Yearbook
1983
American Reading Forum Online Yearbook

Volume III, 1983

Reading Research to Reading Practice

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READING RESEARCH AND PRACTICE: OUR ACHIEVEMENTS AND OUR POTENTIAL

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When I took my first education courses many years ago, I began to hear remarks from my peers, and even some of my professors, about how useless educational research is. I heard that little or nothing has been learned from educational research. I heard that what is learned from research is not put into practice. I heard that if it is put into practice, it takes 30 years for the implementation.

Throughout the intervening years, I have continually heard and read such disparaging remarks and seldom seen the case made for the affirmative side. Obviously throughout all those years I have dealt with many fine people who do not think so ill of research. Perhaps they have been so busy reading and doing research that they have not taken the time to make the case for it. Of the critics let us remember Emerson's statement, "Taking to pieces is the trade of those who cannot construct."

I do not hold with the notion that reading research is a useless craft. I believe that learning to read is not difficult; teaching how to teach them is more difficult; and researching how to do all the above is most difficult.

For its intelligence agencies our country chooses some of its brightest people. From among those, the very brightest are selected for cryptography. It is assumed that only those of phenomenal mental abilities can create codes or break them. Lesser mortals can encode and decode when the cryptologist shows them how. Reading and writing teachers are not so lucky. Even when we are shown how to teach children to read, the process is so complex that most teachers and researchers find it difficult to teach what they have learned to teach to others. The process is not about teaching children to read easily, but about teaching teachers how to teach reading. The complexity of the process makes it difficult for teachers to master, and even experienced teachers may struggle with the material.

We as reading people have taken it upon ourselves to teach others how to decode and understand all of it. Whatever our failures might have been, we deserve some recognition for our courage.

I do not buy the idea that we do not put what we know about reading research into practice. An examination of the list of American Reading Forum members in this present Yearbook will reveal the names of those who write textbooks, teach teachers, supervise teachers, write teachers manuals, and write children's materials. In the Forum, we have a number of people who have profoundly affected the way that children are taught to read. We have in the organization people who have written books and articles that are in the great libraries of the English-speaking world. Many, if not most, have written articles that students and teachers will still be reading well into the 21st century. People in this organization have written materials for children that several million children read and work with on any given school day. Many in this organization train teachers and some train teachers of teachers. I believe that the people in this organization and other organizations in reading know a great deal about reading research. I cannot believe that these people do not incorporate the best that they know into their writing and their teaching of children or the training of teachers.

I can get more specific than that. Some of the research and writing George Sperlich has been used for 20 years to counter the claims of some of those who said they could teach people to read faster than a speeding bullet. That research is still the best evidence we have concerning those claims. Those of you who have used the Gray Oral Reading Test were using the product of William S. Gray's dissertation done in 1914. A few years ago I read Wayne Otto and Robert Chester's research article in which they delineated the Great Atlantic Pacific Word List. By the following day I had a list in the hands of 48 teachers. It does not always take 30 years to get educational research findings implemented; sometimes it only takes 24 hours. Indeed, reading researchers have made important and lasting contributions and their work does get applied to practice.

True, some reading research does not get put into practice. Let us examine some of the reasons this research does not get implemented.

Some research findings are not applied because they are philosophically not in the spirit of the times. My best judgement from an overall look at the research would be that social promotion and teaching children on whatever level they happen to be working on is a better practice than failing children and having them all bunch up on the fourth grade level. I admit there is some research to support each position. However, we are going to go through a period of failing children no matter what the research says. In America's frustration with the complexities of the world we have built a system of asking for simple and even simplistic answers to our problems. Failing children is one of those simplistic answers. I suspect an enterprising young researcher could find a correlation between those adults in our society who feel they have failed and those adults who feel children should be failed. I find it odd that when I ask about failure or social promotion the majority of those who would fail children believe that in their company or school pay, promotion, and privileges should be based on seniority.

Some research is not applied because we do not have the technology required. The year 1982 will probably be known in history as the year of the microcomputer. The availability of microcomputers will give both researchers and practitioners new dimensions of learning to investigate and to apply in the immediate months and years ahead. The old saying to the effect that the best form of education is to have a student on one end of a log and Mark Hopkins on the other may be modified. A future mark of education may be the student on one end and an analog on the other. We need to read and understand these days about computer literacy. Reading people should take note. The present prerequisite for computer literacy is literacy. Reading researchers have learned years ago about the importance of immediate feedback in the learning process, about reinforcement scheduling, and a number of things we formerly did not have the available technology to implement. Some research is not applied because there is an equal amount of equally-well done research that seems to contradict it. Meta-analysis is a promising, relatively new statistical tool that will be an immense help to us in weighing research evidence. However, I would like to predict that meta-analysis will supplement but never replace the old fashioned critical, careful review of the literature done by a thoughtful, conscientious person in the field. The only way out of this dilemma of having contradictory research findings, painful as it is, is to do more research.

Sometimes our research is not put into practice because of misconceptions about our work. A very simple and easy to correct problem will suffice as an example. We get our next idea formulated and usually set the problem up in a null hypothesis, but we really expect our new way or our variation to be significantly superior. When the results turn out to be nonsignificant, we are downcast; our idea is no good. But since when is just-as-good-as to be cast away? In our enthusiasm for the new idea, we expect too much of it. If we can come up with a variation for new methods, materials, techniques, plans, technologies, or whatever that are just as good as the old, then we have added to the alternatives that are out there. And, after all, what is the very process of education itself but the generation of alternatives?
Even if the idea appeared to be inferior in the statistical comparison, we might need to keep working on the idea itself. Perhaps there are ways of modifying it until it becomes as good as or even significantly superior to the old ways of doing things. Perhaps useful results other than any expected will emerge. In discussing research in the physical sciences, Friedrich Duren- mott wrote in 1962, "The more human beings proceed by plan the more effectively they may be hit by accident!"

Some research is not and should not be applied because it is biased by the researcher. A researcher can become so enamored with a new idea that scientific objectivity is lost. Laurence Sterne has written, "It is the nature of an hypothesis, when once a man has conceived it, that it assimilates everything to itself as proper nourishment, and, from the first moment of your begetting it, it generally grows the stronger by everything you see, hear, read, or understand!" In 1825, Charles Caleb Colton wrote, "Professors in every branch of the sciences prefer their own theories to truth; the reason is that their theories are private property, but truth is common stock!"

The way to deal with this problem of researcher bias is in the hands of those who train the researchers. It is not enough to teach people how to do research. We need also to teach them the ethics and the responsibilities that should accompany their research. We have been teaching this new generation of people how to get their stuff into print, and they are getting good at doing just that. We need to be sure to teach them to have something important, something responsible, and something that is their own to say when they break into print.

Some research is not applied because its application appears to be expensive. During the crises of the Great Depression and World War II, when the Republic itself was in mortal danger, we learned how to borrow money from future generations. Then it was such a seductively easy step to learn to steal from future generations. Among the most unwise actions any nation, state, community, or family can take is to reduce its financial, moral, and intellectual commitment to the education of its children. Every time we balance the state budget at the expense of education, we steal from future generations that to which they have a right.

We have done much; we have done well. In the lean economic days ahead, if we continue to do as well or better we must identify those who are to do it. I submit that we have here in the American Reading Forum, per capita, one of the most accomplished groups of veteran researchers and practitioners that I have ever seen brought together. We have also one of the most talented and well-trained groups of young reading researchers and practitioners that I have seen brought together. Some members of the American Reading Forum have, as individuals and as members of other groups, had a positive and profound impact on reading education in this nation and in other nations. This group will, as individuals and as the American Reading Forum, impact positively and profoundly on reading research and practice in the years and the decades ahead.
evolution. Educational psychologists began research on the issue in the early days of this century. Their first subjects were all adults, many of whom demonstrated high levels of both rate and comprehension.

Ruediger (1907) made the suggestion that the origin of efficient reading be investigated in young subjects with the goal being a scientific pedagogy for rate training. As a result, a great deal of the research of the 1907-1930 period involved elementary students. This period is summarized in O'Brien (1926).

Colleges began to train for rate during the 1920's (Witty, 1969). Since then, most of the controlled studies of rate training have been done at the college level. Very few, if any, controlled studies of rate training programs at the elementary, high school, or adult levels have been done.

There was a period during the 1940's and 1950's that the U.S. Government was very active in the development of tachistoscopic training programs. This interest was due to the success of Renshaw (1945) in training anti-aircraft spotting tachistoscopically.

Commercial interests dominated the 1960's. The reading profession battled what they considered to be the excesses of the commercial groups during this time period. They felt that while this emphasis on speed lead to high reading rates, the resulting low comprehension and lack of reading flexibility were too high a price to pay. Spache (1962) was a major proponent of this position opposing the commercial approach.

Interest in rate training dropped off in educational circles during the 1970's. This decline was so noticeable that Pau (1981) declared speed reading dead. Although the level of research has dropped, the issue has remained as an area that is written and speculated about. The main field now publishing rate research is cognitive psychology. Nisbett (1967), often recognized as the founder of cognitive psychology, noted that there is no theory to adequately explain the high reading rates that researchers have observed.

THE ISSUES: READING RATE

1. Automaticity

Much of the work done by the cognitive psychology groups has centered on the concept of automaticity (LaBerge & Samuels, 1974) and the two stage processing model of Hochberg (1970, 1976). Automaticity has recently been investigated using modified Stroop type tests (1935) with word-picture or word-color tasks. Rosinski, Golinkoff, and Kukiss (1975), and Cuttentag and Halit (1978) found evidence supporting the automaticity theory after studying pupils with only a single year of learning to read. Ehri and Wilce (1979) suggested that only a moderate amount of practice may be required for beginners to attain an automatic level of processing, i.e., a level at which they could assign the mechanical aspects of reading to subconscious control. Schadler and Thissen (1981) found evidence of automaticity in letter processing in kindergarten.

Hochberg (1970) theorized two kinds of reading guidance during visual search. He concluded that in reading sequential fixations must be guided by the distribution of information within each visual display if any economy of search is to be achieved. This guidance of the search pattern by the visual display itself can only be of two kinds. First, peripheral search guidance in which the low acuity information picked up in the periphery of the eye's range suggests to the optic search system where it must move its point of clearest vision to get a detailed view of some potentially interesting region. Second, a cognitive search guidance in which knowledge of what has been seen so far provides the observer with some hypotheses about where to look to obtain further information. Fisher (1979) combined Hochberg's dual control model with LaBerge and Samuels' concept of automaticity. He did not regard this combined model as the ultimate answer to all questions about reading. It was felt that as complements the two notions allow us to better
describe the components of reading that range from elementary decoding strategies to fluent high speed recognition. However, the amount and quality of the research thus far has not significantly contributed to proving or disproving the theory set forth. Further, an analysis of current reading programs indicates very little practical application of findings from the research that has been done.

2. Mature reading

The mature flexible reader has occupied the thinking of writers in the area of rate training since the early work of Judd (1918) and Buswell (1920), and continues to be included in more recent writings. This type reader is able to extract meaning directly from print without subvocalizing each word. The mature flexible reader does not read everything at a high speed but uses this skill when appropriate for preview, review, or simply getting the gist of what is read. Book (1930) and Robinson and Hall (1941) noted two levels of reading beyond the entirely subvocalized level used by 90 percent of the readers studied by McDonald (1960, 1965). The first level involves decreased subvocalization, only selected words, or word parts are actually heard. Huey (1908) noted this level in deaf and dumb in the next level, visual reading. The second level, first described by Jastrow (1885), involves no subvocalization but attention to the meaning of what is read.

In a more recent theory position, Hochberg (1976) stated that there are four types of reading. Type I involves word decoding by analysis of the word using a narrow span of recognition. This type of reading is used by beginners, poor readers, or a flexible reader viewing a difficult word; this type has a widely varied reading rate. Type II is word-by-word reading. The reader can identify words up to about four to six words per fixation. The reading rate for this type is that of oral language, about 250 words per minute, and each word is subvocalized. Type III is phrase reading. The reader uses features like word length, as far out as 12 to 14 letters, to recognize words. Subvocalization is suppressed in this type. The reading rate for this reader is roughly 580 to 680 words per minute. Type IV reading is visual reading. The reader does not look at or get information from each and every word. Subvocalization is absent in this type, the attention is on the meaning of what is being read. This reader has a widely varied rate. McLaughlin (1967) suggests this type reader begins processing at 1200 words per minute. The fully developed mature reader is able to use each type, even intermittently, as appropriate for the reader’s purpose and comprehension. Each type of reading has characteristic eye movement patterns (Buswell, 1920). There are also characteristic eye movement patterns for skimming and scanning (McLaughlin, 1967).

3. Where to begin training

Harris and Sipay (1980) noted that there are reports, but no controlled experimental studies, that rate training can be taught successfully as low as the sixth grade. Other writers who have concluded that rate may be dealt with beneficially before then. Judd (1918) indicated that some third graders, and many fourth graders, were capable of Type III reading. Others urge rate training by third grade included: C. T. Gray (1917), W. S. Gray (1919), and Book (1930), Singer (1945), as a result of extensive sub-strata experiments, concluded that there was a change in the organization of sub-strata factors that made sixth grade reading level an ideal one for rate training. The importance of rate training by the sixth grade level is indicated by Betts (cited in Smith & Dechant, 1961). He stated that if specific efforts are not made to improve reading rate an individual’s rate is unlikely to improve much beyond that attained in sixth grade.

4. Methods for teaching

It is important to note that although individuals have been recorded reading at silent rates far beyond average college students’ rate of 280 words per minute (Taylor, 1963) imposed by the subvocal habit, the value of special training to produce higher than normal rates has not been demonstrated by research. And, specific methods of training have not been compared. Harris and Sipay (1980) suggested the neglect in this area is unfortunate because of the practical value of the ability to read at rates several times beyond today’s norms. Little guidance can be gained from a study of the rate training research which has been undertaken to improve today’s reading programs, since most of the research has been done on crash courses modeled after commercial programs. Ransom (1978) concluded that rapid reading with comprehension is a skill best developed gradually in youth. Yet, there is no longitudinal study of a “spiral curriculum” rate training program.

5. Theory

Based on the theories noted here, a strong case is made that the best third grade readers should begin to be trained in Type III phrase reading. By sixth grade, average readers are said to be ready for Type III phrase training. The best sixth graders are ready for Type IV training, as are average eighth graders. Unfortunately, the research on which theoretical conclusions are based is more than a half century old. A recent trend toward moving reading skills to earlier and earlier grades suggests the possibility that changes in the fundamental reading habits of elementary age groups may have taken place and that this research by grade level is suspect and in need of verification or denial.

6. Ideal training age

Also inadequately investigated is the idea, first expressed by Dallenbach (1914), that there is an ideal age level for perceptual training.

The advantages of the mature reader of having been trained in rate through elementary and high school remain to be investigated. No longitudinal studies comparing trained with untrained readers appear to have been done. Retention tests are uncommon in rate training research. In the 10 cases in which a retention test was given six months to a year after the training posttest the tendency was for rate to decline, but to remain above pretreatment level, and for comprehension to increase over the posttest level. No research has been reported in which retention tests were administered over a year after posttesting.

8. Trainer Attitude

Reported, but lacking investigation, is the idea that teacher attitude can influence the results of rate training. Brown (1976) suggests that a trainer may very subtly communicate attitudes and expectations towards individuals in the class. Thus, class test results may tend to reflect any limiting attitude on the part of the teacher toward individuals in the class.

9. Skilled Reading

The processes used by skilled readers have not been adequately studied. Smith and Holmes (1971) felt that research was lacking in this area due to the complexity of the issues involved. There appear to be just three studies in which a high speed reader was photographed while reading: Tillison (1955), Thomas (1962), and McLaughlin (1967).

In each of these studies a single rapid reader was photographed. Thomas (1963) stated that it was obvious, even from such a small sample, that the eye movement pattern used by rapid readers is completely different from the pattern used by readers with a normal rate. His results suggested a greatly increased area of visual perception during each fixation. However, he noted it would be a big step to postulate such a different reading mechanism on the basis of so few cases.

10. Silent Reading Testing

Pugh (1978) argued that there is still neglect in the teaching
of silent reading due to the difficulty of testing and measuring silent reading performance. He called for refinement in both teaching methods for silent reading and testing procedures, suggesting that more thought needs to be given to what is meant by "comprehension" and by "readability". He regarded current measurement devices, and the constructs of the devisers of tests, to be misleading for teachers. Staton (1926) questioned the use of equivalent forms of standardized reading tests as measures of growth and change in rate training courses. Apparently there has been little progress in finding the standards in rate testing first suggested by Ruediger (1907). He noted that it was impossible, except in a rough manner, to compare the work of one investigator with that of another since, in many cases, they did not even mention the book or passages used in determining rate.

11. Eye Movements

Haber (1976) expects that we soon will know more about the interaction between the content of the text being read and the control of eye movements during reading. Rayner (1977) agreed, concluding that fixation durations in reading are affected by cognitive processes. Thus, eye movement data may provide answers to many interesting questions about reading and sentence processing. Rayner (1979) added that the extent to which simultaneous processing of foveal and parafoveal information occurs will also have to be determined.

Summary

Durkin (1981) has noted unprecedented interest in reading comprehension research in current journals and convention programs. This upswing of interest in comprehension should lead to an increase in interest in reading rate. The areas of rate and comprehension have been closely tied in research and theoretical work, since the early days of the reading field. It is likely that individuals can be found who could complete any reading task with a high degree of comprehension and do so at a rapid rate. Indeed, an emphasis on rate may actually improve comprehension.

One investigator summed up five years of rate training experience saying:

We found that silent reading alone, without regard to the rate, was not aiding pupils to concentrate the mind on the text. They would study the lesson. It was discovered that the text was read over several times with no particular effort to absorb the thought because they were not expected to get the thought rapidly. When the element of time was introduced, pupils became alert. Then came the ability to get the sentences in proper sequence. Soon the teacher began questioning for details, for shades of meaning, for opinions as to the descriptions, for judgment on the value of facts, for the meaning of certain expressions.

(Dresdel, 1917)

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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN INTELLIGENCE SCORE AND RATE FOR WORD RECALL IN A NATURALLY OCCURRING CLASSROOM SETTING

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The learning of a basic sight vocabulary of irregularly spelled words doesn’t come as easily for some as for most pupils when they first begin to read. And, for these “special” pupils, poor visual and/or auditory-perceptual memory often continue for years to frustrate their efforts to become efficient readers.

Recently, no definitive studies of the relationship between maximum recall of sight words and the time a teacher spends per lesson, the number of words taught per lesson, and the number of lessons needed per week have been done, either on short or long-term recall. Gates (1950) analyzed vocabulary “loads” for pupils of different intelligence levels and estimated the number of repetitions needed for “efficiently” learning from one to seventeen words. Pupils in the 60-89 range were said to need 40-55 repetitions, 90-119 range 15 repetitions, and 120-129 range 29 repetitions for each word taught. Waugh (1961, 1967) reported that items which were presented for memorization twice in a row were just as likely to be remembered as items presented at two different locations in the same list. She also indicated that the two types of presentations were both twice as likely to be remembered as an item presented only once. She noted that an item’s likelihood of being retained was directly proportional to the total presentation time within a list.

Later studies by Melton (1967) and Underwood (1969) appear to refute the idea that massed practice was superior to distributed practice. They found that well-distributed items presented for memorization were recalled more frequently than massed items. Waugh (1970) then investigated rate of presentation of the to-be-remembered items in an effort to explain the conflict between these findings and her earlier research. She found that when a list was read rapidly words presented twice in sequence were as likely to be recalled as distributed items presented twice, and twice as likely as words presented once. However, if lagtime between presentation of items was increased, then recall increased. She found that an item presented eight times in distributed practice style was eight times as likely to be recalled as an item presented one time. On the other hand, a word presented for “learning” eight times in massed practice format was only twice as likely to be recalled as the same item presented only once. The data clearly seemed to favor distributed practice. Also, the results from her study indicated that as list duration increased, total items recalled increased, but at a slower rate.

Singer, Samuels, & Spiroff (1974); Samuels (1967), Hartley (1970), Duell (1968), Baker and Mandell (1965), Silverman, Davids, & Andrews (1963), compared the effect of picture clues, sentences, and the learning of words in isolation on recall of the target words. Various combinations of the approaches mentioned here were examined, with the same basic conclusion drawn: Learning words in isolation produced significantly better recall of these words. However, Arlin and Webster (1978-79) found that picture clues and the word, plus an oralization of the word, produced recall superior to that gotten without picture clues. Thus, they argued that the focal attention hypothesis of Samuels is wrong because the research was done without a voice feedback accompanying the picture-printed word treatment.

Jorm (1977), Richards (1976), Ellis & Shepherd (1974), and Paivio (1966), all found that concrete words were more easily learned than abstract ones. Jorm did find that high imagery (concrete) words were more easily learned than low imagery (abstract) words by poor readers (ages 8-11), but there was no difference in learnability for the two types of words for good readers.

Emphasis in this study was on mastery of the high frequency, basic sight words which are often abstract. Thus, the use of picture clues and imagery exercises was quite difficult to sustain with any degree of success.

Samuels & Jeffrey (1966) reported that whole word learners performed quite well at the outset in word recognition because the words they were learning were grossly dissimilar. However, as more similar words were added the result was confusion between like forms. Samuels (1965, 1970) noted that rapid initial learning of words coded in color, the subsequent reaching of a plateau in switching to black on white orthography, and the onset of confusing the target words with ones of similar configuration. These results add another supporting dimension to the studies by Ehril et al. (1979, 1980).

Haber (1970) stated in his study that naive readers processed words in serial letter order, while mature readers practiced “parallel processing.” Huey (1908) found little difference in recognition speed and accuracy in words between good and poor readers. Past this point there was a significant increase in processing time, indicating some recognition strategy involving the whole word unit. Terry (1976) noted that young readers struggling with an unfamiliar orthography also processed serially, even spelling out, while the more experienced readers functioned holistically. And, Mackinnon (1959), Weber (1968), and Blemmler (1970) stressed there was an emphasis on context and language clues in the earlier reading stages, with a later shift to use of graphic clues. Pupils who continued to depend heavily on context clues were significantly poorer at word recognition than those who had made the orthographic-phonological shift.

It appears, based on the foregoing research, that any system of word learning introduced into the developmental classroom must take students successfully through several stages. First, emphasizing spoken context and word repetition will bring the pupil to a point of mechanically calling an initial sight vocabulary. Then, there must begin to occur serial processing of letter order, graduating into the early stages of an orthographic-phonological match. A degree of maturity is achieved at this stage when the pupil is able/enabled to bring forward from previous skill learnings experiences which help to unlock the spelling of new words. Now, there appears a holistic response to the word form, a scanning technique which makes use of key orthographic-phonological clues within the word, and the past language experiences of the reader. Finally, the written syntactic-semantic-phonological patterns come into play to define the rapid, smooth
pronunciation of "unknown" and, sometimes, "unseen" words.

Currently, basal reader series prescribe varying numbers of words to be learned per lesson, and per book. The number is more dependent on whether a new story is being introduced, or on the need for words by which to teach a new skill, rather than on any research into pupil learning rate. This study sought to determine the relationship between pupil learning rate and the number of words taught, time used per lesson, lessons taught per week, time spent reteaching unlearned words, and time spent in other ways of teaching the words. Three recall intervals were used: Immediate - right after the lesson. Recall after re-teaching - recall of words taught when not learned after the first teaching. Posttest - long term recall of all words learned in the two months interval. Records were kept as a part of the teaching procedure on pupil recall at all three intervals.

METHOD

Subjects

Fourteen teachers in grades 1-3 in a south Georgia county school system were trained to teach the vocabulary from their regular basal reader lessons to their reading groups, a total of 264 pupils, by the seven-step procedure outlined below.

Procedure

Training was first carried out by the investigator who role-played the teacher while the classroom teachers became pupils who were learning words. This step was videotaped. Then, the teachers planned their lessons and role-played the teaching of words to each other. Next, teaching in the regular class was begun with five trained supervisors assessing the teacher and pupil behaviors by frequency and rate counts. Those teachers having difficulty with steps were retrained and also viewed the initial teaching tape once again. Finally, tapes were made of the teachers who were accurately following the teaching sequence. These were also studied by those having problems. Afterwards, observation and critique of their teaching continued until the "seven steps" model was being followed. Monitoring of their behavior by the principal and assistant principal continued throughout the duration of the project.

Teachers all used the introductory word lists at the beginning of each new story lesson plan in the basal reader as their source of sight words. They established a rate at which words were introduced to fit their estimation of the pupils' learning rates. Just prior to the treatment all pupils had been given an informal reading inventory and class groups were reorganized to more nearly fit the pupils' reading levels. As a basic criterion, groups below grade level were to be considered low achievers, on grade level readers as average achievers, and pupils reading above grade level were identified as high achievers. Teaching was begun at the rate of 2 words and 30 repetitions for low achievers, 5 words and 15 repetitions for average achievers and 8-13 words and 15 repetitions for high achievers. The words were taught, then tested immediately (RECIDM). Words which were unknown on the immediate recall test were re-taught and re-tested (RECRET). On the following day, the words were again tested. If they were accurately recalled one more word was added to this day's new list. If any words were not recalled these were re-taught as a part of this day's lesson and the number of new words to be taught was correspondingly lowered. This method of approximating an "ideal" presentation rate was continued until the total number of words taught each day came closest to being recalled for two consecutive days of retesting.

EVALUATION

Since step five of the treatment mode involved written spelling of the word, spelling served as the record-keeping system for evaluating recall immediately after teaching (RECIDM) and recall after reteaching of the words not learned from the initial teaching (RECRET). A written spelling test was administered after two months and included all the words learned (RECPOST). Written recall of the words was considered to be more demanding test of pupil learning than oral recall, but this did afford accurate project records. In all three tests, if a word was misspelled it was counted as wrong.

The California Short-Form Test of Mental Maturity, Level 1 (1963), was administered to all the study population in grades one through three. Since the standard deviation on the test is 16 points the population was divided into three groups, low - 50 to 83 IQ; average - 84 to 116 IQ; high - 117 and above IQ.

RESULTS

A multiple regression analysis was performed on the three intelligence groupings correlating 1) words taught per lesson, 2) lessons taught per week, 3) time spent per lesson, 4) time spent reteaching per lesson, 5) lessons spent reteaching, and 6) average all other time spent teaching the words, with recall accuracy at the three time intervals specified in the study.

For all three intelligence groupings, words taught per lesson, lessons taught per week, and amount of time used per lesson were significantly related to immediate recall of sight words (RECIDM). In the 50-83 IQ range a striking 66 percent of the variance in pupil achievement scores was accounted for by controlling the number of words taught per lesson. In the group whose IQ scores were from 84-116 WDSPER accounted for a significant 29 percent of the variance. However, in the group whose IQ scores were 117 and above, WDSPER accounted for ten percent of the variance in scores, lessons per week (LESPER) 17 percent, and times taught per week (TIMPER) 14 percent - for a combined total of 42 percent of the variance.

In the 50-83 IQ group a WDSPER rate of three taught on an average two and one-half times per week for 17.5 minutes achieved 92% immediate recall (RECIDM). Four words taught twice weekly for 17.5 minutes resulted in 90% recall, but, as the number of words taught was increased to 5 or more per lesson (10 per week) recall fell below the 90% level. In effect, six words taught per week were recalled with 92% accuracy. At eight words recall dippd to 90%, and with ten words or more, recall dropped to 85% maximum.

The WDSPER data for the 84-116 IQ is not as clear; however, since pupils taught three words per lesson for two lessons, averaged 95% recall, four per lesson, for two lessons, averaged 91% recall, and five per lesson, for two lessons, resulted in 92.5% recall. Thus, the results were that 3-5 words per lesson achieved above 90% recall-conditional on number of lessons per week being two and time spent teaching per lesson averaging between 12 and 19 minutes. Maximum efficiency was achieved with five words per lesson taught twice weekly, and using two and one-half minutes per word to produce 92.5% recall.

Once the daily words taught total went to six, hence the words to be learned per week passed ten, recall dipped below the 90% level. Optimum recall, 95% or better, appeared to result from combinations of three to five words per lesson, with lessons taught 1-2 times per week for 15 to 25 minutes per lesson.

In the 117 to 138 IQ group three WDSPER (words per lesson) at two LESPERS (lessons per week) taught for an average of 20 minutes TIMPER (time per lesson) produced 93.3 percent immediate recall. When four words were taught for two lessons using 17.5 minutes each lesson, recall was 97.5 percent. Once words taught went to five per lesson, and lessons per week remained around two (with time per lesson averaging 18.3 minutes), recall went down to 87.7 percent. Six words taught an average of two and one-half times per week for 20 minutes yielded 87.5 percent recall. In effect, either six (3 x 2) or eight (4 x 2) words per week yielded better than 93% recall. However, when the number of words to be learned per week exceeded 11 (5 x 2.3 and 6 x 2.5) recall went down to an average of 87.7 and 87.5 percent respectively.
DISCUSSION (RECRET)

Once the teachers tested for immediate recall, they proceeded to reteach the words which were unknown and to test for recall after this reteaching (RECRET). The multiple regression analysis of the relationship of time spent daily reteaching (DATIRET) and times per week reteaching (TIRET) proved to be non-significant for the 50-83 IQ group, significant for both DATIRET and TIRET for IQ group 84-116, and significant for TIRET only in IQ group 117-138. A high thirty-three percent of the variance in recall scores following reteaching of the 84-116 IQ group could be accounted for through an analysis of the time used each lesson to reteach the unknown words.

As time taught per lesson (DATIRET) went from 5 to 10 for IQ 84-116, recall rose from 80% to 90%. At this point, an increase in time per lesson, but a decrease in lessons per week (TIRET) showed a corresponding decrease in recall (85%).

DISCUSSION (RECPPOST)

Recall on the posttest (RECPPOST) was assumed to be influenced by the number of words taught (WDSPER), lessons per week (LESPER), time per lesson (TIMPER), time spent reteaching (DATIRET), times reteaching per week (TIRET), and the average time per week spent in other teaching of the words (AVTIOTH).

For IQ group 50-81, WDSPER p. < .037 was the only variable which proved to be significantly related to posttest recall. Approximately twenty-one percent of the variance in the posttest scores can be accounted for through inspection of differences in the number of words taught per lesson.

However, an inspection of the data indicates a negative relationship since percent recall tends to increase as number of words taught increases. Maximum long-term recall occurred at 10 words per week, as opposed to 6 or 8 per week, which, theoretically, should not occur—all other time factors being constant. All the other variables—LESPER, TIMPER, DATIRET, TIRET, AVTIOTH—were not significantly correlated with recall on the posttest (p. < .05).

In the IQ group 84-116, LESPER, TIMPER, DATIRET, TIRET, and AVTIOTH were all significantly (.05) related to recall on the posttest. Combined, however, they accounted for only seven percent of the variance in final scores.

A visual analysis of the variable values indicated that two lessons per week, for 15 to 18 minutes duration, followed by 5 to 10 minutes of reteaching of mastered words (2 to 4 times weekly) achieved from 71 to 76% recall on the posttest. Since the average weekly time spent in other teaching ranged from only 15 to 34 minutes per week, it appears that this time can be largely discounted from any logical combination of time factors chosen as optimal for achieving the maximum posttest recall accuracy in this study.

An examination of IQ group 117, and above, showed the same results. All variables except WDSPER were significantly related to recall on the posttest (p. < .05). The amount of time weekly the unknown words were retaught accounted for almost thirteen percent of the score variance, and a similar variable, lessons used per week in initial teaching, accounted for approximately nine percent of the variance. Combined, the difference in times used weekly to initially teach, and reteach, the words explained over twenty-two percent of the variance in pupil posttest scores.

An examination of the raw data revealed that no reliable conclusion regarding a maximally efficient number of teaching days could be drawn.

Taken as a whole, between 2-3 lessons per week, supported by 2-4 reteaching sessions per week produced recall between 73 and 84% on the posttest.

A combining of the time and word rates for each IQ group yielded scores that were very similar in WDSPER, LESPER, TIMPER, and TIRET across groups. In time spent daily reteaching (TIRET) much more time was used for the 50-83 IQ group (15 minutes) when compared with the 84-116 (7.7 minutes) and 117-148 (9.5 minutes).

REFERENCES


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**Table 1**

*(IQ Range 50 through 83)*

Multiple regression analysis of independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER) and time taught per lesson (TIMPER) and their relationship to immediate recall of sight words (RECRIM).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.815</td>
<td>.665</td>
<td>.834</td>
<td>.085</td>
<td>37.701</td>
<td>.001</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>LESPER</td>
<td>.507</td>
<td>.865</td>
<td>.748</td>
<td>.083</td>
<td>5.969</td>
<td>27.764</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>TIMPER</td>
<td>.194</td>
<td>.913</td>
<td>.884</td>
<td>.085</td>
<td>8.711</td>
<td>28.390</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables time per lesson spent re-teaching (DATIRET) and times per week retaught (TIRET) and their relationship to recall of sight words after review and reteaching (RECRET).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATIRET</td>
<td>.048</td>
<td>.002</td>
<td>.008</td>
<td>.430</td>
<td>.043</td>
<td>.838</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>TIRET</td>
<td>.096</td>
<td>.102</td>
<td>.010</td>
<td>.146</td>
<td>.094</td>
<td>.911</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER), and time taught per lesson (TIMPER) and their relationship to recall on the posttest.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.458</td>
<td>.209</td>
<td>.503</td>
<td>.035</td>
<td>5.039</td>
<td>.037</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>LESPER</td>
<td>.275</td>
<td>.482</td>
<td>.233</td>
<td>.023</td>
<td>.534</td>
<td>2.730</td>
<td>.092</td>
<td></td>
</tr>
<tr>
<td>TIMPER</td>
<td>.162</td>
<td>.537</td>
<td>.288</td>
<td>.055</td>
<td>1.317</td>
<td>2.291</td>
<td>.115</td>
<td></td>
</tr>
<tr>
<td>DATIRET</td>
<td>.258</td>
<td>.540</td>
<td>.291</td>
<td>.004</td>
<td>.897</td>
<td>1.649</td>
<td>.211</td>
<td></td>
</tr>
<tr>
<td>TIRET</td>
<td>.292</td>
<td>.550</td>
<td>.303</td>
<td>.011</td>
<td>.231</td>
<td>1.302</td>
<td>.315</td>
<td></td>
</tr>
<tr>
<td>AVTIOTH</td>
<td>.228</td>
<td>.598</td>
<td>.358</td>
<td>.035</td>
<td>1.200</td>
<td>1.299</td>
<td>.320</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

(IQ Range 84 through 116)

Multiple regression analysis of independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER), and time taught per lesson (TIMPER) and their relationship to immediate recall of site words (RECM).  

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.541</td>
<td>.293</td>
<td>.308</td>
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<td>.001</td>
<td>176</td>
</tr>
<tr>
<td>TIMPER</td>
<td>.337</td>
<td>.555</td>
<td>.308</td>
<td>.015</td>
<td>23.57</td>
<td>25.482</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>LESPER</td>
<td>.178</td>
<td>.555</td>
<td>.308</td>
<td>.001</td>
<td>3.696</td>
<td>38.458</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables time per lesson spent re-teaching (DATIRET) and times per week retaught (TIRET) and their relationship to recall of sight words after review and reteaching (RECRET).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATIRET</td>
<td>.581</td>
<td>.338</td>
<td>.338</td>
<td>.000</td>
<td>88.693</td>
<td></td>
<td>.001</td>
<td>176</td>
</tr>
<tr>
<td>TIRET</td>
<td>.213</td>
<td>.581</td>
<td>.338</td>
<td>.000</td>
<td>.417</td>
<td>44.124</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER), and time taught per lesson (TIMPER) and their relationship to recall on the posttest.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.114</td>
<td>.013</td>
<td>.013</td>
<td>.029</td>
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<td></td>
<td>.131</td>
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</tr>
<tr>
<td>LESPER</td>
<td>.177</td>
<td>.205</td>
<td>.042</td>
<td>.012</td>
<td>5.201</td>
<td>3.781</td>
<td>.025</td>
<td></td>
</tr>
<tr>
<td>TIMPER</td>
<td>.084</td>
<td>.228</td>
<td>.052</td>
<td>.024</td>
<td>1.849</td>
<td>3.149</td>
<td>.026</td>
<td></td>
</tr>
<tr>
<td>DATIRET</td>
<td>.070</td>
<td>.276</td>
<td>.076</td>
<td>.024</td>
<td>.132</td>
<td>3.524</td>
<td>.009</td>
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</tr>
<tr>
<td>TIRET</td>
<td>.185</td>
<td>.277</td>
<td>.077</td>
<td>.001</td>
<td>4.458</td>
<td>2.831</td>
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<tr>
<td>AVTIOTH</td>
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<td>.078</td>
<td>.001</td>
<td>.210</td>
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<td>.031</td>
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</table>
Table 3

(IQ Range 117 and above)

Multiple regression analysis of independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER) and time taught per lesson (TIMPER) and their relationship to immediate recall of sight words (RE CIM).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.325</td>
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<td>.007</td>
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<tr>
<td>LESP ER</td>
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<td>.530</td>
<td>.280</td>
<td>.175</td>
<td>15.524</td>
<td>12.466</td>
<td>.001</td>
</tr>
<tr>
<td>TIMPER</td>
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<td>.652</td>
<td>.425</td>
<td>.145</td>
<td>15.835</td>
<td>15.515</td>
<td>.001</td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables time per lesson spent reteaching (DATIRET) and times per week retaught (TIRET) and their relationship to recall of sight words after review and reteaching (RECRET).

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATIRET</td>
<td>.187</td>
<td>.035</td>
<td></td>
<td>2.365</td>
<td></td>
<td>.130</td>
<td>67</td>
</tr>
<tr>
<td>TIRET</td>
<td>.279</td>
<td>.327</td>
<td>.107</td>
<td>.072</td>
<td>5.149</td>
<td>3.837</td>
<td>.027</td>
</tr>
</tbody>
</table>

Multiple regression analysis of the independent variables words taught per lesson (WDSPER), lessons taught per week (LESPER), and time taught per lesson (TIMPER) and their relationship to recall on the posttest.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>r</th>
<th>R²</th>
<th>change</th>
<th>F</th>
<th>Overall F</th>
<th>P</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDSPER</td>
<td>.182</td>
<td>.033</td>
<td></td>
<td>2.192</td>
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<td>.144</td>
<td>67</td>
</tr>
<tr>
<td>LESP ER</td>
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<td>.357</td>
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<td>.094</td>
<td>6.821</td>
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<td>.014</td>
</tr>
<tr>
<td>TIMPER</td>
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<td>.396</td>
<td>.157</td>
<td>.029</td>
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<td>3.850</td>
<td>.014</td>
</tr>
<tr>
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<td>.476</td>
<td>.227</td>
<td>.070</td>
<td>5.497</td>
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<td>AVTIOTH</td>
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<td>.023</td>
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Table 4

Summary of immediate recall scores (RECM) by words taught per lesson (WDSPER), lessons taught per week (LESPER), and time used in teaching each lesson (TIME).  

<table>
<thead>
<tr>
<th>WDSPER</th>
<th>LESPER</th>
<th>1 IMPER</th>
<th>RECM(%)</th>
<th>N</th>
</tr>
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<tbody>
<tr>
<td>3</td>
<td>2.5</td>
<td>7.5</td>
<td>18.5</td>
<td>6.2</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>10.5</td>
<td>17.5</td>
<td>4.4</td>
</tr>
<tr>
<td>5</td>
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<tr>
<td>6</td>
<td>2</td>
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<td>15</td>
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IQ 84 through 116

<table>
<thead>
<tr>
<th>WDSPER</th>
<th>LESPER</th>
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<th>RECM(%)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2.02</td>
<td>6.06</td>
<td>19</td>
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</tr>
<tr>
<td>4</td>
<td>2</td>
<td>8</td>
<td>17.5</td>
<td>4.4</td>
</tr>
<tr>
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<td>2</td>
<td>10</td>
<td>12.5</td>
<td>2.5</td>
</tr>
<tr>
<td>6</td>
<td>2.5</td>
<td>15</td>
<td>17.5</td>
<td>2.9</td>
</tr>
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<td>8</td>
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<td>16</td>
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117 through 148

<table>
<thead>
<tr>
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<th>1 IMPER</th>
<th>RECM(%)</th>
<th>N</th>
</tr>
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<tbody>
<tr>
<td>3</td>
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<td>6</td>
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<td>4</td>
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<td>6</td>
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<td>15</td>
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Table 5

Summary of recall after reteaching of unlearned words (RECRET) by time spent daily reteaching (DATIRET) and times per week retaught (TIRET).

IQ 50 through 83

<table>
<thead>
<tr>
<th>DATIRET</th>
<th>TIRET</th>
<th>RECRET</th>
<th>N</th>
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<tbody>
<tr>
<td>8</td>
<td>2</td>
<td>16</td>
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</tr>
<tr>
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<td>3</td>
<td>30</td>
<td>80</td>
</tr>
<tr>
<td>10</td>
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<td>10</td>
<td>7</td>
<td>70</td>
<td>82</td>
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</tbody>
</table>

IQ 84 through 116

<table>
<thead>
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<th>DATIRET</th>
<th>TIRET</th>
<th>RECRET</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>4.2</td>
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<tr>
<td>10</td>
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IQ 117 through 148

<table>
<thead>
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<th>TIRET</th>
<th>RECRET</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>2</td>
<td>30</td>
<td>85.5</td>
</tr>
<tr>
<td>7.5</td>
<td>3</td>
<td>22.5</td>
<td>88.4</td>
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<tr>
<td>10</td>
<td>4</td>
<td>40</td>
<td>98</td>
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<td>7.5</td>
<td>5</td>
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<td>90</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>35</td>
<td>77</td>
</tr>
</tbody>
</table>

Avg. Total words per week

Avg. Time per wd. per week

Tot. Time Reteaching
Table 6

Summary of recall on posttest (RECPOST) by words taught per lesson (WDSPER), lessons taught per week (LESPEPER) time teaching each lesson (TIPMPE), time daily reteaching words not learned (DATIRET), times per week words retaught (TIRED), and average time per week in other teaching of words (AVTIOITH).

<table>
<thead>
<tr>
<th>WDSPER</th>
<th>LESPER</th>
<th>TIMPER</th>
<th>DATIRET</th>
<th>TIRED</th>
<th>AVTIOITH</th>
<th>RECPOST</th>
<th>N</th>
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<tbody>
<tr>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IQ 50 through 83</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>18.3</td>
<td>10</td>
<td>5.7</td>
<td>50</td>
<td>52.3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>17.5</td>
<td>9</td>
<td>3.5</td>
<td>52.5</td>
<td>71.3</td>
<td></td>
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<td>2</td>
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<tr>
<td>Avg. 4.5</td>
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<td>19.0</td>
<td>13</td>
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<td>36.9</td>
<td>71.2</td>
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<td>IQ 84 through 116</td>
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<td>20</td>
<td>8.3</td>
<td>4.3</td>
<td>33.3</td>
<td>73.3</td>
<td></td>
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<td>3</td>
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<td>9.5</td>
<td>3.5</td>
<td>42.1</td>
<td>79.4</td>
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CASE STUDIES ON A TIME-EFFICIENT TECHNIQUE FOR TEACHING DECODING

CAROL DANA
Cardinal Stritch College

As a teacher of reading one of the major battles I fought was that against time. There is a limited amount of time in a school day and only so much is allotted for reading instruction. This issue of time becomes a critical problem for less-capable students who require more time to learn concepts, and so continually fall behind their classmates. In order to combat the problem of time so as to meet the needs of all my students, I attempted to locate reading programs that incorporated efficiency in their instructional design.

Since word recognition skills are essential in gaining a student's admittance to books, my first goal was to locate an efficient program for teaching word recognition. I was specifically interested in a phonic program, since phonics, in itself, is considered an efficient approach for teaching word recognition (Ausubel, 1978). However, there were phonic programs where instruction would take several years covering from forty to over two hundred generalizations. Although phonics is an efficient word recognition technique, I could not locate a program that presented it efficiently.

My goal became to develop a time-efficient technique to teach phonics. The major premise underlying the design of the technique was that although it has been shown that being an expert decoder is a benefit for a reader (Golinkoff, 1975-76; Perfetti and Hogaboam, 1975), it has not been shown that in order to become an expert decoder a student has to learn from forty to over two hundred generalizations. I would test this premise by designing a technique that made up fewer generalizations and then studying its effectiveness.

I began by reviewing the phonic components of various reading programs. Next, I made charts of the generalizations covered in the programs keeping tally of those generalizations that were repeated. Then I began restructuring and condensing the phonic generalizations into a more manageable number. Over a period of ten years of field testing and refining, ten generalizations have evolved.

In developing the ten generalizations, I broke with tradition in that the terminology used in the generalizations was not borrowed from the field of phoneties, nor was the instructional sequence of the generalizations completely based on the frequency of occurrence of the letter patterns. The focus of the design was on learnability. I attempted to create generalizations that were easy to remember and apply. I did this by identifying letter patterns that were frequently covered in phonic programs. Then I organized letter patterns into groups so I could offer students vivid cues on the sound-letter patterns made. These cues served as mnemonics, memory aids that have been found to facilitate learning (Norman, 1969; McMuntrie, 1982).

Three mnemonic techniques were used. First, terminology used for the generalizations offered cues to the sounds the letter patterns made. Traditional terminology such as diphthong, digraph, and long vowels was substituted with terms such as animal-sound vowel cores, yawn vowel cores, and name vowel cores. Second, generalizations were represented in pictures that reinforced the cues in the terminology (eg. A picture of a man yawning used students that yawn vowel cores made a yawn sound). Third, method of loci, a spatial mnemonic, where the location of objects, visuals or symbols in a given setting are used to trigger information in memory and aid recall, was employed by arranging the generalizations to form a chart. Students were told to pay close attention to the location of each generalization on the chart in order to facilitate their recall of not only each generalization but also relationships among generalizations and instances where letter patterns were repeated. Students were encouraged to use visual imagery to help them store the chart in memory.

In addition to the mnemonic value of the chart, it also served as an overview of the concepts the students were to learn. At the onset of instruction, students were given direct instruction on how, when and why to use the generalizations on the chart. The chart was used to present the generalizations as an organized group of related principles that are learned individually and are continually related back to the whole. The chart both in structure and use is similar to Barron's (1971) graphic organizer, a skeletal word diagram of the main ideas to be learned. However, instead of using the graphic organizer for its traditional purpose of facilitating learning content from a passage, students used the organizer to facilitate learning a technique. The chart as an organizer also appeared to enable students who had previous instruction in phonics to organize their preexisting and newly acquired knowledge to help them develop a workable system for decoding.

The numerical order of the generalizations on the chart prescribed their instructional sequence and was determined by two factors: 1) letter patterns that were easiest to learn, and 2) letter patterns frequently found in words. Field testing served as the major impetus in balancing these factors to determine the instructional sequence.

So that students would become proficient in applying the generalizations, I developed materials consisting of flashcards, short passages, comprehension exercises, and comics. Although the materials were primarily designed so that students could become adept in phonic analysis, the materials concurrently promoted the use of context clues and acquisition of sight vocabulary. This synergistic relationship of word recognition skills was fostered because, for the most efficient instruction, a word recognition skill should not be taught to the exclusion of other word recognition skills (Ausubel, 1978).

Throughout development and testing of the technique my goal was to be able to teach students an efficient decoding technique. This technique would be used to help students achieve independent reading; once independence was reached, careful guidance in book selection would allow word recognition skills to improve through practice.

Case Studies

Throughout a decade of development and refinements, I have used case studies to study the effectiveness of the time-efficient phonic technique. In preliminary stages of inquiry the case study provides one of the best means of investigating a problem by allowing the investigator to observe a pure example of the phenomenon under investigation and, at the same time, providing hypotheses that can be tested later with a large number of subjects (Sax, 1979).

Having used the technique with a wide-range of students ages six through twenty-four, from a variety of socio-economic and ethnic backgrounds, in exceptional education and regular classes, in group and one-on-one settings, I selected two case studies that are representative of the results I have observed.

Case Study One: David

*Background:* David, seven years old residing in a middle-class suburb of Milwaukee, lived with his parents and two younger sisters who were biological offspring. Previous psychological testing on the Wechsler Intelligence Scale for Children (Revised Edition) showed David had an intelligence quotient of 115. However, in emotional composure he was moody, given to explosive outburst, immature, and often unsure of his own capabilities.

David's parents were concerned because David had left first grade with limited reading skill. His teacher proposed that David be tutored in reading over the summer or that he would have to be retained. At that point, he was referred to me for help. *Instructional procedure*.
Reading Inventory (Silvaroli, 1978) showed that David was reading at the primer level. I designed a six week program for David that focused on word recognition skills. I taught David the time-efficient phonetic technique and used the materials I developed to help him become proficient in applying the generalizations.

I worked with David one hour a week for six sessions. Between sessions four and five David went on vacation. Although I did not see him for a week, I gave him sufficient work to assure his continued progress. David worked on his assignments for 1.5 hours every day broken into several short sessions. He worked either independently or with his parents. He also spent an additional half hour each day reading for enjoyment from specially selected trade books.

During our sessions, we would review the generalizations, go over the previous week's assignment, and begin work on the next generalizations. Each week David would be given an assignment to develop his proficiency in applying the generalizations that were covered for that session. Six groups of generalizations were prescribed. Assignments given to David included work with flashcards, short passages, comprehension exercises, and comics. By the second week specially selected trade books were given to David to read for pleasure.

Results. After six weeks of work, David went from a primer level to a 2.3 grade level as measured by the Diagnostic Reading Scales. During exit testing David was observed using several word recognition skills: phonics, context clues, sight words, and finally, because of his progress in the summer program, David was promoted to second grade.

Case Study Two: Wallace

Background. Wallace was fifteen, Black, and lived in Milwaukee with his mother and siblings. Psychological evaluation on the Wechsler Intelligence Scale for Children (Revised Edition) showed a 106 intelligence quotient. Because of truancy and theft, he was placed in an adolescent treatment center. At the center he initially was belligerent, stubborn, and uncooperative. I was the reading teacher at the center and Wallace was enrolled in my class.

Instructional procedure. Entrance testing on the Woodcock Reading Mastery Tests (Woodcock, 1973) showed Wallace reading at the 3.6 grade level and at the 5.5 grade level on the Diagnostic Reading Scales (Spache, 1972). During testing Wallace showed no organized system for identifying multisyllabic words that were not a part of his sight vocabulary. Since his test scores indicated a need for improving his word recognition skills and Wallace had a personal goal of being able to read "long hard words", I began his reading program by focusing on teaching him the time-efficient phonetic technique.

I saw Wallace for thirty minutes a day four days a week for nine months. For the first four months we spent fifteen minutes a session on word recognition. This was phased to ten minutes a session for the next three months and finally to a weekly review.

During sessions I explained why, when and how to use the chart. Next, we practiced applying the generalizations by working with carefully controlled groups of words that began with prefixes. We worked on words that related to one of the ten generalizations at a time. We then moved to the next generalization and a new set of words, and practiced until he showed proficiency. The words were mixed from previous lessons to check for retention. After prefixes we moved to words with suffixes. Next came special groups of words called "hard words", "really hard words", and "I mean really hard words". We ended with a set of driver's education words and a functional literacy list. After each lesson with Wallace, I would give him a group of words to practice decoding for homework.

Several weeks into our program Wallace began to show improvement and found that "long hard words" no longer posed a major problem. We began to apply his newly developing skill by practicing reading in trade books selected from Scholastic's Action Books and from Pitman-Fearon's Big Box of Books. He became an incessant reader of books from these series.

Results. Wallace's September score on the Woodcock Reading Mastery Tests was at the 3.6 grade level; his May score was at the 5.4 grade level. On the Diagnostic Reading Scales he progressed from a 5.5 grade level to a 7.5 grade level.

Wallace eventually improved enough academically to leave the school at the treatment center and attend a neighboring school where he passed all of his courses. After one year at the treatment center, he was sent home.

REFERENCES


TEST REFERENCES


DIMENSIONS OF READING ATTITUDES RELATED TO AGE

CARMEN J. CARSELLO AND JAMES W. CREASER
University of Illinois at Chicago

In a previous article the authors (Carsello and Creaser, 1982) studied the relationship between age and each individual item on the "Survey of Elderly Reading Attitudes" (Kingston, 1981) for a group of adults ranging in age from the mid fifties to mid eighties. This revealed various items (e.g., "Reading helps me not to feel lonely") for which there was a large difference in the percentage of agreement for the youngest age group as compared with the oldest age group. These items seemed to cover several different areas related to reading. It was decided therefore, to group the items by means of empirical evidence into sub-scales representing dimensions of reading attitudes that would be more meaningful and useful for studying and understanding the reading problems of the elderly.

Method

A group of 214 adults (over 50 years of age) in the Chicago area participated in the study. The group consisted of 55 males and 159 females with approximately the same percentage of
representation in each age group. They were from all socio-economic levels and varying amounts of education. Some were working, others retired or semi-retired. Some were homemakers with varying amounts of work experience. Included in the study were retired university faculty and staff, senior citizen group members and friends, and neighbors of the senior author.

Each was administered the Survey of Elderly Reading Attitudes (SERA) (Kingston, 1981). The inventory consisted of 75 items concerning attitudes and behavior difficulties involved in reading. Each item consisted of a statement that the respondent was to either “Agree” or “Disagree” by circling A or D.

The 75 items were then subjected to a principle component factor analysis with a quartimax rotation to find independent dimensions of reading attitudes and interest. This was done to provide more insight into the reading habits of the elderly than would have been attained from a single score based on the total test. Since this was an exploratory study it was felt that it might be useful to construct sub-scales even when there were only a few outstanding loadings on a particular factor. Six sub-scales were derived as follows with the number of items in each sub-scale as indicated: physical ability (10), reading interest (10), comprehension (9), reading as a method of coping with loneliness (5), ability to read directions (4), interest in religious materials (3).

A seventh scale was constructed to measure what might be called “Reading Age.” This was done by correlating the responses to each item with the subjects’ actual ages. Items which had significant correlations with age were used in this scale. Actually it would be possible to derive a reading age equivalent measure in this manner. However, the data used in this study are the raw scores for the subjects on the 43 items that were related to age. To obtain the scores on the sub-scales each item was given a value of one. Therefore the total possible score on each sub-scale was the same as the number of items.

Then the scores on the seven sub-tests were analyzed by two-way analysis of variance evaluating the effects of 1) age and 2) sex.

Results and Discussion

Table 1 shows the average scores attained by each age group on each of the seven sub-scales. The analysis of variance showed that the factor of sex had no significant effect on the scores of any of the sub-scales. The average scores obtained by males and females were very similar. Therefore, the data is given for both sexes combined.

There is a highly significant relationship between scores and age for six of the seven sub-scales and a moderate relationship for the other one. Only the “reading directions” sub-scale fails to be significant at the .001 level or to show a consistent decrease or increase with age.

Physical ability declined with age as might be expected although from 50 to 69 remained about constant. Interest in reading declined steadily with increase in age. This might be due to the fact that some of the questions measured “active” interest such as going to the library or buying books. Comprehension capability declined with increase in age. The use of reading to cope with loneliness increased as people become older. Interest in reading religious materials increased with increase in age. The “reading age scale” increased dramatically with age as it was designed to do. There was a difference, significant at the .05 level between age levels for the “reading directions” scale but the trend was not consistent.

REFERENCES


Table 1
Average Score for Each Sub-scale

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</tr>
<tr>
<td>N=</td>
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<tr>
<td>Comprehension</td>
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TEXT AND THE READER-WRITER: TAKING ADVANTAGE OF STUDENTS’ FACILITY IN PROCESSING

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Instructional practices for reading and writing developed to date have not capitalized upon students’ innate processing abilities. Rather, they have been restricted to a linear model which infers that reading and writing ability can be improved only through instruction in a sequence of selected skills.

Research indicates that a skills viewpoint cannot adequately account for complex cognitive and language processes which occur during the reader-writer’s interaction with text.

Cognitive Structure of the Author and Reader

Tierney and Mosenthal (1982) have recently developed a model which illustrates the components of processing shared by reader-writers. They contend that discourse production and comprehension involve much more than the transfer of words to the text and back to the brain. Instead, the process attains more psychological reality when it involves an interaction of the reader-writer with the text via prior knowledge, purpose and motivation. An assumption of the model is that an author articulates acquired knowledge in producing a text which is in turn comprehended by a reader who achieves understanding through a matching of his own experience with those expressed by the author through the use of an innate linguistic competence acquired through previous encounters with texts. A second assumption is that the author produces a text for a particular audience monitoring its creation and revising and constructing almost simultaneously with audience in mind. To an extent, text comprehension can be accounted for by how successfully the author perceives audience in terms of their cognitive capabilities, linguistic competence and purpose for reading a given text. Of course the burden of responsibility for comprehension does not rest entirely with the author; the reader is expected to somehow activate the cognitive structures necessary in achieving some “mind text” match with the author. A third logical assumption is that the author is motivated to create a text in much the same way as a reader is motivated to read one. A potential reader who stands in a library surrounded by thousands of texts will remain a potential reader until he becomes motivated to reach for and open one of them. Affective factors cannot be disregarded.

Facility in Using Metacognitive Functions

Metacognitive facility refers to the reader’s awareness of whether or not he is learning from text (Brown, 1982). The awareness of the ongoing process is complemented by a “debugging” strategy which a reader can employ once he is aware that the process has broken down—i.e., comprehension is not occurring. The typical sequence involved in metacognitive facility involves a continual monitoring of effectiveness during the process, checking outcomes and finally testing, revision and evaluation of one’s strategies for learning (Brown, 1982).

Although the bulk of metacognitive theory and research has been most strongly associated with discourse comprehension, it is not unrealistic to assume that the same processes are involved in the creation of a comprehensible text. The author, in creating written discourse, must be aware of the effectiveness of the communication, and rethink and reconstruct when necessary. In this sense a reader’s facility in metacognition is somewhat synonomous with a writer’s self-editing.

Enhancing Metacognitive Processing

There are numerous ways to enhance one’s metacognitive processing. Students should be encouraged to write text in which they draw from personal experience. In doing so, they are more able to create text without processing “breakdown.” Likewise, students should read materials that can be easily related to their individual background of experience. This will provide positive reading experiences which will carry over to some of the more tedious day-by-day print encounters.

Finally, students should be given an opportunity to read and edit their peers’ writing. The process will provide invaluable practice in manipulating text which can be applied as they interact with texts of increasing difficulty.

Text and Discourse Processing

Moffett (1968) defined discourse as “any piece of verbalization complete for its original purpose” (p. 11). Halliday and Hasan (1976) define “text” in much the same way, referring to a text as a unit of language in use. Traditionally, discourse has been conceptualized as content; the production of written discourse has emphasized the message. In the realm of reading comprehension, discourse again is the message the reader receives from print; the print assumes significance as a transmitter. That view has spawned reading and writing curricula which have focused on product while excluding the dynamics of processes which occur in each situation where reader and writer interact through text. The emphasis of instruction in reading and writing is surprising given the fact that written discourse has no meaning aside from that established by the relation of the reader to the writer.

Discourse is comprehended by a reader only in terms of what the reader knows about the world and the extent to which the author can capitalize upon the reader’s knowledge through the use of rhetorical relations. The symbol system of print serves as an organizational structure for storing and retrieving the rhetorical relations implicit in written text. Investigation into the organization of text structure for recall (e.g., Meyer, 1975, 1977) and schema theory (Rumelhart, 1980; Rumelhart & Ortony, 1977) have accentuated the effect of prior knowledge of both text content and structure on text comprehension and production.

Facility in Manipulating Text Structure

Readers and writers attain facility through practice in using the symbol system to move in and out of rhetorical relations. From the time young children begin to communicate, their utterances indicate a natural sense of intonation, articulation and rhythm. They practice with oral language and easily transfer the control to written language. In the earliest encounters with print, children not only attempt to assign meaning, but effectively manipulate to communicate for an intended purpose to a specific audience (Temple, Nathan, & Burris, 1982). As they experience more text, children acquire the ability to manipulate text structure and content in a variety of ways for varying purposes and audiences.

A new focus on a broader definition of grammar indicates that language users can control not only the sentence syntax rules proposed and popularized by Chomsky (1965), but also the semantic structures implicit in larger discourse (e.g., Halliday & Hasan, 1976; Kintsch & van Dijk, 1978). Similarly, research into story grammar (Mandler & Johnson, 1977; Stein & Glenn, 1978; Whaley, 1981) has suggested that readers and writers can store, retrieve, and predict structures which account for entire written narrative genres.

Enhancing Competence in the Manipulation of Written Text

Facility in text comprehension and production is developed
during children's encounter with a variety of text. Therefore, it is logical to assume that teachers should provide children with the opportunity to read and write a variety of texts. In doing so, teachers should also draw a closer connection between "real" language—i.e., dialogue, and children's writing. Writing as thinking (Martin et al., 1976), taping interviews for transcription and reading, free writing, and journal writing fit this grain. Secondly, children should be provided with more opportunities to use reading and writing for a variety of reasons such as effective communication, expression of feelings, or as an outlet for creativity. Thirdly, children should be taught to see themselves as both readers and writers; their writing should be taken seriously and "published" in some form for peers to read, enjoy, critique and edit. Finally, and most importantly, teachers should remove themselves from a judgemental role and allow students to express themselves freely. An amazingly simple but neglected aspect of facilitating children's language competence is that they possess it as a natural ability and can make remarkable gains if they are given ample opportunities to use it.

REFERENCES


CHARACTERISTICS OF EFFECTIVE URBAN LANGUAGE ARTS TEACHERS: AN ETHNOGRAPHIC STUDY OF RETIRED EDUCATORS

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Nostalgia and a longing for past moments related to pleasant times play only a minor part in this present discourse. The major objective is to posit the belief that the resource needed to improve the literacy rate among the urban poor, the minorities, and the blacks in America already exists. It exists in the form of that "old-fashioned" black teacher of English and reading who knew how to bridge the language gap of her students and produce individuals who could perform in the national language, Standard English. It also exists in the literature describing the turn of the century teachers of ghettoized immigrants living in Boston and New York (Ravitch, 1974).

I propose that through careful reflection on the part of those having experienced teaching in ethnic schools, we may be able to describe behaviors which can be recycled for use in today's schools. Certainly this should not be misinterpreted to imply that the writer is naive enough to believe that the solutions to the complexities of present day schooling can be solved entirely by resorting to the past. It does, however, suggest that in the rush toward change and innovation that characterized the curriculum reforms of the sixties and seventies, we may have literally "thrown the baby out with the bath water".

This research was designed to determine the characteristics of effective urban teachers of language arts. Over the last two decades a large number of quantitative studies of effective teachers have been attempted. Studies by Armor (1976), Hanushek (1971), and Murane (1975) clearly support the notion that there are significant differences in the amount of learning taking place within classrooms of the same school as well as those of different schools and school systems. These studies and similar works suggest that some attributes of teaching are more significantly related to student achievement than others. Since quantitative research on school effectiveness usually begins with broadly specified input-output models that often neglect the roles played by individuals, such research methodology may be inappropriate for measuring the influence of particular individuals as they operate within a total system (Murane, 1981).

In order to overcome the "sterility" of the psycho-statistical model of research, Lutz and Ramsey (1974) advocated the use of anthropological field methods in education. They reasoned that statistical studies tended to test hypotheses rather than develop them. Thus, they concluded that the field study approach to educational research provided hope for breaking through the confining framework of present concepts and opening a new area for developing needed hypotheses for subsequent testing.

One method of anthropological field study is called ethnography (Geertz, 1973). Lutz (1981) defines the process as one which involves the "observation of a society or culture through a complete cycle of events that regularly occur as that society interacts with its environment." Teachers who have spent a lifetime performing their jobs seem a reliable source from which data about the profession can be generated. Therefore, through an examination of retired ethnic teachers, it was felt one could better extract information which might adequately describe successful teaching. In the case of black teachers, having themselves experienced generations of people made "divisible" from the mainstream because of their language differences, they may know best what it really means to be among the language have-nots. Language, like skin color, has often been the first and most potent people divider. This is not to suggest that only minorities can or should teach their own kind. It simply stands to reason that a first step in motivating a child to learn
begins with an understanding of his or her own culture. A lack of such cultural understanding is strongly suspected to be a prime source of current school unrest.

This researcher admittedly entered the project with what Geer (1969) has labeled "working hypothesis"—hypothesis generated out of prior knowledge of the participants and a conceptual and theoretical position already in place. As a product of the system to be studied, it was necessary to develop some ground rules to guide the selection of the target population and for subsequent examination of the data gathered. With regards to the pool of retired teachers needed for the study, it was determined that all participants would have taught reading or English during the major part of their careers, and that they would have remained with the system until retirement.

In order to identify the participants to be included in the study, currently employed administrators and curriculum specialists who were also graduates of the Richmond, Virginia city school system were asked to name the most effective of their former teachers. Approximately fifty-four such individuals were informally asked to name the individual who had been the most influential of their former grade school language arts teacher, or teacher of English. The results of this polling provided fifteen names. Each name had been mentioned a number of times. Following a randomizing, the ten mentioned most often were selected to make up the target group. All were female.

The names selected from the pool of public school personnel were later checked against a second poll conducted with 137 former students in the school system studied. These individuals included only business and professional men and women who had graduated from the public schools and remained in the community. The names solicited from this group failed to add to those already obtained and it was thereby decided to study the 10 names generated in the initial poll.

Following the selection of the ten participants, a letter was sent to each outlining the purpose of the proposed research and soliciting their participation. The letter also included a listing of the questions to be used along with a description of the proposed recording sessions. All of the individuals agreed to participate, but seemed baffled that they were being called "outstanding teachers!" Even in retirement, they continued to live in the area.

The data was collected over a two-year period during carefully arranged interviews in the home of the retired teachers. As noted above they had been furnished with a list of the questions (see Appendix) to be asked during the session and asked to write down significant dates if they did not already have a site of formal-type biography. A few had prepared the requested information prior to the recording session, but all were able to recall dates and facts without any problems and seemed not to have needed such a written list. In fact, asking for this information may have served to limit the veracity of the data given, as the participants, without exception, were reluctant to speak of specific "ages." Call it the usual "female modesty" regarding such matters but it may also be attributed to the possibility that many of these ladies had taught well beyond the usual mandatory retirement years and did not want that factor known.

The final group consisted of ten retired, black women of obvious middle class background and persuasion. They were all employed to teach prior to 1950 and had not retired before 1980. The oldest began teaching in 1914 and did not retire until she had completed 44 years of work. The youngest started teaching in 1945 and retired in 1980. When looked at as a group, the participants had taught for an average of 38 years; attended normal school prior to earning the Bachelor's Degree; had been at least the second generation in their families to have been educators; and had spent almost their entire lives in the metropolitan area of Richmond, Virginia. Six had earned Master's Degrees in their fields and one held a Professional Diploma. They had all been active in social and civic organiza-

tions with most having served in positions of leadership in both local, state and national organizations. Unable to attend state universities and colleges during their formative years—years which also paralleled the most intensive years of national resistance to integration, they had attended prestigious northern Ivy League schools like Columbia and Yale and the other great schools of education like those of the Universities of Indiana, New York University and Case Western Reserve. One participant reached her demise just before her interview was scheduled but was included in the study via the information gleaned from interviews with her surviving daughters, both teachers, and an analysis of inclusive documents that she left in the form of records of public speeches, newspaper articles, and personal letters.

When the data generated during the interviews was analyzed in light of the prepared interview schedule, the following information emerged. All participants had always wanted to be teachers. Some had been influenced by their parents or grandparents, but all had never thought of doing anything else. As one recalled, "I grew up playing school teacher because I was so tall even as a young child." "Our people needed education back in and it was the quickest way to begin a lifetime of service to people." Another stated, "I never liked the way the local newspapers and public officials made fun of the speech of uneducated blacks, and I made up my mind to do something about it during my lifetime!"

Most remembered their years as a teacher in favorable terms. They agreed that those days were difficult because pay was low, and they had received only minimal support from white administrators. Yet, they took special pride in the fact that they had excellent relationships with other black teachers and educators. One participant recalled with pride that she and others had stood solidly behind Antoinette Bowler, a hero of the early desegregation fight in Virginia (Picott, 1975, p. 119). "We couldn't all go downtown and threaten to quit if they didn't raise our salaries, so we each gave money to a special fund to be used to pay her salary if she had lost her job!"

When asked to recall successful teaching experiences, the participants tended to cite outcomes of successful projects they had conducted. One recalled the events surrounding a unit she had once taught about Colonial Williamsburg. She had gotten the boys to read and do math by assigning them to build a scale model of the original settlement. "The project just began to grow once the boys searched through old books trying to recreate realistic reproductions," she contributed. Another recalled her pride when her journalism students of the 1940's earned first place awards from both Quill and Scroll, an international honor society for high school journalists, and Columbia Press Association, at Columbia University. "It was 1948," she replied, "and the white high schools had never been similarly honored. So you see we had proof that blacks could be taught to compete with whites and achieve." They, like their fellow teachers, tended to focus more upon goal setting as opposed to what they might or might not have done to accomplish a small step of an overall strategy for learning.

The participants blamed the home and today's teachers for the resistance to teaching which characterizes most urban classrooms. Mrs. X., a teacher for 43 years, summed up the matter when she declared, "Children aren't any different; their parents and their teachers are." She explained that parents of today rarely spend time with their children because they work too hard to give them things. "Since most children don't really have love at home, they look for it at school. Older teachers have known this all the time and so they loved the child first and then tried to teach him something. Never teachers just don't seem to see the relationship!"

The importance of appropriate teaching materials and facilities is widely accepted as main ingredients of good teaching and learning. When the participants were asked to indicate how
ARF '83

materials and facilities had influenced their work over a lifetime, they responded in ways that minimized the importance. Mrs. B., the wife of a prominent civil rights leader and a former reading consultant felt that the focus was upon the wrong things. "Certainly adequate buildings and materials are needed and that's why we went to court for school integration. We had many excellent teachers, but they had the worst facilities and practically no materials. When integration finally took place, the administration acted as though teachers didn't matter. Administrators spent unnecessary money on materials and just threw them at the teachers. No one ever asked us what we needed or how we taught our children. In fact, no one ever asked me how I taught black children until now. Instead, they limited their questions to matters of discipline. They may not have liked my answers, but I always replied the same way. Any individual who couldn't exercise momentary control over other individuals of lesser status and ability ought not to call himself/herself a teacher. If you've got something to teach and you know how to teach it, discipline won't be a problem!"

The best summary of the data generated from these interviews might best be realized through a detailed description of one participant in particular. That individual sensed teaching happen for me when I was fortunate enough to gain a student teaching placement in one of her eleventh grade English classes. This classroom teacher had been one of my former English teachers and her name was Mary Jane Wingfield Payne. I say "fortunate" because even though she had only been teaching for less than half of the forty-three years she would ultimately give to public school teaching, everybody who was black in Richmond, Virginia, in the 1950's knew that she was the best of her special kind. The six syllables that made up her full name were ones which no former student ever had trouble saying. It was for us then a synonym for English, and it remained that way even today.

Make no mistake about it, Mary Jane Wingfield Payne was not "just a teacher." If anything, she represented the mold from which every effective teacher had been fashioned. That's the way we saw it then as her students, and that's how I see it now that I am a university professor. She was visible proof that teaching and learning were not separate acts, and when she taught, no child in her class failed to learn because she always managed to teach them something. She knew well the polyphonic nature of teaching—that children learn not only what one intends to teach, but they learn also from the process and procedures employed to teach them.

It was no secret that Mary Jane Wingfield Payne had kept company with the great books, and our literary tradition in particular. To drive northward to Teachers College at Columbia University to seek graduate education because she could not get one in a still segregated South, she had literally sat at the feet of the masters in order to improve her knowledge. The names of great writers and philosophers and their works punctuated her teaching. Well-known quotations from these great treasures often cropped up in the middle of ordinary student-teacher discourse. She didn't need an excuse to teach literature, but she could make use of the opportunity if one arose.

To get unwilling students to read, Mary Jane Wingfield Payne wore the local newspapers to school daily. They were always with her, scattered about her desk or flying fully opened as she pointed out some relevant reading. These papers were openly hostile to blacks, then, and they often wrote biased and unflattering stories regarding black citizens. Mrs. Payne simply used the articles to provoke thought and its accompanying rage. The result was a class that dared not to know current events and the true complexities of their time. Reading thus was viewed as a matter of survival for life and that's the way she taught it.

She preached no sermons on the grammar and its usage, but she taught it every available moment. I recall the time a student used can inappropriately to ask permission to leave the room. Mrs. Payne appeared somewhat perplexed but responded immediately and with authority, "No indeed! Not unless somehow you propose to just walk over my body as I stand in the doorway should you attempt to leave without my permission!" Perplexed, but confronted with the reality of the situation, the student then restated his request to include may as the preferred form in formal English grammar. Had the student not known the answer, she would then have taught it right then. She believed in timely, sequential learning, I'm sure, but she realized that sometimes one simply has to abandon one's plan in favor of common sense. She knew even then that the best place to teach anything was at that point whereby the student makes an error in his own reasoning or judgement. Certainly philosopher Maxine Green must have imagined such teaching when she wrote, "Teaching happens when a person begins learning (on his own) how to do certain things. Teaching happens when a student begins to understand what he is doing, when he becomes capable of giving reasons and seeing connections within his experience" (Green, p. 172).

As I write about her now, my own reflectiveness calls to mind the classic account that Gerald Levy provided when he met similar black teachers for the first time as the only white male faculty in the segregated Chicago schools in the early fifties (Levy, 1970). He called them "chronic teachers" and depicted these white-gloved, black women as cultural and political carriers who taught their subject matter at a direct and personal level. They existed as the usual, rather than the exception, and they spoke the language of the nation and enforced rules of grammar with unquestioned authority. In spite of student resistance, apathy, truancy, and the presence of every imaginable social illness within the school community, they managed to teach and they did so with lasting effectiveness. I had such a person in my own school experience and that is where my real education began.

Her point of view was not unlike that of many of her contemporaries who, in the tradition of the Jeane teachers, organized their teaching around the everyday life and practical needs of the black communities where they lived and worked. Anna Thomas Jeane, a Quaker lady, humanitaritan, and philanthropist, established the Negro Rural School Fund which subsequently provided much of the early maintenance and assistance for schools for southern blacks (Williams, 1979). Mrs. Payne had come to her own education by a path similar to that of her predecessor. Miss Virginia Randolph, the first Jeane Supervisor, who had begun her work in neighboring Henrico County, Virginia in 1908. Like Miss Randolph and other Jeane teachers, Mrs. Payne recognized that the school house was often the chief source of acculturation and socialization for the poor and she didn't take her job lightly. On the surface, she maintained a consistent posture of respect and cooperation with the oppressive white power structure. Underneath, however, she fought an unrelenting war against ignorance and injustice in America. She had to teach the content, of course, but she also assumed the added responsibility of ensuring that black children would be exposed to the values of the dominant culture. She emphasized character and personality development in her students as she modeled the appropriate behaviors and standards of public conduct. Close ties to the black family life enabled her to reduce the social distance between her and her charges, and she knew how to be firm without being mean or insensitive.

I do not know if Mary Jane Wingfield Payne had ever heard of a reading taxonomy as such, but there is evidence that she knew the complexity of the reading act. In her classes, wrong answers to questions were usually met with the reminder that, "One should never say that he can read unless one can extract from the written page all that is written and all that is implied!" "The mere sounding of words!" she intoned "is not reading. It is mere recitation." They were often quoted words and they signaled the student to explore possibilities before providing answers to questions. Even in those days, she felt "a mind was
a terrible thing to waste!" She saw little value in simple recall, therefore, she did all she could to urge students to use their minds.

It might seem somewhat strange that such a teacher like Mary Jane Wingfield Payne would practice so high an intellectual brand of education and do so in a segregated school for poor blacks. Further irony is experienced when one considers the added fact that the very school she taught in was named for General S. C. Armstrong, a confederate general who believed that only manual education was more suitable for blacks. As early as 1890, he had set into motion a program of black education which was acceptable to southern whites because it emphasized preparation for ascribed roles in agriculture, domestic and personal services, and common labor. His views still influence the curriculum found in schools of the urban poor. But Mary Jane Wingfield Payne did not believe it then, and she did everything in her power to impress upon her students the need to develop themselves fully in order to produce leadership among blacks—leadership aimed at social equality and unfettered competition. Like Shakespeare, "If it be not now t'will come, the readiness is all!"

Mary Jane Wingfield Payne was by definition an "oral teacher." As such, she employed what one might today call an exaggerated style of speech in her usual classroom discourse. She crossed every t and dotted every i. It wasn't that she didn't respect and value the home language that most of the students brought with them to school. She simply felt that the classroom was a formal place and such intimate and personal language should be reserved for use at appropriate times. Aside from this, she recognized even then that for some a person's language was as strong a people divider as was color. Therefore, she demanded that students speak as she spoke because the language she used was the one they would need in order to obtain the jobs they desired. Students believed her and thus the appropriate reason for learning Standard English became their actual reason.

By now you have concluded that students admired Mary Jane Wingfield Payne. Such admiration is often what causes a student to turn toward involvement in the activities and forms of behavior of their teachers. If it is indeed the case that education involves an initiation of young people into the form of "knowledge or the prevailing public tradition, then she was also an effective teacher (Peters, p.72). Such effectiveness in the case of the contemporary language arts and reading teachers can exist in classrooms today. As Mary Jane Wingfield Payne might have responded, "How many know why we still need them?"

Recently, Jere Brophy (1982) synthesized the results of a large body of research on teacher effectiveness amassed from studies done during the 1970's. In doing so, he has provided educators with eight characteristics of effective urban teachers. According to Brophy, effective urban teachers expect their students to learn. They organize classes where learning can take place and the rules for class behavior are routine and well known by the students. In addition, he found that effective teachers tended to teach using highly motivating, task-oriented methods. Most often these teachers serve as instructional managers who actively taught in large and small groups. For the most part, they tended to overteach and placed much emphasis on the "basics." They interacted with students often and usually employed an "ordered" method of questioning that offered structure for the questioned student. Finally, he noted that these teachers "maintained a strong academic focus within the context of a pleasant, friendly classroom" (Brophy, 1982, p. 529). These findings are strikingly similar to those which may be deduced from this current research.

The teachers studied here seem to have also loved their student in every sense of the word. They gave willingly of their time and their resources. They, too, were dedicated and believed that students should be offered the highest learning standards. In no situation would they tolerate failure and apathy, and they possessed the tools to overcome such. For each of them teaching was a special public trust—one which only a selfish individual would fail to uphold and protect.

**INTERVIEW OUTLINE**

1. What or who influenced you to become a teacher?
2. Describe your educational preparation for the position(s) you held over the period of your employment. (A chronological outline of your schooling would be helpful.)
3. Tell me, as best you can remember, what it was like to teach during the span of your career.
4. What, in your opinion, was one of your most successful teaching episodes, or occasions?
5. In addition to having reached the retirement age, or length of service needed for such, what other factors influenced you to retire from teaching?
6. Many of today's teachers say that children are "different" today than they were in years past. They often give this as a reason for disliking their jobs. Do you believe that this is a true assessment?
7. How helpful was the home or community where the education of the child was concerned? Was it any different then than it is said to be now?
8. In planning to teach a lesson or some new information, what specific things did you regularly do?
9. How much did materials and the facility (schoolhouse) influence what you did?
10. To what extent were you involved in the civic, social, and political life of the Richmond community? (Listing your membership in organizations would be helpful.)
11. Why do you think that so many of your former students and others think that you were an outstanding teacher?
12. Describe, in your own opinion, what the "Ideal Teacher" should be like.

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INSIGHTS INTO READING BEHAVIORS AND OTHER VARIABLES AFFECTING SCHOOL PERFORMANCE OF MARGINAL STUDENTS

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The thrust of this inquiry centers on those processes within the urban environment which constrain the reading-learning growth of inner-city students. Jones (1977) reports that among the urban poor, primarily minorities, our society is creating a permanent underclass who exist as "marginal" persons. Ogbu (1978) states that the low achievement levels for urban minorities can be expected given current job ceilings in this country. The situation may not improve in the near future. A recent report (Department of Labor, 1982) indicated that six million people will be off the welfare rolls in 1983, not because of employment but because benefits have been exhausted. Given the economic climate in the country, it may be imperative to change the way we instruct our youth. Some educators (Ghory and Sinclair, 1981) call for immediate and widespread reforms especially in the training of disenchanted inner-city youth, many of whom are in the marginal category we describe.

This study reflects issues of marginal students: who they are, and why they are marginal. The investigators hypothesized that these were not typical "borderline" students of ten years ago, but that more of the core culture were now marginal. Being reading specialists, we wanted to believe that reading deficiencies represented a primary casual factor. What we have identified, however, is a new typology of students — those who read out of school, but not in; those who have had no need of remedial services, or at least were not identified as needing compensatory programs. From these questions and speculations grew an ethnographical study of marginal students.

The investigators hope to expand this study to a "two-prong" attack with the design of our intervention program aimed at early identification of marginals. To this end, federal grant money is being sought.

Procedure

A field-based ethnographical investigation of ninth and tenth grade marginal students in an urban school setting was conducted during the spring of 1982. The high school is an inner-city facility with a student body of approximately 60% minority and 40% white population. The student socioeconomic status ranges from poverty level to upper middle-class. For the purpose of this study, marginal student population was defined as students who had earned D's and F's in less than half of their classes during a nine-week grading period. A pool of such students were selected for interviewing. Students failing classes due to poor attendance were not included, as well as special education students. The intent of this study was to interview youngsters who were marginal due to academic reasons. The breakdown by sex and race for grades 9-12 was as follows:

- White male — 63
- White female — 56
- Black male — 96
- Black female — 102

This figure comprises ten percent of the student population. At least thirty-five percent of the student population had failing grades in more than half of their classes, the primary cause for their being marginal.

After examining academic records of these students, several conclusions were drawn:

1. Students typically do poorly in English and math courses.
2. The second highest failure rate was in Physical Education, followed by foreign languages.
3. Students attempted difficult courses; very few were enrolled in remedial or basic curricula.

From this general population, 48 ninth and tenth graders were randomly selected to be interviewed. Twelve were selected from each sex and racial category.

Results

All but two students appeared to be of normal weight and height for their age group. Their perception of attendance ranged from poor to good with one student indicating he missed one day a week (this was not reflected in attendance records). Without exception, students felt their academic difficulties began in junior high/middle schools. All students indicated they began having trouble in English and Math. When asked if they received special help, thirty-six out of forty-eight replied "no".

Those students indicating they received special help were enrolled in a reading class (3), had teacher assistance (6), or attended summer school (3). It appears that compensatory programs at the middle school/junior high level were not designed for early identification of these students, or that content teachers did not make adequate referrals.

Forty-five out of forty-eight students reported remembering that their parents read to them at an early age. However, approximately eighty percent reported they did not like reading in school. Other comments included "it depends on what I'm reading", "if teachers make it interesting." Over fifty percent indicated they read out of school. Most common choices of materials included magazines, (surfing and sports magazines, were mentioned several times), mystery books, biographies, and fiction.

All students surveyed felt that their average grades were B's and C's with a few D's included. No one felt they were in danger of failing or that they were in the "A" range.

When asked if they were involved in school activities in elementary and/or junior high, 75% of the students indicated they had participated in sports, plays, or music productions in elementary school and junior high. One student had been a cheerleader. Distinctly missing were any responses of student government or club activities.

Comments on amount of time spent on homework ranged from fifteen minutes to three hours. The main amount of time was one hour and fifteen minutes. In contrast, the main amount of time watching television was two and one-half hours. One student reported she spent 7 hours per day watching television. No student reported that they did homework as much as they knew they should.

Approximately twenty percent indicated they were receiving help with homework now. All students remembered receiving help in junior high. All expressed willingness to ask for extra help from teachers when they need it, and only one student indicated he had not received it. No student reported getting help at any point in their schooling from guidance counselors.

Eighty percent of the students indicated both parents were in the home. Of those that were not, one student saw his father two days out of every week and four other students saw their father irregularly. All students had siblings. Only three students were the eldest in their family. All students lived in a single-family residence, although one student's family had just moved from an apartment to a house. Another student lived in a town house. Their length of residence spanned from four months to fifteen years with the median length of time 6-7 years. Only four students indicated they moved frequently—every two years! Two students were employed.

Interestingly enough, in the 1980 census, it was found that 38.7% families changed homes within a five year period. Maynard and Murnane (1978) report that students with higher reading scores have, within the family unit, two or fewer persons per bedroom.
Parental education breakdown is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Father</th>
<th>Mother</th>
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<tbody>
<tr>
<td>High school dropout</td>
<td>20</td>
<td>22</td>
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<tr>
<td>High school graduate</td>
<td>15</td>
<td>21</td>
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<tr>
<td>College</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Graduate school</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Don't know</td>
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Nine students reported that their brothers and sisters had academic difficulties (these all dropped out of high school). All but one student reported having close friends. (His statement indicated he used to, but didn’t anymore.) They all perceived their friends did “average” to “fine” in school. Most responses to how they spend out of school time centered around sports, spending time with friends, and watching television. Only one student mentioned reading and two students were employed.

Four youngsters replied that school was not interesting. The majority of students indicated that school was interesting because 1) their friends were here, 2) it beat not having anything to do, 3) teachers made it interesting and 4) being able to play sports. Favorite subjects in order of their popularity included: Science, History, Homemaking. Least favorite subjects included: English, Math, Spanish. English courses overwhelmingly received the most negative votes. Comments to this why was so centered around, “I don’t understand it,” “I’m not interested,” “It’s too hard,” “I don’t like to read.” (This last comment came from the student who watches seven hours of television per day.)

When asked what students like most about teachers, representative comments included: “When you can talk to them;” “When they’re friendly;” “When they let you out of class;” “Some make class interesting;” “Tell you how to make up work;” “Have a sense of humor;” “When they act like they like kids and teaching;” Most positive comments centered around the humanistic aspect of teaching such as when students felt they were special to the teacher.

The question of what students liked least about teachers was answered with comments such as: “When teachers don’t know what they’re doing;” “When you ask a question, and they send you out;” “Some don’t care;” “Too much work;” “Don’t spend enough time with students.” Comments about poor teacher attitude were repeatedly made.

When asked which teachers had the greatest impact on them, students responded with individual names and reasons for the choices. All but twenty percent were current high school teachers. Reasons included statements such as: “She always backed me up;” “She understands;” “Willing to help;” “Funny.” Not one student commented on academic preparation. In a recent study, Boardman, Horowitz and Lloyd (1981) report that teachers with high verbal ability may lower the aspirations and expectations of black students.

Students commented on changing schools to meet their needs. One young lady aptly stated—“It’s not the teachers that are the problem—it’s the students. They don’t care. They’re only here because they have to be. It’s not necessary to be smart, it’s only necessary to try.”

The majority of students commented on changing some of the teachers—that they weren’t equipped to teach. Other comments included renovating the school, including more sports in the curriculum, having stricter rules, and enforcing study halls.

When asked the main reason why they felt they were doing poorly in a subject, answers included (in order of frequency):

1. teachers
2. not studying enough
3. don’t try hard enough
4. not understanding subject matter
5. not paying attention in class.

Conclusions

1. Sixty percent of the students indicated they like reading and fifty percent read out of school. Reading in school, however, was not an enjoyable or necessary experience for eighty percent of the students. Many students remember being read to as children.
2. Black females have a greater frequency of marginal grades.
3. Marginal students appear to have “external locus of control,” i.e., they tend to blame academic problems on the system, especially the teachers. They do not adequately prepare for classes and many times come to school for social reasons. Black students in this category are double that of white students. A possible explanation is that low achieving students do not possess requisite social skills for effective classroom participation (Milburn and Cartledge, 1976; Hope and Cobb, 1973). The importance of locus of control in achievement suggests that in order to increase scholastic attainments, students should believe in their ability to determine future successes and failures.
4. The most disturbing aspect of this study is students’ perception of teachers and the fact that none perceive themselves to have been helped by guidance counselors. It would appear that some select teachers serve the role of counselor for these students.
5. The failure rate in certain courses (Health and Physical Education) was also disturbing. This class should be a motivational factor for many students. The basic skills (English and Math) appear to be lacking. Perhaps more remediation should be provided for this specific population. The majority of students received no special help in previous years.
6. These students need to be identified early in the ninth grade year. It would be beneficial for them to work closely with a guidance counselor on selection of courses.
7. Results show that academic difficulty begins in the junior-high period.
8. Eighty percent of the students live in a traditional home setting and were not highly mobile. However, two-thirds of the parents had not completed high school or had only received a high school diploma.

Recommendations: The Case for Non-Clinical Intervention

Marginal students are not traditionally referred to secondary reading clinics. They typically pass minimal competency tests and are usually not more than two or three grade levels behind in reading (the non-basket cases). However, they don’t make adequate grades for academic success. These students need to be identified before high school and enrolled in special classes that stress “reading to know” and strategies for internalization of knowledge. Perhaps this is a new category of student that has not emerged in the reading literature; students who can read and do read but not in school-related subject matter. It is not entirely clear whether this is a skill or a motivational issue. The investigators feel that teachers who are versed in adapting curriculum and approaches to such “cliff-hanging” students could easily raise reading awareness and expand reading repertoires.

Marginal student studies (by our definition) are rarely found in the literature. It should be noted that the researchers began pursuing this study by spending two years in a field-based program at one particular high school, where it was recognized that reading was for “remedials.” Yet through personal observation and conversations with students and teachers alike, we became aware of these neglected students. Several researchers (Glory and Sinclair, 1981; Tyler, 1981) have recognized the need to teach marginal students not presently being reached. Glory and Sinclair call for a coordinated system of education spanning several settings—family, mass media, and the workplace. Certainly several sectors need to pay more attention to motivating a group which represents a vast source of human potential.
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DRAMATICS AND READING PERFORMANCE: THEORETICAL AND RESEARCH

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Recommendations concerning the use of dramatics in an educational setting have had a long tradition. McMurray (1903; 1904) suggested that dramatics and "intensity and realism to thought" (1904, p. 155) and that dramatics allow greater freedom and spontaneity in the reading act. Merrill and Fleming (1930), in describing their work at the Francis W. Parker School in Chicago, viewed dramatics as a therapeutic or creative activity. Dramatics was also seen as an important activity for children by educational philosophers such as Dewey (1934).

A number of disciplines have examined the use of dramatics in an educational setting—dance, early childhood, elementary education, counseling, exceptional children, and reading. Each discipline employs its own terms to describe what is essentially the same process. It is variously called thematic fantasy play, play, sociodrama, sociodramatic play, self-directive dramatization, story play, and role-playing; as well as creative dramatics.

For the purpose of this report, dramatics will be considered to be the process in which the child engages in spontaneous interpretation of a character for the purposes of enacting a story. The story can be one that the child has read, heard, or has improvised in conjunction with other children. The role of the adult in this process varies from directive to non-directive. However, the child, a spontaneous decision maker, chooses how a character is going to be played.

Expert Opinions About Its Values

Dramatics has often been recommended because of its therapeutic-affective benefits by people in and out of reading. Dramatics serves to develop the whole child while recognizing the uniqueness of the individual child, and it serves to relieve the tedium of the school day which thereby gives the child a fresh start on learning tasks (Borden, 1970; Ward, 1957; Way, 1957). Also, creative dramatics encourages the child to read in order to acquire knowledge for further dramatization. Used in this way, creative dramatics is a motivational tool (Borden, 1970).

It has also been theorized that dramatics offers cognitive benefits as well as affective benefits. Dramatics taps processes within the child which can be applied to the acquisition of literacy and communication skills (Pappas, 1980). Moiffert (1977) suggests that dramatics is thinking out loud. The child is required to use language to communicate and share thoughts with other players (Yawkey, 1979). Children are given the opportunity to experiment with language as they establish new contexts of interaction (Prentice and Talbert, 1978). Dramatics puts the written word in a real context.

Way (1967) suggested that creative dramatics offers the learner practice with living and direct experience with learning. In this way comprehension of narratives can also be enhanced through creative dramatics because, playing a story requires the child to undergo a transformation, that is, to change himself or herself to another person or object (Yawkey, 1979). Enactment of plot, action, and setting, requires the use of inferential thinking and prior knowledge in order to enact a story (Minniti & Phelps, 1980). The child speaks from the character's viewpoint, enriching comprehension of narritive text. Direct experiences with text through creative dramatics allows the learner the opportunity to synthesize information meaningfully (Bloom, 1956; Way, 1967). Succinctly stated, playing a story involves the manipulation of the classroom environment in order to bring the characters, setting, and plot from the written text into the classroom, thus bringing the written page to life.

Kindergarten Research

Validation of the above opinions has been somewhat spotty. Research in creative dramatics as it relates to language development and the acquisition of literacy has been conducted mainly with preschool children. It is not the aim of this paper to assess that body of research, but rather to review the research which has involved school children. The first section will concentrate on studies that deal with kindergarten children.

The effects of a social relationships curricula through role-playing on reading readiness was investigated by Yawkey (1980). The subjects were 96 five-year-old children, who were randomly assigned to four classrooms, two experimental and two control. Prior analyses with the Gates-MacGinitie Reading Readiness Test, the Peabody Picture Vocabulary Test, and the Singer Imaginativeness Inventory assured homogeneity of variance between the groups. The experimental groups engaged in a number of role-playing activities. These activities lasted 15 minutes a day, five days a week, for a duration of seven months. During the same time period, the control group engaged in a variety of cut and paste activities designed to minimize the social interaction among children. Posttests indicated that the experimental group scored significantly higher. Yawkey concluded that role-play permitted the children in the experimental group to feel, act, and think like the characters they played, which facilitated their understanding of story content and concepts.

In addition to the Yawkey study, research by Smilansky (1968) indicates that kindergarten children who regularly engage in sociodramatic play possess a richer, more developed speaking vocabulary. Tucker (1971) found that listening skills of kindergarten children were enhanced by a six week exposure to creative dramatics. Strickland (1974) used creative dramatics as part of a literature-language program for economically disadvantaged black kindergarten children. Children in the literature-language program were better able to produce standard structures of English. Paley (1978, 1979, 1981) used dramatics in her kindergarten classroom. She described the development of oral language abilities in a program which included dramatics based on student generated dictations.
Elementary Grade Research

While a generally positive effect on language development and reading readiness has come to be the expected result of creative dramatics, the research in the primary, intermediate, and middle grades is less conclusive. Stewig (1972) commented that experimental studies involving creative dramatics is sparse and unsatisfying. His statement still seems to be true ten years later.

In a seven month experiment involving culturally disadvantaged first through fourth grade children, in a small city elementary school, Carlson and Moore (1966) compared self-directed dramatization with a control group using basal reader instruction. The students were matched according to IQ (California Short Form Test of Mental Maturity) and reading grade scores (Gray-Voyvod-Rodgers). At the end of a three-and-one-half month period, the children were retested. In grades two through four, the control group made significant gains in reading. However, during the second three-and-one-half month period, the dramatics groups (grades one through four) made significant gains in reading, and for the year the dramatics treatment group made significantly higher gains than the control group.

Carlson and Moore do not offer an explanation for the turnaround in their results. Perhaps the creative dramatics treatment used a longer period in which to achieve its positive effects. The authors concluded that self-directive dramatization enhanced the child's reading because successful dramatization is contingent upon understanding and remembering what has been read. Furthermore, motivation to read seemed to be enhanced through dramatization of stories.

Axline (1947) successfully used creative dramatics as part of non-directive therapy which included art, puppet plays, music and story dictation. In Axline's program creative dramatics was viewed as a therapeutic means to bring children voluntarily into the reading task rather than a vehicle to enhance comprehension of language development.

Bills (1950) used non-directive play therapy to enhance the reading scores of eight third graders on the Gates Primary Reading Test. When compared to those of a similar control group, the experimental scores were significant. Blank (1953) found that second graders involved in a creative dramatics program made greater improvement in vocabulary than a control group. The experimental group was also found to have made improvements in the vocal quality of their oral reading.

Ziegler (1970), conducted an interesting experiment to determine whether creative dramatics would have an effect on library usage, reading interest, reading achievement, self concept and creativity for fourth and fifth grade children. Ziegler's results indicated that dramatics did not have an effect on any of these measures. Borden (1970), reported that through creative dramatics a class of 21 fourth graders, described as "retarded readers," improved their reading scores beyond what was to be expected. Pappas (1979), found non-significant differences between a dramatics treatment and a basal reader treatment on the overall reading achievement and reading attitudes of sixth graders. However, the reading attitudes of boys were more improved by the dramatics treatment. Burke (1980) found non-significant differences between results of a creative dramatics treatment and results of the Middle Cities Reading Program when used with seventh grade students. Neither reading achievement nor school attitudes were significantly different. Burke suggested that the creative dramatics treatment was more cost-efficient than the $50,000 Middle Cities Reading Program.

Henderson and Shanker (1978), compared the use of interpretative dramatic activities to the use of basal reader workbooks for developing comprehension of details, sequencing events, and generalizing main ideas. The subjects were 28 black second graders who alternately received treatments which were followed by teacher designed comprehension tests. The results significantly favored the dramatics treatment. Furthermore, 26 of the 28 subjects preferred the dramatics approach to the workbook approach.

Pellegrini and Galda (1982) compared the effects of thematic-fantasy play with discussion and drawing. A total of 108 children, 54 boys and 54 girls, from kindergarten, first, and second grades were involved in the study. The experimenters took groups of four of the children from the same grades, two boys and two girls, and read the subjects the story Little Red Cap. At the conclusion of the story, the children engaged in one of the three conditions (thematic-fantasy play, discussion, or drawing) and were given a ten-item criterion referenced test which included two items for each of five categories of Bloom's cognitive taxonomy. The results revealed significant differences for kindergarten and first grade, and no differences for second grade. The most important finding was that thematic-fantasy play best facilitated story-related comprehension for the kindergarten and first graders. Pellegrini and Galda concluded the children's use of story language required their more active involvement with text.

Summary

There has been increasing interest and concern regarding the use of dramatics as part of the reading program. Generally the opinions of experts in and out of the field of reading has been favorable. Research with preschool children has substantiated these favorable opinions. Research with elementary and middle school children, while not completely favorable, has generally been positive.

The findings and conclusions of the cited research suggest several possibilities for further research. Three general recommendations follow:

First, the issue of teacher personality regarding the use of dramatics should be examined. In many of the studies cited in this report the researcher was the teacher. Future investigations should involve neutral teachers with a minimum of training in dramatics.

Second, research which establishes exactly which types of text can be best comprehended through dramatics. Research by Pellegrini and Galda (1982) provided implications concerning children's comprehension of story language. However, the text used in this study involved folklore which had a relatively simple story structure.

Third, in many of the cited studies, dramatics may have had the advantage of being novel in that it was usually compared with the commonly used DRL. It would be interesting to compare dramatics with another novel technique such as the ReQuest Procedure (Manzo, 1969).

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THE INSULAR WORLD OF THE READING PROFESSOR

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The purpose of this paper is to raise questions about the perspective of reading educators and to suggest that our pursuit of scholarship and ethics has ironically lead to the development of an insular world view; a view which may be inhibiting our ability to help the classroom teacher.

I will present two examples of this using the events in Ionesco's play Rhinoceros and especially the character Botard to illuminate the problem. The story line in Rhinoceros is simple. It starts out with several people at a cafe who observe, or think they observe a rhinoceros go by. They fall into a debate about whether the rhinoceros has one horn or two. Scenes change, discussions ensue as people are observed to be changing into rhinoceros. Many themes have been identified in this play (Wellworth, 1964) but one might go beyond the theme about people who conform to but cannot relate to each other and consider the character's inability/unwillingness to recognize the meaning of events as a failure of knowing (in Dewey's sense of knowing as competent inquiry). The conformity of characters may also be attributed to constraints of habitual behavior or the role each needs to play in life. Botard, who is not the main character, when told about the metamorphosis of people into rhinoceros, declares that he is concerned with people's lack of clear thinking and practical observation.

Botard continually fails to relate events to a larger meaning, but knows this should be done, claiming to know the "why and wherefores" of the events—with his "infallible system of interpretation." No events, of course, are interpreted but blame is laid upon society. No solutions are offered, when a fellow worker sees her husband turning into a rhinoceros Botard offers to report it to the union and form a committee.

Reading Habits of Education Professors

Botard's actions and words, like those of the main character Berenger's, are tangential to events and his fellow man's needs. This way of dealing with events reflects the reading educators approach to problems where wrong questions are asked, old forms of inquiry sought, issues narrowed, and the problem (not the solution) discussed. For a narrow but specific example of this, consider the research on reading habits of teachers. Research suggests that classroom teachers are not well read. The larger meaning of these reading habits has not been explored, nor has the larger context. Just as Ionesco's characters become reoccluded with whether the rhinoceros has one horn or two, we have focused upon documenting how little teachers read. An examination of the larger context might however reveal both the cause of the problem and the solution. In pursuing the "whys and wherefores" of this problem I looked at the educators of these teachers—ourselves. At conferences, meetings and within my own institution I asked education professors what they read and why. Then I asked them what they wanted their students to read and why and how they promoted this reading. These exploratory questions were presented to a small group (n = 22), varying widely in age and discipline. Most teacher educators read a great deal—if professional literature and journals are considered. However, when nonprofessional reading is considered, a different view of reading habits emerges. With two exceptions, most educators read "earthy", "popular", or "self-improvement" books. The reason for this reading is to escape, or to deal with desired personal/life changes.

There are very real reasons for this limited reading as can be understood by considering a typical (unsolicited) reason given for not reading more. One professor noted he was afraid to start a good book because he would become wrapped up in it and not be able to put it down—the literature in his field was overwhelming and there was no time for outside reading. In other
words our pursuit of scholarship is narrowing our reading.

For most part, the reading of education professors differs greatly from the reading we want our students to do. Most education professors want their students to read the classics. The reason: "to be exposed to the beautiful souls who inhabit literature"; "to have their assumptions challenged," "to become more imaginative." With one exception, educators stated that they themselves had not reread these classics since they had been required reading in an English course. Few felt they were able to promote wider reading by their students because there was so much required professional reading. Several said they tried to make students aware of classics by references to these within lectures or by making students feel "guilty" if they had not read these books.

There is a dearth of references to the classics in professional reading journals. In fact, most recently one journal (Murray, 1982) has suggested a simple anecdotal approach to presenting research. There has been no request for a more profound or penetrating analysis which encompasses the larger world. Thus, when we present the world of our discipline to our students or read our own professional journals, this world becomes increasingly smaller, our own assumptions are not likely to be challenged, or imaginations stimulated.

It would not be appropriate to suggest we all adopt Fadiman's (1960) life-time reading plan or self-consciously sprinkle our writing with quotes from great literature. It is, however, appropriate to suggest that we evaluate our own reading habits and consider how these may be impacting upon our thinking, our writing, and our students.

Ethical Habits of Reading Professors

Turning again to Ionesco's character Botard, it is possible to consider a second behavior which may have narrowed the world of the reading professor. Botard, first denied that there were any rhinoceros, then stated "I do not deny rhinoceros evidence and never have." His last human words as he turned into a rhinoceros were "we must move with the times." We as reading professors must move with the times and indeed have. For example, many of us were and still are swept along with the trend toward "grade inflation." I believe there is a pervasive but undocumented (maybe it does not exist) test-score inflation problem which is growing along with increasing pressures on classroom teachers to demonstrate their student's growth in reading via standardized reading test. As former classroom teachers and reading professors we know the "whys and wherefores" of this problem. At least the labels are known "stretching the grade" or "teaching to the test." The university experience did not spawn this, but our experience should enable us to recognize and relate to the teachers' problems. Ethics may inhibit this. As some teachers feel pressured or are directly pressured to participate in reading score tactics inflation, they are privately asking for help. Others move with the times. With university grade inflation the issue was avoided, rationalized, then documented; and now, for some, accommodated. For classroom teachers, admitting the rhinocerosic evidence may be impossible (or again there may be no such thing) because this involves an outside standard. This is not a problem we should insulate ourselves from, refuse to relate to or act upon. We have formed committees and pointed out the pitfalls of the term "grade level," and moving with the time have also written and helped standardize these same tests. We have formed committees and written position papers against using discriminatory and non-valid competency measures, and moving with the time have helped develop teacher competency tests. Like Botard, we are caught midstream. At the very least, it is time to ask the right questions in the right way, to seek solutions and examine and try to alter the larger forces causing them.

Conclusion

The purpose of this paper was to generate discussion and

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THE IMPLICATIONS OF RESEARCH ON ADJUNCT QUESTIONS FOR INSTRUCTIONAL PRACTICES

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During the past twenty years, there has been an upsurge of interest concerning the effects of questions on prose comprehension. Students frequently have difficulty with the comprehension of written materials, and questions are considered tools which can "light the way to productive learning and retention of content material" (Vacca, 1981, p. 149).

Current research has focused on examining the effects on text comprehension of adjunct questions, questions which are inserted before or after associated text segments. The effects on comprehension of question placement has been a frequently investigated instructional variable because of the supposition that questions can be employed to focus the attention a reader devotes to the text. Where the question is placed is hypothesized to influence the type of attention elicited from the reader. The effects of level of complexity of questions used has been another frequently studied instructional variable. The level of processing required to answer the question is hypothesized to mediate the effects of the question and its placement. These two areas, question placement and question level, will be discussed in the following sections. The research involving each factor will be discussed and specific recommendations concerning classroom applications will be given.

Placement of Questions

The findings from several studies which have investigated the effects of adjunct questions on learning (Fraser, 1967, 1968; Fraser, Patrick, and Schumer, 1970; Rothkopf, 1966) suggest that having students answer questions interspersed both before and after a passage segment can enhance their comprehension of the selection. Prequestions (questions which refer to subsequent material in the text) have a facilitative effect upon the retention and comprehension of material elicited by those same questions. When students encounter a relevant question before reading a passage of material, their attention is apparently directed to the information needed to answer the question. They are given a purpose for reading and hence search for an answer to the question.

The effects of postquestions (questions which refer to the preceding material in the text) are typically both direct,
facilitating retention of question-specific information, and indirectly, facilitating retention of material not actually questioned. The direct and indirect effects of postquestions have been attributed to both "backward" and "forward" processing behaviors: The first (backward) hypothesis states that placing test questions after passages requires Ss to review implicit content which has been read; therefore retention of preceding material is facilitated. This hypothesis asserts that questions work in a backward manner, organizing and repeating previous prose content...The alternative hypothesis asserts that questions act in a forward manner, optimizing mathemagentic behaviors on passages following the questions...(postquestions) now provide a general text-taking orientation equivalent to the paragraphs which follow (Frase, 1967, p. 270).

In later work, Frase (1970) suggested that both a backward and a forward process could be produced, even simultaneously, by adjacent postquestions. Investigations (Mayer, 1975; McGaw & Grothausehen, 1972; Richards & DiVesta, 1974; Rothkopf & Billington, 1974) conducted since Frase made this suggestion have confirmed the backward and forward processing hypotheses. More recent experiments have identified four basic postquestion types associated with adjacent postquestions: specific backward processing, general backward processing, specific forward processing, and general forward processing.

A specific backward process would involve a review of the material actually questioned. This process is similar to the "direct effect" associated with prequestions. Experimental postquestions are hypothesized to engender a specific backward process when they produce superior recall of questioned statements compared to subjects receiving postquestions substantively irrelevant to the passage. A number of researchers (Richards & DiVesta, 1974; Rothkopf, 1966; McGaw & Grothoulousehen, 1974; Rothkopf & Biscibcos, 1967) have reported findings which support the specific backward process hypothesis.

A general backward process would involve the mental review of materials adjacent to, or in the same "topico-spatial neighborhood" (Rothkopf & Billington, 1974) as the adjacent postquestions. If the facilitative effect of inserted postquestions is, at least in part, a review effect, then the effect should be greater for criterion test items that elicit information related to material reviewed in answering the inserted questions. Moreover, the review effect would be expected to be stronger with material read shortly before the adjacent questions and weaker with longer lags (McGaw & Grothoulousehen, 1972; Rothkopf & Biscibcos, 1967) observation of more pronounced facilitation on criterion test items with answer types that were represented in the adjacent questions used in the prose material could be accounted for in this manner, as can experiment results reported by McGaw and Grothoulousehen (1972) and Richards and DiVesta (1974).

According to the mathemagetic model, the effect of postquestions is forward in that they influence inspection of material that has not yet been read (Frase, 1968). Postquestions would prompt a specific forward process whereby having repeatedly received a specific type of postquestion, the reader would develop a mental set to subconsciously attend to the particular type of information being questioned. The question provides a "hint" (Frase, 1968) as to what type of information to look for in succeeding paragraphs. A number of studies (Mayer, 1975; McConkie, Rayener, & Wilson, 1973; Rothkopf & Biscibcos, 1967) produced data which supported the hypothesis that postquestions shape inspection behavior. However, other studies (Frase, 1968; Watts & Anderson, 1971) failed to support the shaping hypothesis.

A general forward process would result in increased attention to all of the information in paragraphs immediately following the inserted postquestions. Learners would attend more comprehensively to the material they were reading presumably because they could predict that questions would follow, but not which questions would be asked. McGaw and Grothoulousehen (1972) conducted a study which supported the general forward processing hypothesis. They speculated that if the effect of postquestions was to increase attentiveness to material following the questions, then the effect should be greater on retention of material immediately following the question. Their experimental results showed superior performance on the information elicited from the text pages immediately following the adjacent questions which suggest a forward effect mediated through increased attentiveness.

The results of the studies cited above indicate that both prequestions and postquestions have a facilitative effect upon the comprehension and retention of question-relevant information, but that postquestions can have a general facilitative effect, also. These findings have many implications for the instructional practices of classroom teachers.

Teachers should understand that to use questions most effectively to facilitate text comprehension, they need to:

1) Identify what type of information they want the student to extract from the text, and

2) select the question location which is most likely to facilitate achievement of those objectives.

In particular, if teachers want students to search for specific textual information, they should consider focusing students' attention on that information by asking a prequestion before the text segment containing the specified information. This is the fundamental assumption underlying the Directed Reading Activity (Betts, 1946)—that the teacher can focus the student's attention on the salient text information by posing a purpose-setting question.

Postquestions, on the other hand, may be appropriate to use when the teacher wants the students to read in a global fashion. Such questions can increase students' overall attentiveness to the text either by causing them to review the text material or by causing them to anticipate receiving questions and, therefore, becoming more attentive.

Teachers also can use adjunct questions to provide more individualized instruction by analyzing how different question placements might benefit different types of readers. Frequent questions may be particularly appropriate for three groups of readers: careless readers who have difficulty focusing on any type of text information, a heterogeneous group of readers who are examining a new genre or type of material for the first time, and readers with adequate decoding skills and whose listening comprehension exceeds their reading comprehension because they don't know which aspects of the text they should attend to.

Postquestions may be particularly appropriate for two groups of readers: developmental or average readers who can be expected to take in large quantities of information, but who would benefit from having important text features highlighted through questions; and a heterogeneous population of readers whom the teacher wants to encourage to pause and reflect upon their reading.

Teachers attempting to improve their students' abilities to ask questions can use adjunct questions to model the types of questions they want the students to ask. Manzo (1969) specifically suggests using a reciprocal questioning technique to encourage students to formulate their own questions about reading material. Teachers can place adjunct questions in different text locations to demonstrate to students where it would be appropriate to ask different types of questions.

Levels of Questions
Research has examined whether questions at different levels affect students' learning differentially. The level of question refers to the nature of cognitive processing required to answer a question (Andre, 1979). The concept of levels of questions and levels of processing is related to several different theoretical frameworks. First, levels of questions is at least implicitly related to depth of processing (Craik & Lockhart, 1972). A depth of
processing explanation would indicate that students remember better information that is processed more deeply. Depth of processing may be related to the amount of attention devoted to a stimulus, the compatibility of that stimulus with the analyzing structure, and the processing time available. Questions that require a greater depth of processing will allow students to remember what they learn more effectively. Processing deeply in the sense referred to here is a qualitative type of processing whereby certain activities cause deeper memory traces than do others.

Second, levels of questions may be related to the idea of elaborations (Anderson & Reder, 1979). This idea was proposed as an alternative explanation of the phenomenon explained by depth of processing. Instead of suggesting that memory is a function of how deeply an idea is processed, the elaborations explanation suggests that what is remembered is a function of the number of elaborations that are attached to the idea. In this conception, questions of different levels would cause different numbers of elaborations, hence a quantitative rather than qualitative difference in processing.

Third, levels of questions is related to classification systems which are used to refer to different levels of cognitive behavior. Bloom's (1956) Taxonomy is an example. Sanders (1966) adapted Bloom's Taxonomy for use specifically with questions and identified seven distinct levels of classroom questions. Others have used less detailed classification systems, often suggesting three major divisions, such as literal, inferential, and applied (Herber, 1978).

The first two of these frameworks can best be thought of as explanations of the phenomena observed. The third, levels of questions, tends to be a way of operationalizing the concepts. That is, the effects of different levels of questions, according to one of the various classification systems, are what are typically measured. All three of these frameworks are important in discussing classroom applications.

Several studies have dealt with paraphrased versus verbatim questions. Anderson (1972) argued that paraphrased questions induced a higher level of processing than did verbatim questions and thus would lead to better recall. A series of four studies with high school students (Anderson & Biddle, 1975), however, did not show this difference. It must be noted that Anderson and Biddle's paraphrased questions were batched together and given after students had read the whole passage. Andre and Sola (1976) were able to demonstrate that when adjunct paraphrased questions could guide the encoding of the information, the paraphrased questions led to better performance than the verbatim questions.

A number of studies have dealt with inferential versus factual questions. Frese (1969, 1970, 1971) in a series of studies found that inferential prequestions were more effective because they "Increase the number of relevant sentences and perhaps ensure the repeated processing of those sentences" (1971, p. 371). Rickards and DiVesta (1974) used two categories of factual, one of meaningful-learning, and one of irrelevant postquestions. They pointed out that "Focusing attention on a superordinate idea in a paragraph rather than on one of the subordinate facts yielded greater recall on the remaining facts in a paragraph" (p. 358). In order to answer the meaningful-learning questions, the subjects had to attend to more of the passage content.

Another study dealt with the effects of application questions. Watts and Anderson (1971) found that application postquestions which required students to select a new example of a concept employed in the text led to greater recall than verbatim postquestions. In addition, the application postquestions enhanced readers' abilities to identify correctly new examples of principles. Watts and Anderson suggested that the results were caused by more thorough processing.

In addition to the apparent effect related to the type of question used, at least one study has dealt with the interaction between position and type of question. Rickards (1976) found that conceptual prequestions yielded greater recall than conceptual postquestions. These findings are in contrast to findings in verbatim level adjunct question research. Rickards did find the expected results with verbatim questions. Verbatim postquestions yielded more recall than did verbatim prequestions. This study would indicate a different effect of position of question depending upon the level of the question.

Finally, one study dealt with the effects of different levels of questions on the recall of poor readers. Rickards and Hatch (1977-1978) found that higher level meaningful-learning questions yielded greater recall of facts than did lower level rote learning questions or no questions. They suggested that the higher level questions helped the poor comprehenders semantically to organize and relate the text material to the main idea of the passage.

The results of the studies cited above indicate that higher level questions seem to be more effective than lower level questions, the placement effect for higher level questions in different from that for verbatim questions, and higher level questions may be more effective because they require students to use lower level information to construct answers. Teachers should understand that questions most effectively facilitate text comprehension when used as suggested earlier: after consideration of the information teachers want students to extract and selection of the appropriate question location. Teachers should also be aware of several other considerations:

(1) Conceptual prequestions may be the most generally facilitating, and
(2) the position effects mentioned earlier may be different for different types of questions.

A common suggestion to teachers is that they should prepare students for reading by asking questions to guide students' reading. The Directed Reading Activity, mentioned earlier, uses questions to guide reading. If the questions used are conceptual prequestions they should be more generally facilitative than liberal prequestions.

Teachers should consider that the use of literal questions in an attempt to emphasize the facts of a piece may be inappropriate, particularly when there is no evidence that the students lack the ability to read or recall the facts. Rickards and Hatcher's study (1977-1978) would indicate that even poor readers may benefit more from conceptual prequestions than from factual prequestions.

Teachers should also attend to the proposed reasons for the suggestions mentioned before. If they understand that conceptual questions seem to make it necessary for students to process information either differently (depth of processing) or more often (elaborations) they will be more likely to ask questions appropriately. If teachers know that conceptual questions seem to require students to attend to the facts as instruments to use in answering the conceptual questions themselves, they are more likely to use questions appropriately.

Some suggestions should also be made in terms of the application of research on adjunct questions to the questions found in textbooks. The essential principle to keep in mind is that teachers should match the position and type of question with the information that they want students to extract from the text. With this in mind, several points are relevant. First, questions in the back or front of the chapter would probably be more effective if used according to the suggestions made earlier. (E.g., literal prequestions should be used to help students locate important facts. Literal postquestions should be used to help students read in a global fashion.) Second, the questions in textbooks should be evaluated in terms of the general conceptual levels involved. Then teachers can direct students to answer particular questions during particular phases of the reading. Third, teachers should use the general model presented as a way of
organizing their look at the questions in textbooks. Rather than assigning the questions at the end of the chapter as activities, these same questions may be more profitable used immediately before or after specific portions of the reading.

Teachers should be aware of generalizations derived from research into adjunct questions. The specific suggestions provided here can give teachers some direction in applying those research-based generalizations to their teaching. By considering the information that they want their students to acquire and the appropriate types and positions of questions, teachers can use questions effectively.

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A PRACTICAL APPLICATION OF SPELLING AND COMPOSITION RESEARCH: THE TEACHERS' VIEWPOINT

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If an inservice workshop is to be successful for the participating teachers, the group I am representing, the over-riding consideration must be that the teachers perceive an instructional need. They must enroll in the workshop anticipating that they will receive answers or instructional methods that will alleviate a pervasive instructional concern in the classroom. This was the case in the summer 1981 composition workshop, but the felt-need was discovered by a rather circuitous route.

Curriculum design in the Sycamore Community School District involves, in each discipline, a year of evaluation, a year devoted to writing and revision, and a year of intensive focus on implementation. During the 1979-80 school year, as we evaluated the language arts curriculum, a survey concerning spelling elicited some general statements.  
1. There were 2 1/2-3 instructional hours per week being devoted to spelling.  
2. Teachers were unhappy with exercises in spelling books.  
3. Teachers felt that skills learned in spelling were not being applied in daily writing.

The spelling committee, with this information as a basis, designed a research project, intending to determine if spelling exercises improved spelling and if time presently devoted to spelling could be used to greater advantage in another area of the language arts curriculum. The data from this research have now been compiled. Briefly, similar test classes were chosen at each grade level, two through eight. Control classes were to continue spelling instruction using textbook exercises and teacher-designed instructional methods. Teachers of experimental groups were to administer a pre and post test and use instructional time, previously devoted to spelling, for composition. As the research progressed during the 1979-80 school year, it became apparent that teachers of the experimental groups could see no decline in the spelling proficiency of their students on the weekly spelling lists. However, an unanticipated response began to surface. Faced with much additional time devoted to composition, the teachers were finding it difficult to formulate topics for writing, motivate children to write on a daily basis, and respond to parents who were questioning methods of evaluating children's writing.

This preliminary information, which was available before research data were available, established the need for a composition workshop. Teachers, who felt that time spent in writing was far more valuable than time spent on spelling exercises, were confronted with the realization that they felt inadequate in the
area of composition methodology.

The school district had turned to the staff of the University of Cincinnati in designing the spelling research. It was only natural to turn to the same professors when our teachers expressed their frustrations concerning instruction in composition. Weaver, and later Laine, responded. The first element of a successful workshop had been achieved: an intense felt-need for solutions to a continuing instructional problem. Teachers wanted practical, realistic methodology in the area of composition.

The actual design of the workshop was the responsibility of Laine and Weaver. They were responsible for its success, which, from the point of view of the participants, was due to six conditions being met. They were:

1. **A manageable topic**

   The parameters of the workshop were carefully drawn and announced to the participants before anyone enrolled. The focus was to be "techniques for improving composition in grades one through six." For four hours each day for ten days this focus was maintained. The topic to be covered in the workshop was appropriate for the time limits of the workshop.

2. **Topic explored in depth**

   Teachers regularly respond to workshops with the same complaint—"The speaker told me what I already knew." This relates to definition of topic and its appropriateness to time constraints. The composition workshop allowed time for exploration in depth, a situation that all too frequently is missing in educational workshops.

3. **Balance between theory and practical application**

   This was the most valuable element of the workshop when teachers were interviewed after the workshop. Teachers in the field find it very difficult to remain cognizant of current research and methodology. Too frequently, when such information is available, it has very little relevance to the daily instructional program in the classroom. Laine and Weaver structured each workshop session with a blend of theory to broaden our perspective and practical application so that theory had meaning for instruction. Teachers attending the workshop felt that they were given credit for being intelligent educators. On the other hand, the reality of the problems they faced in the classroom was valued, so application of theory was stressed.

4. **Model of good instructional methods**

   Teachers are all too frequently justified in their complaint that the instructional methods used in a workshop are the antithesis of good instructional techniques. The professors in this workshop designed each day so that it was a model of excellent educational methodology. They incorporated lecture, group discussion, small-group or individual application and/or practice, and application to individual classroom techniques into each session. Several teacher-participants indicated their appreciation of good classroom methodology. Their sustained interest throughout the two-week session was further testamental to their appreciation of well-designed instructional techniques.

5. **Response to questions and evaluations**

   Each day's workshop session ended with a written evaluation and/or questions. This is standard workshop technique, one that is normally required by the funding body. What makes this item noteworthy is that the professors read the evaluations and responded to both questions and evaluations the following day. This undoubtedly required much effort and exhibited an attitude of respect toward the participants. This promoted an atmosphere that, while it would be impossible to measure objectively, undoubtedly had much to do with the success of the workshop.

6. **Use of data from the classrooms of the teacher-participants**

   The entire workshop was based on data derived from the classrooms of the teacher-participants. Writing samples from the initial research were used as the basis for each day's instruction. Participants were addressing the problems they faced each day in the classroom; the compositions they were analyzing were actual compositions from their classrooms. The professors did not need to create compositions that were typical of children's writing. They had hundreds of compositions from the Sycamore District classrooms from which they could select appropriate examples. The teachers, in turn, could relate to these examples.

In addition, no prescribed formulas for instant success were proposed. Rather a limited number of instructional approaches were presented. Teachers completed the workshop with definite approaches to try, but without unrealistic expectations for instantaneous improvement in the area of composition.

Implementation of the instructional program for composition is now in progress. The scope and sequence and strategies written in the Language Arts Curriculum Guide are correlated to techniques proposed at the composition workshop. There is no conflict, either theoretical or applied. A significant number of teachers attended the workshop so that staff leadership within the elementary schools is available. This leadership, in conjunction with administrative support, made it possible for all teachers to improve composition instruction. In addition, Weaver and Laine spent some time in each elementary school to reinforce ideas, answer questions and provide encouragement.

Composition may be one of the most difficult instructional areas of the elementary curriculum. If this workshop design proves effective for improving instruction in a curricular area in which improvement has been difficult to effect, it should be an extremely workable model for other areas of the curriculum.
A PRACTICAL APPLICATION OF SPELLING AND COMPOSITION RESEARCH: JOINING RESEARCH TO PRACTICE

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Teachers of elementary composition who participated in the summer institute studied the findings of major research studies and applied them to sample compositions written by students in their own school district early and late in the school year.

Early in the institute the findings of the research of Arthur Applebee were presented to the group. Applebee found that students writing in response to experience exhibit differing degrees of abstraction. The least mature writer concretely retells the story or experience, making no attempt to create any kind of framework. In the next stage of development, the writer gives a synopsis of the story or experience. Usually the account begins with "It is about..." and is a report of ongoing events. Later the writer uses summary in which the experience is encapsulated and categorized as "exciting," "funny," "nice," etc. The bases for the categories are specific incidents.

The initial efforts at categorizing lead to the next stage in which unsubstantiated evaluation is the mode of writing. In this stage the student evaluates the experience as "exciting," "funny," "nice," etc. without reference to specific incidents. He or she has left behind the details of the experience but writes global and circular judgments. When he or she substantiates the judgments, the stage of critical analysis has been reached. This stage is characterized by an explanation of how the experience has cause and effect relationships. Generalization is the sixth stage characterized by a concern for theme or message resulting in an understanding of life as a result of the experience. An examination of compositions written by the students convinced the teachers that such stages realistically distinguish the maturity of writers.

A second activity engaged in was an examination of syntactic maturity defined as the expression of subordinate relationships among ideas within one unit of communication called a
T-unit. This quantifiable trait was developed and validated by Kellogg Hunt and can be used as a ball-park indicator to progress in the expression of ideas. Although individual pre and post T-units scores are not to be given too much credence, a comparison of early with late scores provides some clue to the instructional activities that may be needed.

Two ways of achieving syntactic maturity were explained and practiced. The first method is sentence-combining, recommended by John Mellon, Frank O'Hare, and others. The writer focuses on a series of previously constructed sentences in which relationships are not clearly expressed and attempts to condense the pertinent information of multiple sentences into one "mature" sentence.

A second way to increase syntactic maturity has been described by Francis Christensen as the four principles of rhetorical analysis: addition, direction of movement, level of generality, and texture. Writers are encouraged to state a basic idea such as "I saw my brother coming down the street."

By "backtracking" over the same idea they see more and express what they see in additions which provide more specific information that enhances the reader's awareness.

I saw my brother coming down the street, his arms raised above his head, waving a paper which I realized was his new contract.

The final task of the first week was to understand and apply the four ways of tailoring prose: adding, cutting, moving, and replacing.

On the fifth day teachers, working in small groups, completed an activity sheet, which pulled together the work of the first week.

During the second week teachers examined primary trait analysis, the rating method used by the National Assessment of Educational Progress. The primary trait is the particular task that needs to be done in order to achieve a precisely defined purpose for writing. In a factual report about safety, for example, the primary trait is explanation through selecting and organizing facts. In a letter attempting to persuade the program director of the local television channel to schedule a certain program, the primary trait is to devise arguments and appeals appropriate to the situation. In a composition sharing personal ideas and emotions with others, the primary trait may be expressing feeling, depending upon the assignment, through elaboration of a point of view or through role elaboration. Achievement of purpose is rated on a score of one through four. Each category has several precisely articulated criteria.

Teachers learned how to use primary trait rating scales to assess student strengths and weaknesses and to determine what instructional comments were appropriate. They also practiced constructing a primary trait scale appropriate to "creative" writing. The final activity of the workshop consisted of an examination of their curriculum scope and sequence, by grade level, with the intention of integrating their new knowledge and skills with the prescribed program.

As a result of the workshop teachers were more articulate about the characteristics that distinguish one piece of writing from another, had a clear understanding of writing as process, and felt confident about their ability to provide pertinent information and practice to students in the difficult process of communicating through writing.
A PRACTICAL APPLICATION OF SPELLING AND COMPOSITION RESEARCH: A COOPERATIVE MODEL FOR TEACHER RENEWAL

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Many believe that inservice training will be the major phase of teacher education during the 1980's (Edelfelt, 1974; Pasch, 1974; McLaughlin and Marsh, 1978; Mamary, 1978). In the past, teacher training institutions were preoccupied with preservice education and local school districts struggled to accommodate increasing enrollments. In today's market, teacher training institutions must focus on inservice education and local school districts must upgrade the skills of a stable, tenured staff.

The teacher institute described in these reports represents a cooperative approach to inservice training. University faculty members joined with the Ohio Department of Education and the staff members of a local school district to develop an inservice model that has a high probability of generating and maintaining new instructional skills in teachers. The institute, Teaching Composition in the Elementary School, focused on an area of recognized need and involved classroom teachers in the planning and assessment of the institute.

Cooper and Hunt (1978) suggest that the most frequent inservice activities occur under the three main categories of staff development days, outside experts as consultants, and show-and-tell. However, these models fail to make use of what Ingersoll (1976) calls "the single most important source of information available for inservice training—the teacher." Cooper and Hunt (1978) point out that the usual rule is for the planning and assessment to be executed by educational authorities other than classroom teachers.

Ingersoll (1976) urges that failing to include the teacher in the decision making process lacks sense for three important reasons:

1. when teachers are involved at the choice point, they are more likely to carry their interest into actual training;
2. it fails to make financial sense to offer something that has little relevance to teachers’ needs; and,
3. to make all the decisions at an administrative level is little more than patronizing.

The discrepancies between the perceived needs of teachers and perceived needs of educational authorities other than teachers have been well documented. A study by Ingersoll and Schneider (1978) found a lack of agreement between 21 principals and 219 elementary school teachers in perceived training needs. Pilcher (1973), in his study of the effectiveness of teacher centers, reported that the traditional superior-subordinate inservice role has resulted in bitterness among teachers.

Zigmari, Betz, and Jensen (1977), studying teachers’ preferences in and perceptions of inservice education, found that teachers rated bulletin, programs conducted by outside consultants, faculty meetings planned by administrators and presentations by educational sales representatives as not useful. Although these traditional inservice approaches are frequently used, the authors observed that none of them build in teacher's resources or sharing.

History of Collaborative Planning

The teacher institute described in this paper was the result of extensive planning with the administrators and teachers of the Sycamore Community School District. The history of collaborative planning illustrates an attempt to involve classroom teachers in the planning and evaluation of an inservice program.

During the summer of 1979 a previous teacher institute was conducted with language arts teachers from the Sycamore Community School District. Faculty members from the University
of Cincinnati helped district personnel develop a scope and sequence outline for a proposed K-12 language arts curriculum. Using this outline as a foundation, teachers and administrators wrote a new language arts curriculum during the 1979-1980 academic year.

As work progressed on the writing of a new curriculum, district personnel realized the need for additional instruction in the teaching of writing. Techniques for the teaching of writing have historically been a weak component of undergraduate preservice programs. To provide greater depth in this aspect of the language arts curriculum, a series of inservice workshops was planned. The workshops, conducted during October of 1979, included group sessions for middle school, junior high school, and high school teachers and were designed to help teachers of grades 5 through 12 enhance their composition program. A half-day workshop was planned for each group.

University faculty, after cooperative planning, introduced the classroom implications of research conducted by Mellon, O'Hare, Christensen, and Corbett to these groups of district teachers. Much of these workshops was devoted to translating research findings into classroom techniques. While these short inservice workshops proved to be helpful, they also indicated the need for more extensive and intensive instruction in the teaching of writing.

At the request of the junior high school language arts faculty and the Assistant Superintendent for Elementary Instruction, university faculty met with district personnel during an inservice session in April of 1980. The teachers had begun to implement the composition component of the new curriculum and were using techniques introduced in the October inservice session. However, they were now faced with the need to diagnose student compositions. University faculty were able to briefly address this issue during the district's spring inservice session.

Simultaneously, the district was evaluating its spelling program. District personnel, faced with the need to adopt a spelling program, hypothesized that the time students devoted to the study of spelling lists might be more profitably spent in writing. The district's research study, stimulated by this concern, sought to determine whether the time devoted to the study of spelling lists could be devoted to writing without reducing spelling ability and whether this extra time devoted to writing could also improve the quality of student compositions. In order to conduct the study, district personnel needed a valid and reliable way of assessing the quality of student compositions. The T-unit count, developed by Kellog Hunt, was suggested as a technique that could be used for both the district's research study and the teacher's classroom diagnosis of student writing.

Teachers were involved in assessing inservice needs and planning institute activities in a variety of ways. Building principals and the language arts coordinator met with groups of teachers to determine specific classroom needs. Written suggestions were submitted by teachers while the institute was being planned. In the process of reading compositions collected as pre and post measures of student writing, district personnel and university faculty were led to a clearer understanding of the needs of the children in the Sycamore district. The use of compositions written by district children insured that the identified needs were actually needs of that specific population.

Allotting greater amounts of time to the teaching of composition caused district teachers to identify specific methodological needs. Motivating children to write, evaluating student writing, responding to parents regarding the composition program, and formulating stimulating and worthwhile topics for writing were areas of special interest to district teachers. Finally, a significant attempt to involve teachers in the planning of the teacher institute involved the use of daily evaluations to adapt each session and address specific participant needs.

State Guidelines for Teacher Institutes

State appropriations for inservice education were seen as a possible funding source for the proposed summer inservice program. Guidelines for teacher institutes were obtained from the Ohio Department of Education and a proposal was submitted in January of 1981. State appropriation 207-518 supported collaboration in designing and delivering inservice activities for elementary and secondary educators. The fiscal year 1981 appropriation of $960,000 was directed toward inservice activities related to mainstreaming, teaching the basic learning skills, classroom discipline, teacher stress, or systematic planning for total school improvement. The teacher institute described in this paper was funded under the area of "teaching the basic learning skills."

Guidelines for 1981 teacher institutes indicated that proposals should:
1. demonstrate a perceived need of the participating school system.
2. evidence planning with the teachers and administration of the participating schools.
3. set forth clearly defined objectives, in measurable terms, for the desired outcomes.
4. provide for at least 10 consecutive days of intensive work when participants are not otherwise engaged.
5. include appropriate follow-up activities after the period of intensive work. At least 5 follow-up sessions were to be scheduled.
6. assure the participation of sufficient staff members to enhance the possibility that desired outcomes will be realized within the individual school buildings. School administrators, especially building principals, were to be encouraged to participate in institute activities.
7. provide for an appropriate evaluation design and submission of evidence as to what degree the objectives of the institute and the follow-up activities were met.

The proposal was recommended and signed by the Dean of the College of Education of the University of Cincinnati and was accepted by the Division of Inservice Education, Ohio Department of Education.

Institute Funding

The institute budget provided a stipend of $150 for each participant to help defray expenses for lodging, meals, and transportation. Twenty percent of the stipend was borne by the Sycamore Community School District. Fifty dollars was budgeted for each participant for reference books, handbooks, and other instructional materials necessary to accomplish the institute objectives. These materials were selected by district personnel and university faculty and were made available for use during the full term of the institute.

The institute budget also paid tuition costs for each participant. The 3-credit graduate level course was titled "Teaching Composition in the Elementary School." Tuition monies were used to pay for secretarial services, consultant fees, salaries of the institute instructors, and indirect costs. Total enrollment was limited to 35 teachers.

Institute Objectives

The desired outcomes for the teacher institute specified that teachers who participated in the program would be able to:
1. distinguish between the process and the product of student writing.
2. define and describe criteria for assessing writing (primary trait).
3. design activities intended to develop writing skills.
4. list and explicate four ways of tailoring prose (Mellon, O'Hare).
5. describe and apply ways of evaluating student writing (Hunt, O'Donnell, Cooper, Odell).
6. describe the advantages and disadvantages of evaluations by self, peers, and teachers.
7. identify the developmental level of a student's writing (Applebee).
8. describe ways of stimulating invention (Zoellner, Christensen, Corbett, Rohman, Elbow).

The achievement of these and other objectives was evaluated during and following the 10-day teacher institute.

Conclusion

The literature on inservice education indicates that serious problems flaw traditional approaches to inservice teacher training. Hutson (1979) finds fault with the existing models and explains that while hard research on inservice is meager, there is near unanimous agreement that the current status of inservice practice is deplorable. Ingersoll (1976) concludes that "the viability and effectiveness of most inservice teacher training have ranged from gloom to despair."

Cooper and Hunt (1978) list the fact that teachers are seldom involved in planning inservice programs and assessing inservice needs as the first of the serious problems that flaw traditional approaches. The results of the teacher institute described in these reports suggest that when classroom teachers are involved at this early stage, the inservice experience is perceived as worthwhile. McLaughlin and Marsh (1978) suggest that "the desultory status of staff development as education's neglected stepchild is changing." Cooperative models, such as the one described here, give added strength to the renewal process and accelerate the changing status of inservice training.

REFERENCES

BUILDING A COMPREHENSIVE READING PROGRAM

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Louisiana's Special Plan to Upgrade Reading, SPUR, is an ambitious statewide effort to build quality reading programs in the 64 participating school systems. Based on research findings from the comprehensive Rand Study, SPUR is not a program, but a proven process for educational change. Local school systems are assisted in implementation of the process by eight regional teams who provide leadership training and technical assistance.

Research Base for SPUR

The Rand Study (McLaughlin and Marsh, 1978), completed under the sponsorship of the United States Office of Education, was a four year study of federally funded programs designed to introduce and spread innovative practices in public schools. The study looked closely at the local process of change and identified factors that caused not only desired change in teacher practices but also pupil growth and the maintenance of desired changes after federal funding was terminated.

Key to the conceptualization of SPUR was the finding that successful projects were not projects at all but part of an ongoing problem-solving and program improvement process.

Staff development was found to be part of this ongoing program improvement process. Effective staff development occurred in an organizational context where many role groups, not just teachers, were viewed as needing new skills. Particularly important were the staff development needs of district administrators and principals; administrators must be prepared to (1) provide a supportive organizational environment and (2) carry out the program-building process, involving teachers and related staff in collaborative planning and problem-solving.

Another critical finding in regard to staff development was the finding that staff training activities must be accompanied by training support activities if permanent change is to occur. Staff-support activities, such as (1) classroom assistance, (2) outside consultants, and (3) frequent meetings to discuss problems and progress, were critical in helping staff members understand and apply new skills.

In the total program improvement process, staff development was accompanied by other aspects of change, such as curriculum development, improved organizational frameworks, and administrative reform. District and school site organizational factors, as well as the active involvement of both the principal and the school district leadership, were critical to the continuation of the desired changes. Reform or change then was "more a function of people and organizations than of technology" or finance.

The SPUR Process

Given these findings, SPUR represents both a process and a framework or structure to facilitate the building of comprehensive reading programs. It is a planning process, a sharing process, a decision-making process, a process that is on-going, open to new evidence and the exploration of new and better ways to meet changing needs. The process is cyclical and involves: (1) determining needs, (2) establishing goals, (3) specifying objectives, (4) setting priorities, (5) selecting activities, (6) establishing timelines, (7) implementing, evaluating, adjusting and maintaining the plan.

Ideally the process operates at four levels (see Figure 1): the system level, the school level, the teacher level, and the student level. Based on recent research in the impact of parental and community involvement on student achievement (Colletta, 1977;
Figure No. 1
The SPUR process addresses instructional program analysis and improvement at four levels: system, school, teacher, and students.
Rich and Jones, 1977, Berger, 1981), the process is supported by parent and community support groups as well as college and university personnel.

Local school systems are assisted in implementation of the process by eight regional teams who provide leadership training at the regional and system levels and provide technical assistance at the system and school levels. It is this linkage from the State Department of Education through regional technical assistance teams to the individual systems and schools that provides the structure for the SPUR process.

The role of the technical assistance teams, both collectively and individually, is to (1) provide the staff support indicated by the Rand Study as critical to change, and also to (2) function as external agents for change in a manner very much like the Department of Agriculture's extension agents who had a national impact on farming as a result of the Smith-Lever Act of 1914.

"In order to create change that is effective, lasting, and that lives when SPUR leaves, it is essential for technical assistants to aid in developing a feeling of ownership among leaders at the system and school levels. The role then is truly one of technical assistance through facilitating, coordinating, supporting, assessing, providing guidance in identifying strengths, needs, alternatives, potential problems/solutions and in general helping to create an atmosphere in which there can be long-range planning to develop, implement and maintain a comprehensive reading program (SPUR Handbook, 1982-83)."

The tenure of the state SPUR team is by its very definition and intent to be of limited duration. In order to make lasting changes in the systems and schools, SPUR must provide for the continuity of positive change through the local school system's personnel by developing or increasing their skills as change agents. This is accomplished through staff development for leaders in participating school systems utilizing a "trainer of trainers" model.

This "trainer of trainers" concept for SPUR is based on the idea that the SPUR teams' efforts to facilitate change in a system or a school's reading program will be more effective if efforts are concentrated on selected target groups (central office leadership personnel and principals). The technical assistance team and individual technical assistants provide support and guidance as the leadership personnel and principals prepare to train classroom teachers and other support staff. As members of these target groups gain expertise, they gradually assume larger and larger roles in staff development and in identifying and training other personnel within that system to assume leadership in the process for program improvement.

To participate in SPUR, systems agree to appoint a system level Task Force composed of central office personnel responsible for the reading program as well as representative principals. Using the described SPUR process, the Task Force assesses needs and develops a comprehensive plan for program improvement as well as a yearly action plan. School systems are encouraged to include in their plan a time line for extending the process to the school level. Schools are likewise encouraged to establish a school level Task Force and develop a school plan for program improvement that complements the district's plan.

In assessing reading programs at the school level, schools are aided by the Criteria of Excellence, a set of standards developed under the Right to Read program as representative of quality reading programs. Also available for teacher self-assessment are the Critical Elements of Teaching identified by Hunter (1981) in a study of teachers whose students consistently averaged a year's gain in achievement. Hunter identified the effective teacher as one who teaches to an objective at the correct level of difficulty, monitors and adjusts instruction based on response from the students, and uses, not abuses, the principles of learning.

Student assessment is aided by the use of state assessment tests and other measures used by the local educational agencies. Students are likewise encouraged to assess their own needs as they assume responsibility for their own learning.

It was in the assessment of needs and the development of plans at the system level that some additional issues were raised. Task Forces, charged with the responsibility of developing plans resulting in a comprehensive reading program at the system level, asked: What is a comprehensive reading program? By what standards can we assess our needs at the system level?

In raising these issues, local educators were addressing a problem inherent in needs assessments. Although it sounds somewhat paradoxical, sometimes people do not know what they don't know.

The state SPUR project officers, responsible for the provision of training and resources, were charged with the task of defining a comprehensive reading program at the system level.

The Comprehensive Reading Program

In order to define a comprehensive reading program, the SPUR staff turned to research. While the Criteria of Excellence document used for program improvement at the school level implied components needed at the system level, it was based on the views of state leaders in the field of reading rather than research. A survey of the literature revealed, as Hodgkinson points out in the December 1982 issue of the Kappan: "Today, researchers are working to discover the traits of good schools and then trying to duplicate those traits elsewhere." He briefly summarized the results of such studies by stating that the difference between successful and unsuccessful reading programs is related to environmental factors such as:

(1) local school involvement in the decision-making process;
(2) the principal's leadership and support from community and superiors;
(3) a "critical mass" of teachers who share attitudes and values;
and
(4) the use of local ideas originated in each individual school.

Samuels (1981) recently reviewed four research reports dealing with characteristics of exemplary programs (Weber, 1971; Hawridge, Tallmadge, and Larsen, 1968; Wargo, Tallmadge, Michaelis, Lipe, and Morris, 1972; New York State Office of Education, 1974) and identified common characteristics of successful and unsuccessful programs. Successful programs were characterized by:

(1) Assumptions that—
- schools are responsible for student achievement, and
- most students can master basic skills.

(2) Personnel comprised of—
- strong administrative leaders who provide the organizational climate needed to meet goals
- reading specialists who work with teachers/aides
- use of aides to reduce pupil-teacher ratio

(3) Teacher training and supervision that is—
- concrete, teacher specific, and provides for
- regular meetings focusing on practical problems
- teacher participation in decisions
- teacher observation of similar projects and model lessons

(4) Curriculum that has—
- clear, specific objectives (task, people-oriented)
- skills centered curriculum with ample time for reading meaningful and interesting material
- instruction, materials relevant to objectives

(5) Time organized to provide—
- efficient use of time
- extra time allotted when needed

(6) Structure (skilled classroom managers)

(7) Evaluation (frequent formative testing)

In contrast, unsuccessful programs had the following characteristics:
(1) Improper program initiation and implementation (opportunism, top-down or bottom-up motivation)
(2) Inadequate incubation and development time (need 2 years for planning, 2 years for implementation, 2 years to produce a stable effect on student achievement)
(3) Narrow piecemeal approaches (no quick fixes; need a comprehensive approach over a long period of time)
(4) Lack of commitment, feeling of inadequacy
(5) Unsupportive principal (failed to create necessary norms and climate)
(6) Inefficient use of time (classroom time wasted, discipline problems)

More recently, a comprehensive study of effective programs was conducted by John Westbrook (September 1982) as part of the Southwest Educational Development Laboratory Regional Exchange Project. He identified 11 characteristics of programs that have been effective in improving student achievement:

1. **Time On Task**—Students are engaged in high levels of task-oriented "academic" behaviors.
2. **Expectations**—Teachers have high levels of expectations for student achievement.
3. **Success Rate**—The higher the success rate of students the greater the correlation with achievement.
4. **Curriculum Alignment**—There is a "match" or alignment of instructional activity and evaluation.
5. **Staff Task Orientation**—Staff members appear to be highly task-oriented.
6. **Behavior Management**—Less time is spent on behavior management. The approach to behavior management is the result of school or district plans rather than individual plans.
7. **School Environment**—The school environment is pleasant, orderly, quiet, safe, and conducive to learning. Physical conditions are good.
8. **Cooperation**—Teachers cooperate with other teachers as well as instructional leaders. Staff members participate in planning and decision-making, but efforts are extremely well-coordinated and supported by school leaders.
9. **Instructional Leadership**—Principals, supervisors, and/or lead teachers are active in the observation and coordination of academic work within the school, demonstrating strong managerial and instructional skills.
10. **Parent Participation**—The involvement of parents appears to be closely related to achievement.
11. **Instructional Practice**—Instructional practice includes more teacher interaction with the class as a whole, monitoring of student performance, frequent and quality feedback, and direct instruction methods.

In addition to identifying characteristics of effective programs, Westbrook points out some things to consider in looking at this research:

1. Programs were judged effective on the basis of student achievement which may not be all one would want to consider in defining an "effective" program.
2. There is little data relating how an ineffective program can be transformed into an effective program.
3. Few studies provide data concerning the magnitude of achievement variations between effective and ineffective schools.
4. Longitudinal studies are rare; the results of these "effective" programs over time need to be studied in terms of drop out rate and other factors.
5. Factors associated with the maintenance of an effective program have not been studied in depth.
6. Last but not least, it is important to bear in mind that these characteristics describe rather than cause the effective school. The way that these factors are interrelated and the proportion of each needed to produce an effective program have not been researched.

The concerns raised by Westbrook were shared by the SPUR staff in attempting to define and ultimately build comprehensive reading programs. Given the paucity of research in these two areas, we turned to the writings of noted people in the field of reading.

Smith, Otto, and Hansen (1978) helped in providing the rationale for building a comprehensive reading program. In their book, _The School Reading Program_, they state that "the ultimate goal of the reading program is reading achievement that approaches the limits of each person's capacity," a program based on meeting individual needs. In order for this to occur, the "overall program must provide a master plan that includes the articulation of objectives and a coordination of instructional efforts." Although teachers play a critical role in teaching students to read, "teachers do not work alone. To do their jobs well they need training, instructional materials, supervision and all the other ingredients" that make up a comprehensive reading program.

Because of the uniqueness of school district settings within which reading programs function, there is no one blueprint for a comprehensive reading program. The important thing is that the components in each system's specific program are clearly defined and communicated to all persons responsible for the program's implementation. Without this common knowledge base, Smith, Otto, and Hansen (1978) point out, instructional programs are likely to be fragmented and disorganized.

Remedial teaching, for example, is isolated drill unless it is coordinated with the learner's experiences in the classroom. Similarly, second grade reading is only an arbitrary collection of skills unless it is coordinated with first-grade and third-grade reading. Reading supervisors and administrators are likely to do little more than fight fires unless there are some overall guidelines.

Through a clearly defined comprehensive reading program, decisions can be made that are consistent with the program's underlying philosophy. Coordination and continuity can be provided. The whole can become more than the sum of its parts, and reading to one's potential can become a reality for each student.

Schephoerster (1981) assisted us in determining exactly what those components were that needed to be defined. He states that there are four components in a comprehensive reading program:

1. **Curriculum**—the "what" of education, the facts, skills and attitudes that a system wants its students to learn,
2. **Methodology**—the "how" of education, the means by which teaching is done to ensure learning,
3. **Organization**—the means for ordering the program into a structured, functioning whole, and
4. **Administration**—educational management that allows those responsible for the reading program to know that the curriculum is being learned.

While curriculum and methodology can often be purchased in a basal series, organization and administration of the reading program must be locally developed and custom-tailored to meet the needs of the school or school system.

Some support for the selection of these four components is implied in the Rand study finding that staff development and improvement in skills was often accompanied by curriculum development, improved organizational frameworks, and administrative reforms.

To assist school systems in defining their reading program, the SPUR staff has developed a series of training modules, _Getting to Know Your Reading Program_ (1982). The series explores issues relevant to curriculum, methodology, organization, and administration and provides a process for making decisions in each area.

The hypothesis, yet to be tested, is that by using the SPUR process to define one's program, and then communicating that program to all those responsible for its implementation, systems can encourage and support the program building-process at all
levels—school, teacher, and student. The result will be a comprehensive reading program which meets student needs and results in increased achievement.

Evaluating the Program Building Process

The Rand study found that “complex and ambitious projects were more likely to elicit the enthusiasm of teachers than were routine and limited projects.” While such projects may elicit enthusiasm, they pose many challenges to the evaluators. Evaluation procedures must not only deal with a process that functions at the system, school, teacher, and student levels, but also must deal with the variation in objectives and activities among the 64 participating school systems. Evaluation procedures and materials were needed which not only yielded credible information to the State Board of Elementary and Secondary Education, but also yielded information that could be immediately useful to the SPUR staff and local school systems.

It was also required that the design and conduct of the evaluation conform to the Joint Committee’s Standards for Evaluations of Educational Programs, Projects, and Materials (1981).

With the above considerations in mind, during each fiscal year, the Louisiana Department of Education’s Bureau of Evaluation conducts a formal evaluation of SPUR that is oriented toward both program process and outcomes. The evaluation is concerned with documenting how SPUR achieves its change agent philosophy and what SPUR achieves in terms of its mission of upgrading student performance in reading. In order to answer questions related to the process and outcomes of SPUR, activities, such as the following are conducted:

- administration of a reading achievement test to students in a sample of demonstration school classrooms;
- classroom observations of time spent on reading activities by students and on reading instruction by teachers;
- surveys of directors, principals, and teachers regarding their attitudes toward and use of SPUR;
- documentation of precisely how SPUR operates through a Technical Assistance Logging System of activities, and
- visits to selected SPUR sites to collect information about the program’s activities from central office staff, principals, and teachers.

Although the evaluation specifically focuses on collecting and analyzing data obtained through the activities listed above, other activities may be used as deemed necessary to address unanticipated evaluation questions.

Complete results of SPUR’s third year evaluation are detailed in a technical report available from the State Department of Education.

Some validity of the effectiveness of the SPUR process is provided by the following findings:

(1) In contrast to Samuels’ findings that successful programs usually require six years to produce a stable effect on student achievement, SPUR showed growth in student achievement after the second and third years. On the single objective test measure common to all public schools in Louisiana, the Basic Skills Test, SPUR schools having met the Criteria of Excellence for Schoolwide Reading Programs scored significantly higher (94.61 Average Percent Correct) than students in Non-Criteria of Excellence schools (92.91 APC).

The small difference in achievement is encouraging in light of the following: (1) the Basic Skills Test is a criterion-referenced measure of state minimums and thus does not allow for much variation in test scores, and (2) the SPUR schools reported lower levels of parents’ education, smaller proportions of parents with professional occupations (p < .05) and a higher percentage of minority students, conditions usually associated with lower performance in basic skills. The total percent of students failing the test averaged 7.8 for Non-Criteria of Excellence schools in comparison to 5.7 percent in Criteria of Excellence schools.

(2) On the Prescriptive Reading Inventory administered to a sample of students in grades 2-5 of SPUR demonstration schools, students are performing above the national average with the exception of grade 4. Reported in terms of normal curve equivalents, scores were 56.9, 53.0, 41.8 and 53.6 for grades 2-5 respectively. Grade 2 students tested in 1982 had consistently higher average scores on the test than students tested in grade 2 in 1981, a reading gain of 6.4 NCEs. Grade 4 students, however, showed a total reading loss of 6.1 NCEs. (Evaluators are attempting to explain fourth grade performance which is out of keeping with results at other grade levels.) Comparing the scores of students in grade 3 in 1982 with their performance as second graders in 1981, students gained 2.5 NCEs. Greater gains were shown among students tested as fourth grade students in 1981 and fifth grade students in 1982; their reading total performance improved by 5.7 NCEs.

(3) Time on task observations in grades 2, 3, and 5 in the eight demonstration systems revealed an engagement rate of 86%, 90%, and 89% respectively. Engagement rates were higher than the average engagement rates found for a national sample of grade 2 (75%) and grade 5 (74%) in the Beginning Teacher Evaluation. An analysis of teachers’ responses to the SPUR Teacher Practices Inventory, an instrument listing 75 teacher practices supported by SPUR, yielded the following results:

- Three-fourths or more of the teachers reported that they used 72 of the 75 practices almost always, most of the time, or sometimes. For five of the nine category results, teachers in Criteria of Excellence schools reported more frequent use of the practices than teachers in Non-COE schools (p < .05).

(4) Responding to a survey on SPUR’s impact on the system’s reading program, 52% of the SPUR directors in the local educational agencies felt that SPUR had made significant improvements in the system’s program, and 46% felt that some changes had occurred, or were about to occur as a result of SPUR. In a similar survey, 42% of SPUR principals felt that SPUR had made significant improvements and 55% felt some changes had been made or were about to occur. Only 2% in both samples felt that few or no changes had occurred.

While SPUR seems to be making an impact on reading programs, many areas are still in need of study. The state SPUR staff and the Bureau of Evaluation are currently exploring procedures for evaluating the following:

(1) The Comprehensive Reading Program.

Evidence needs to be obtained to confirm or reject the hypothesis that the process of defining a system’s curriculum, methodology, organization, and administration will in fact result in increased student performance. Is this a viable process for program improvement that can be implemented in other states?

(2) The Four Levels of Change.

In regard to the four levels of change addressed by the SPUR process (system, school, teacher, and student), is one level more critical than the others in promoting student achievement? What is the role of each and how are they interrelated?

(3) The Role of the Technical Assistant in Promoting Change.

In addition to an analysis of logs kept by technical assistants, evaluators will conduct interviews during the 1982-83 school year to determine how effective technical assistants carry out their roles and their impact at classroom, school, and central office levels. As follow-up to our training emphasis this year on change agency, research is needed to see if these skills can be transmitted to others.


Research on the change process conducted by the CBAM
Project at the Research and Development Center for Teacher Education is now being explored by the SPUR staff as a means of determining where individuals are in the change process. CBAM has identified levels of concern indicative of various levels of usage of educational innovations. Areas to be explored are whether knowledge of individual concerns can be useful in facilitating change and also whether levels of usage can be used to explain differences in student achievement in systems and schools.

(5) **Criteria of Excellence.**
Although there is evidence that the Criteria of Excellence does result in increased student performance, additional evidence is needed to support this process. It is hoped that new schools can be tested prior to and after completion of the process. Proven procedures for maintaining the process are also needed.

(6) **SPUR Teacher Practices Instrument.**
While teacher responses show that SPUR has contributed to the use of recommended practices, evidence is needed to show that the use of these practices is in fact correlated with student achievement.

(7) **Program/Process Evaluation.**
Additional procedures are needed to evaluate a project which undertakes the upgrading of reading statewide, deals with so many variables, and has such limited control.

**Conclusion**
In summary, SPUR, Louisiana's Special Plan to Upgrading Reading, is founded on the results of the Rand Study. Since its conception, SPUR has evolved into a program building process that functions at four levels—the system level, the school level, the teacher level, and the student level. In designing this structure and process for educational change, program participants have learned much that might be of assistance to others in attempting to build a comprehensive reading program. For additional information, please contact:

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**REFERENCES**


THE DEVELOPMENT OF VOICE RANGE AND SENSE OF AUDIENCE IN YOUNG WRITERS:
INTEGRATING READING AND WRITING EXPERIENCES

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The attempt to integrate experiences with reading and writing is a topic of increasing interest to language arts professionals. Platt (1977) and Wilson (1981) describe the interrelationship of these developing processes, arguing that children form expectations about the rules of language as they engage in reading and writing. Further documentation exists in the literature to support the notion that reading instruction need not precede writing instruction. Vygotsky (1962) observes that even the young child possesses the rudimentary capacity for abstraction; however, his/her forms of thought differ from the adult's in..."composition, structure, and mode of operation." Platt (1977) suggests that organizing thinking for the writing act is helpful for building full comprehension of someone else's written thoughts during reading. The symbolic characteristics of communication are reinforced reciprocally and the movement to silent reading is facilitated because less attention is directed to the vocal actions of pronunciation and intonation.

My observations of reading and writing instruction over the past three years lead me to conclude that elementary teachers typically have not acquired a perspective which permits an integration of reading and writing. Too often writing activities are planned as appendages to reading instruction. As second-order processes (developed with instruction), the assumption is made that reading precedes writing. An analysis of the developmental stages of writing suggests that this is not the case. When the written product is the goal of instruction, the following behaviors may occur: (1) a thorough understanding of the written work because the content is the child's own language in the child's own spelling system; (2) a greater opportunity to internalize language rules; (3) an opportunity to observe one's own language structures which in most cases surpass the language of reading materials in complexity; and (4) a regard for the value of reading as an important part of communication. Reading becomes a model for one's own work, a revising tool, and a means of appreciating the work of others.

Much of the research on the development of the composing process in young children is observational for obvious reasons. Graves (1975), Calkins (1978), Donnelly and Stevens (1980), Clay (1982) and Dyson and Genishi (1982) acknowledge the difficulty of isolating aspects of the writing process because of the interaction of the sequence of skill development with personal and social motivation. Clay (1982) stresses the need to observe what children actually do when they write. She urges teachers to examine their teaching procedures to be certain that children are not prevented from experimenting with story form and with flexibility in written language use.

With this perspective, I shall attempt in this paper to review two aspects of the writing process with respect to the developing child writer—range of voice and sense of audience. I will then discuss some possible strategies which permit reading to function as a facilitator for developing these two aspects of writing.

The Use of Voice by the Child Writer

Kirby and Liner (1981) describe voice as, "...at the heart of the act of writing." Good writing, they say, is hearing..."the sound of another human talking to you." Murray (1982) alleges that voice is one of the aspects of writing that makes the reader want to read. Readers will be drawn to a voice which has
authority (command of information), concern (expressed through opinion or perspective) and energy (from clear honest language).

Britton (1982) and Temple, Nathan and Burris (1982) describe the emerging voice in children's writing using the categories of expressive, transactional, and poetic voice. Expressive voice is characterized by personalized writing, a verbalization of thought at a close distance to the reader. Expressive voice usually permits a free flow of ideas and feelings. Observe the voice in this first grade writing episode (translated into conventional spelling):

**GETTING ON THE BUS**

It's hard to get up the steps with all your stuff on your back—because it's heavy. You feel like you're going to fall backwards. You bend over to try and get on. In the morning you're so sleepy it's hard to lift your leg up.

This episode illustrates that the expressive voice emanates from a child-chosen topic, usually something recently experienced and within the child's framework of interests. Early writing in this voice may be characterized by what Graves (1982) calls "prosodies," signals children devise to point up speech sounds that they want to emphasize. They may capitalize nouns, boldly draw words they want to stress or use multiple exclamation points. Sharone, grade one, drew a bright bold self-portrait under which she wrote the caption: I AM BIG.

The letters are lower case, but the size conveys the importance of the words. First person is commonly utilized at an early age when the child uses the expressive voice. In an imaginary story about a confrontation between a bear and her pet dog, Christy (grade one) writes, "I was so skared that I didn't mov to the dog." Britton and Sowers (in Clay, 1982) observed that expressive voice occurs as an early writing form because it arises out of the writer's experience and requires less attention to audience.

Transactional voice is used, as the term suggests, to carry out a verbal transaction. Britton (1982) describes it as, "using language to get things done." Using this voice, writers give information or instructions and try to persuade the reader (Temple, et al., 1982). Both expressive and transactional voices have been observed in beginning child writers, which implies that given the opportunity, children can select an appropriate voice range with which to convey the message. In a creative writing exercise, second grade Samantha provides a convincing exposition on the properties of doughnuts:

This is a donut. This donut is delicious. A brown donut is delicious. A power donut is the best in all of the donut. Do you like donuts to.

Transactional writing of young writers frequently requires a drawing to complete the message. Information missing in the script is often labeled in the accompanying drawing. Graves suggests that teachers should permit young children to draw as they write or before they write to help organize thoughts and focus the writing.

Poetic voice requires manipulation of language into a specific form. The message is conveyed by both meaning and pattern. The transition from transactional or expressive to poetic voice is gradual and often inexact (Temple, et al., 1982). Writing in the poetic voice includes poetry, stories, plays, and song.

Consider the second grader who drew a picture and writes:

It's me remember! It's me. See I have that brite yellow hair with blue eyes. I tell you it's me!

Al, a fourth grade learning-disabled student composed this free verse after a vocabulary brainstorming session on the city.

Short buildings, tall buildings, Skinny buildings and wide buildings Rising from the ground to the sky. Skyscrapers above the clouds.

Buildings with smokestacks puffing smoke into the air.

Shapes—squares, triangles, rectangles of buildings in the city.

Buildings so close—pushed and shoved together.

Teachers are encouraged to express appreciation of a child's first poetic efforts as works of art. Young writers do not have command of the conventions necessary to create in this voice. In the case of the poetic voice, the young writer must be rewarded for creating images and actions with words to excite the audience.

Kirby and Liner (1981) regard the job of the teacher as helping students...find the voice in each piece they write." Young writers need to do much talking (socializing) and drawing during early writing efforts. They need to read their work to many audiences—teacher—peers—parents—theirself—as they develop their abilities to transmit written messages effectively.

**The Young Writer's Sensitivity to Audience**

Audience awareness requires an intuitive sense of communication which develops gradually through experience. Elementary school age youngsters, especially in the middle grades, are quite capable of responding to audience information needs. Two conditions tend to inhibit audience awareness in children's writing: the degree to which the child must fulfill his/her own egocentric needs through writing and the degree to which the child directs the writing for the teacher-as-audience. First writing is typically egocentric. It is an expression of personal thought analogous to Piaget's collective monologue in spoken language. As the child is able to put distance between personal thought and text and as others are permitted to offer varied responses, the child begins to see the need to change the form of the message.

The teacher will always be an audience for the student writer and need not be an inhibiting one. Children feel secure in "trying out" their work with a teacher who values it and helps them to deal with issues of content clarity and control of the symbol system. An interesting variation of the typical teacher-student writing conference is offered by Kitagawa (1982). She describes the Japanese method of seki katsu (life experience) writing, a method of teacher-student dialogue developed in the 1920's to improve children's self-concept through expressive writing. In this method the teacher in the role of spectator comments on each part of the child's story, thereby allowing the child to explore the impact of his/her voice upon the reader. Graves suggests that the classroom should become a writing community where both peer and teacher audiences are available. Dyson and Genishi (1982) observed that social interaction becomes a child's primary tool for encoding words and refining ideas when children are encouraged to work on their writing in small groups or dyads. Whole class activities, such as a choral reading or publishing a class magazine, complement individual efforts and encourages audience awareness. Teachers who encourage experimentation with a range of audiences from oneself, to friends and relatives, to the unknown assist young writers in developing confidence and in increasing the sophistication of their work. When students are able to understand the need for sensitivity to audience, it is useful to provide samples of professional writing which illustrate a variety of intended purposes and audiences. Tiedt and Tiedt (1978) and Kirby and Liner (1981) provide excellent teaching suggestions for guiding audience awareness.
SOME SPECIFIC READING STRATEGIES WHICH HELP 
YOUNG WRITERS TO DEVELOP RANGE 
OF VOICE AND AUDIENCE AWARENESS

The strategies presented illustrate activities which permit 
reading to serve as one of the many tools a young writer can 
use to perfect his craft. Reading activities can serve as resources 
for idea generation, as stimuli for characterization, and as 
models for structure and format. Reading is an essential com-
ponent of the revising function.

Reading Readiness/Writing Readiness Activities

Picture Labeling is a common technique used to develop sight 
words. In this version of picture labeling, the teacher asks the 
child to describe the activity in his/her drawing. The teacher 
then writes next to the picture the child's own words and 
phrases, making connections whenever appropriate. This gives 
the preschool child an exposure to his/her expressive voice and 
assists in visualizing personal vocabulary.

Stories Without Words. The child goes through the book and 
describes the pictures. Then he/she goes through the book again, 
telling the story. The story is then written using a language-
experience approach. This activity provides focus and sequential-
ization for the younger. Frequently the writer will employ devices such as dialogue, personal asides and figurative 
language which he/she would not ordinarily use. Some children 
confirm the concept of chapter format from this activity.

COMPREHENSION ACTIVITIES WHICH 
ENHANCE WRITING

an inferential comprehension strategy which extends story related 
prediction with a writing activity. She suggests a discussion 
which allows the students to interpret the text through applied 
writing responses. Writing short answers to questions related 
to character identification and to prediction of consequence are 
examples of her strategy. A more effective approach might be 
to allow the discussion to serve as a stimulus for a more substantive 
writing exercise during which the student uses the expressive 
voice to relate his/her own experience related to the story theme.

Listen-Discuss-Write. This procedure for integrating literature 
with composition (Duncan, 1980) uses an outstanding model 
of children's literature as a frame of reference throughout the 
total writing process from idea generation to refining the lex-
on. The teacher reads the piece of literature or excerpts from 
it to the group. At various times during the work on their own 
compositions, students are referred back to the model for iden-
tification of style, descriptive technique and plot development 
strategies. After each discussion, students work on extending 
and refining their own compositions.

The values of the technique lie in opportunities for growing 
awareness of voice, and for observation of the rhetoric of com-
position in a well-developed model.

Modeling Devices Based on Schema Theory. Comprehension 
development strategies which emerge as applications of schema 
theory to reading practice are useful in developing story struc-
ture. Nolan (1979) observes the process of a sixth grade writer 
from the beginning to the finished product. His observations 
reveal a pattern which closely resembles a story grammar 
outline. Turner (1978) and Fowler (1982) describe several model 
frameworks which give the young writer a chance to sustain focus while writing with a particular voice.

Reading as a Part of the Revising Process. As children pro-
gress in revision from learning to "add on" and "mess up", 
the page to submitting their work to peer and teacher scrutiny, 
reading becomes a natural part of the writing process. The child 
writer gradually acquires a greater awareness of audience, 
becoming more serious about communicating accurately and 
persuading the reader.

When a child feels that his/her work is worthy of publica-
tion, the teacher creates an environment in which the writer can 
get the feedback and guidance required to polish the composi-
tion. This can take the form of small group or one-on-one peer 
conferences followed by teacher conferences (Graves, 1982). 
When children read each other's work, they can ask very specific 
questions to help the child-author clarify meaning. Children also 
offer new approaches to writing which are sometimes accepted 
more readily than suggestions made by adults. Once children 
gain greater control over the writing process, they feel confident 
ought to re-read their own work in order to clarify expe-
riences. This latter stage requires that the child be able to 
assume the spectator role as he critiques his own work.

SUMMARY

Reading and writing processes are reciprocal communication 
memes. Instruction can be integrated to present a natural 
language-learning environment; however, priorities should 
emphasize the written word as the end result of instruction and 
not as an accessory to the reading activity.

Maturing young writers acquire a greater range of voice in 
their compositions as they respond to good models in literature. 
Experiences which cultivate flexibility in voice can be provided 
through reading strategies.

As the young writer gains control of the writing process, 
he/she is more keenly aware of needs of the intended audience. 
Reading a variety of types of professional materials, reading 
the written works of one's peers and reading one's own work 
from the vantage point of spectator are ways in which the two 
models are integrated to promote writing growth. That such com-
plex reading and writing processes can be acquired so early in 
the child's educational development is indeed astonishing. 
Teachers should select instructional strategies carefully so that 
this remarkable growth is not hindered.

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REACTION: THE DEVELOPMENT OF VOICE RANGE AND SENSE OF AUDIENCE IN YOUNG WRITERS: INTEGRATING READING AND WRITING

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This paper presents research and literature supportive of enhancing the composing process of young children through writing. The author also presents her own perceptions and experience with this process. Her presentation focuses on the teaching of composition and use of reading in this process, rather than the use of writing to teach reading. The paper identifies ideas about the teaching of writing that are "natural" and intrinsic to the writing process. I have also experienced good results in using similar methods with primary school children.

While the author clearly indicates that the development of the child's composing skill is the desired "end," my observation is that use of reading is not necessarily just the "means" to that "end." I predict that planned for or not, reading also becomes an "end" in this process.

Young children should be encouraged to write in a relaxed environment. Let the teacher refrain from grading or marking-up papers for poor handwriting and errors in spelling, grammar, sentence structure, or punctuation. Additionally, children's creativity is stimulated by class discussions, peer discussions, literature examples, thought-provoking ideas, and opportunities to "read their own writing." to a genuinely interested listener. Thus, young writers develop in at least four ways: (1) They learn that they are writers and can express themselves on paper. (2) They become more creative in the writing process and are more willing to write. (3) They learn that they are readers when they can read their own writing successfully. (4) They discover the essence of writing and reading. Writing is someone's words put on paper and is personal and meaningful to that person. Reading is the writer or someone taking those words from the paper and saying (reading) them quietly (to oneself) or out loud (so others can hear) in order to hear the writer's words (meaning).

The enhancing of the composing process as described is so "natural" that it is hard to conceive why it isn't done as a matter of course in all primary grade programs. The obstacle seems to be the confusion between the teaching of composing, the teaching of editing, and the teaching of handwriting. Teachers often try to combine these three separate areas into one lesson. They tend to insist that children write "something" in their own words but do so using "standard" spelling, grammar, sentence structure, punctuation, and "good" handwriting. We need to convince classroom teachers and principals that they are mixing apples and oranges and so cannot expect to accomplish quality in any area when they combine these three areas into one activity. When teachers and principals learn this, the "natural" process of composing should flourish.
Well-planned college reading and study skills courses with universal curriculums could nevertheless offer diversity and flexibility that would allow for individualized tailoring to students' different needs. Moreover, a concern of the public and government today is that there is such a wide range in quality of programs at all levels of education, that there are questions about the economical aspects and academic benefits from these programs. Certainly, administrators and content instructors in many places have not bought the idea of what should be excellent results.

More serious than the realism of a universal reading and study skills program is establishing a common set of criteria for admission to and exit from these courses. Criteria might include ACT scores based on the social studies rather than the English sections, reading test scores such as the Nelson Denny, and grade point average. Academically prestigious and lesser known instructions of higher learning alike appear to be fumbling, not so much in offering individualized programs as they are in determining the appropriate academic background of instructors, the instructors' desire to teach such courses, criteria for student participation and interaction with other areas and disciplines within the university, and content faculty involvement in the process of helping these students implement what they learn.

Townsend's paper does not clarify whether Indiana University of Pennsylvania's reading and study skills course is compromised of a total lab or a combined lecture and lab course. By individualizing, it is assumed that the program is basically lab oriented. A greater distinction needs to be made between course credit for certain developmental, self-improvement reading/study skills courses and remedial reading/study skills courses which are required, but for which no credit may be given.

Townsend discusses the results in working with her students in terms of pretest and posttest scores, but the number of subjects and reading ranges in reading comprehension were not given. This would affect realistic expectations, results etc. Concerning the results on the pretest and posttest standardized and pretest and posttest competency-based tests, one might question whether the students were plagued with standardized test anxiety or inferior criterion referenced tests. Before the mean gain of 3.0 grade levels in reading comprehension becomes meaningful, it would be necessary to know the range of scores in the beginning. For interpretation purposes it would have been helpful had she included the N as well. With no reports of whether a control group was used, it is difficult to compare results of the experimental group.

In Townsend's discussion, she makes several valid points related to students enrolled in these courses. These comments are relevant to how much progress can be realistically expected of these students. Those students within a program that enter as the most academically deficient and have experienced failure for much of their academic life, compounded with personal problems, can hardly be expected all of a sudden to become academically efficient as measured by immediate recall of a skill or the delayed application of these skills. These are important concepts for instructors, administrators, and content instructors to realize when evaluating programs.

The subsequent follow-up studies proposed by the author of these type students, including counseling involvement, is strongly encouraged. While philosophically objectionable to some to provide programs for these students in the higher institutions of learning, it is a must as we accept them into our colleges. Of course, every effort should be made to determine causes and to direct our attention to these causes rather than to continue to treat symptoms. Recent endeavors by various committees on improving education may be a step in the right direction as Townsend would probably agree.

REACTION: ASSESSMENT OF A COLLEGE READING COURSE FOR ACADEMICALLY DEFICIENT STUDENTS

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Contrary to what Townsend claims as not realistic, there may be a need for greater agreement for a universally accepted core-curriculum for a college reading and study skills course. Actually, at most schools there should be a requisite that the remedial reading course (defined as developmental in some schools) be dichotomized from the study skills course. When the two courses are one, usually time does not permit thorough coverage and the students' needs are too wide in range to receive ample facilitatory instruction time to enable them to become independent learners.
Results

In June of 1982, transcripts of the 181 students completing the reading course during the 1981-1982 school year were examined. The purpose of this evaluation was to determine if the reading instruction transferred. Grades were collected for college courses which required students to complete heavy reading assignments: biology, history, psychology, sociology, philosophy, political science, earth science, economics, geography, anthropology. If students completed more than one of these courses, a mean grade was tallied. The results of this investigation are reported in the following table.

<table>
<thead>
<tr>
<th>Grade</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Number of Grades</td>
<td>7</td>
<td>44</td>
<td>82</td>
<td>31</td>
<td>17</td>
</tr>
<tr>
<td>%</td>
<td>3%</td>
<td>24%</td>
<td>45%</td>
<td>17%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Examination of pre and post Nelson Denny Reading Test scores revealed a mean reading level gain of two years.

Discussion

After receiving reading instruction, 72% of the 181 students identified as originally deficient in reading were able to achieve a C or better in those courses which required heavy reading assignments. If the SAT and Nelson Denny test scores accurately represented the students' ability to read prior to the reading instruction, this model of reading would seem appropriate for college students. Since three reading professors taught the instruction, a limitation to the study is the manner in which each of these individuals interpreted the course outline.

Further studies should be conducted to determine if course content could also be integrated into the instruction to help prepare for 100 level courses which have been identified as difficult for high risk students. In this study, the courses which produced the greatest failure rate were Sociology 111 (23%) and Economics 101, 102 (25%).
SHOULD WE TEACH COMPREHENSION OR WORD IDENTIFICATION STRATEGIES?
AN EXAMINATION OF THE DIFFERENCE MODEL FOR POOR READERS

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From the late 1960's to the present, reading researchers and educators have directed considerable effort toward developing the notion that reading comprehension difficulties can occur even though a student has word identification proficiency. Much of this work has gained focus from a model described by Wiener and Cromer (1967). As part of their attempt to conceptually organize the phenomena of reading and reading difficulty, Wiener and Cromer (1967) posited what they called a "difference Model." According to this model, reading problems can
occur if there is a "mismatch between the material being read and the response patterns of the reader" (p. 630).

In a later work, Cromer (1970) developed this difference model by suggesting that a "mismatch" could occur if a reader read in a word-by-word fashion instead of in meaningful phrases. Cromer (1970) assigned readers who scored low on the comprehension subset of a standardized test but high on the vocabulary subset to the difference category. And the results of his study showed that these difference readers scored as well as paired good comprehenders when the material was presented in preorganized phrases.

Oaken, Wiener, and Cromer (1971) reported the results of a study which again suggested that comprehension difficulties may be attributed to the way in which the reader organizes input and they made a deliberate attempt to refocus remedial instruction when they stated that, "too often in the literature on reading much emphasis is placed on the mastery of word identification skills, while the importance of the organizational aspects involved in reading comprehension appears to be overlooked" (p. 71). Oaken, Wiener, and Cromer (1971) also take issue with earlier writers such as Durrell (1958) and Garret (1947) who both maintained that the ability to read by thought unitizes as a result of increasing proficiency in word recognition and that comprehension problems result if readers have difficulty recognizing individual words. Oaken, Wiener, and Cromer (1971) suggest that the notion that good word identification results in good comprehension may be only applicable to the acquisition stages of reading; comprehension difficulties at other levels of reading proficiency may be due to other factors such as the inability to understand the organizational patterns used in written language. In addition to the work involving Wiener and Cromer, other researchers—Levin (1973), Guthrie (1973), and Garner (1981), to name several—have also reported studies which support the difference model and have identified strategies for teaching comprehension.

There is no doubt that the recent emphasis on comprehension and the development of organizational strategies for learning from the printed page have merit. Reading researchers have with good reason urged practitioners to focus on comprehension. But as a teacher of poor readers, I have often wondered if poor comprehenders really have mastered word identification. Standardized test scores indicate that some of my students can be appropriately categorized as "difference readers." They score at or above grade level on word identification subsets and below grade level on comprehension subsets. Yet, when orally reading passages at their grade level, these so-called difference readers often miscall words. And even though they score at or above grade level on word identification, their scores are usually not as high as the word identification scores of students who are also good comprehenders. Does it make sense to teach comprehension and organizational strategies to these students when there seems to be some evidence that they are still struggling with the task of quickly and accurately identifying words?

Originally, Wiener and Cromer (1967) discussed the difference model in the context of describing children whose spoken language did not match the formal language patterns that appeared in a typical basal reader. Later, largely through the articles of Cromer (1970) and Oaken, Wiener, and Cromer (1971), the model was expanded in what appears to be an attempt to emphasize comprehension instruction and isolate a comprehension factor in the reading process; the existence of readers who appeared to have well-developed word identification and poor comprehension skills provided an opportunity to study comprehension and the effects of strategies designed to improve comprehension. My concern though, is that practitioners, lured by the extolled virtues of comprehension instruction, may be teaching reading organizational strategies at the expense of providing opportunities to develop fluency to students who will need to devote mental energy to the task of correctly identifying words.

Selected literature that develops the difference model and describes approaches for identifying difference readers is critiqued in this paper. Then standardized test scores collected over a period of three years in a public school district are presented in order to examine some perceived short-comings of the difference model when it is applied to a practical setting.

The Relationship Between Word Identification and Comprehension

Oaken, Wiener, and Cromer (1971) studied the relationship between word identification and comprehension by comparing the responses of good and poor readers when they responded to comprehension questions after silently reading several passages. The subjects who participated in the Oaken et al. (1971) study were assigned to a good reader group if they scored at or above grade level on a standardized test and to a poor reader group if they scored 1 1/2 years or more below grade level. These subjects were matched on IQ scores but the poor readers were simply described as poor readers; no attempt had been made to identify difference readers by comparing vocabulary and comprehension scores as done by Cromer (1970).

The Definition of Word Identification Proficiency

Oaken, Wiener, and Cromer (1971) taught the words that appeared in several passages to poor readers through the use of flash cards prior to reading. The finding was that the responses of these poor readers to comprehension questions on passages for which they had received word identification training were no better than their responses to questions on similar passages for which they had received no prior training. Oaken et al. (1971) then tape-poor readers orally reading several passages. Typewritten transcripts of these reading were made, including all the errors such as false starts, mispronunciations, and omissions. Oaken et al. (1971) found that good readers comprehended less when they read these typed transcripts of poor readers than when they read similar passages under normal conditions. The conclusion Oaken et al. (1971) came to as a result of these findings was that good comprehension was not invariably related to good word identification. That is, the comprehension of poor readers did not improve when they received word identification training but the comprehension of good readers did suffer when they read material containing errors made by poor readers.

The terms "good word recognition" or "word identification proficiency" are not really defined in any of the studies mentioned so far, including Oaken et al. (1971). Though it seems safe to say that Oaken et al. (1971) assume that the ability to recognize and correctly name a finite set of words can be equated with word identification proficiency. They say, "No appreciable improvement in comprehension was found for the poor readers who received such word identification training (training with flash cards that contained words from a particular passage). Thus, it was not demonstrated that good identification is a sufficient condition for good comprehension for all readers" (p. 76).

The Theory of Automaticity Related to Word Identification Mastery.

According to LaBerge and Samuels (1974) fluent meaningful reading takes place when the reader is able to identify words automatically so that the real effort can be directed toward gaining meaning. They say that reading reaches the level of automaticity when the decoding processes are performed without conscious attention. LaBerge and Samuels (1974) compare automaticity in reading to skill in other tasks such as catching a ball where the component processes are performed with little or no attention.

In a study designed to test automatic associative processing, LaBerge and Samuels (1974) asked subjects to name letters
presented when the subjects were involved in another task and then measured the time (in milliseconds) that it took for the subjects to respond. The idea was that if a subject could recognize a familiar letter automatically, little time would be required to shift attention from another task to do so. LaBerge and Samuels (1974) compared the time needed for subjects to identify these familiar letters with the amount of time required for the same subjects to identify unfamiliar letters. Then, LaBerge and Samuels (1974) intensively trained their subjects in the identification of the unfamiliar letters over a period of twenty days. The number of errors made in identifying the unfamiliar letters decreased to zero and the amount of time required was greatly reduced. The number of errors made by the subjects in identifying the familiar letters did not change over time because almost no errors were made in the first place and the time required to name the familiar letters varied only slightly over the training period.

The theory of automaticity as developed by LaBerge and Samuels (1974) is one way of describing the processes involved in word identification mastery. If one accepts the assumption made by LaBerge and Samuels (1974) that decoding or word identification processes function automatically during fluent reading and comprehension, then this automatic processing would seem to be something more than the ability to correctly identify a finite set of words which was how word identification mastery was determined by Oaken, Wiener, and Cromer (1971). A period of twenty days of training and testing was required for the college students who participated in LaBerge and Samuels' (1974) study to gradually learn to automatically associate names with unfamiliar letters. But, other than to say, "The criterion for a student's having learned the words was a minimum of three successively correct identifications of each word." (p. 74), Oaken et al. (1971) do not dwell on their training procedure. It is probably safe to assume, though, that the subjects were trained in one session and that their rate of identification was not timed. Of course, the task of learning real words and the task of associating a name with an unfamiliar letter are not identical. Yet, many elements of the two tasks are similar. At the very least, the findings and the discussion of LaBerge and Samuels (1974) cause me to question whether the fifth graders who participated in the Oaken et al. (1971) study really had mastered the words they were taught. I also question the assumption that the ability to identify a finite set of words can be called word identification mastery. And I wonder if the comprehension of the other readers failed to improve because comprehension is not "invariably related to word identification," as Oaken et al. (1971) maintain or because the poor readers really had not mastered word identification as Oaken et al. (1971) claimed they had.

**Difference Readers' Sensitivity to Semantic and Syntactic Cues**

Isaakson and Miller (1976) attempted to demonstrate that sensitivity to syntactic and semantic cues could account for differences between good and poor comprehenders. They selected subjects on the basis of scores on the Iowa Test of Basic Skills (ITBS). Each selected fourth grade scored within one half year of grade placement on the vocabulary subtest of the ITBS. The good comprehenders scored one half year or more above grade level on the comprehension subtest and the difference readers scored one half year or more below grade level. Each subject was asked to orally read sentences which had been semantically and syntactically disrupted. "The old farmer paid the bean seeds in the rich brown soil." is an example of a semantically disrupted sentence and "The old farmer went the bean seeds in the rich brown soil." is an example of both a semantic and a syntactic disruption. Isaakson and Miller (1976) hypothesized that a confusing word or disruptive element in a sentence would result in an oral reading error if the reader was attending to the meaning and the syntactic flow of the sentence. Conversely, if the reader was reading in a word-by-word fashion, a disruptive word would have little or no effect on oral reading performance. The results of the study supported this hypothesis. Isaakson and Miller conclude:

These findings indicate that good reading comprehenders are sensitive to language constraints in sentences. This sensitivity is indicated by their increase in reading errors when violations of constraints are encountered. Poor comprehenders, on the other hand, are not affected in their reading errors by the presence of semantic and syntactic violations. This apparent failure on the part of poor comprehenders to utilize language structure could account, in part, for the difficulty they face in deriving sentence meaning. Instead of using semantic and syntactic cues to integrate the meaning of individual words into sentence meaning, they seem to ignore the cues and treat words as individual entities...the findings of the present study may be attributed to differences between the two groups of readers in the use made of language structure rather than differences in their ability to read individual words (p. 791).

Chall (1979) proposes that there are five stages in the process of learning to read. An individual at the first stage is learning letters and learning to associate known sounds with these letters; an individual at the fifth stage has learned how to use print selectively to learn what he or she wants/needs to know without having to read great quantities of material. Of interest here, though, is Stage 2. Chall (1979) says:

...reading in Stage 2 is a consolidation of what was learned in Stage 1 through reading what is familiar and already known. And by reading familiar stories fluency is gained. At this stage, reading is not for learning which comes later in Stage 3. Stage 4 reading is not for gaining new information but for confirming what is already known to the reader (p. 41).

In many ways, Chall's description of what happens during Stage 2 reading coincides with LaBerge and Samuels's (1974) discussion of what needs to happen if the decoding processes are to function automatically. The reader must practice and practice until the skills can be performed without thought.

Isaakson and Miller (1976) conclude that the reading difficulties of difference readers were not due to their ability to identify individual words but to their inability to make use of language structure. But viewed from the perspective of Chall's Stage 2 and the theory of automaticity, these results could be interpreted differently. Though the subjects who participated in the Isaakson and Miller (1976) study scored above grade level on a standardized test, these above grade level scores do not necessarily mean that these students and mastered word identification. According to Chall's five-stage model, readers do learn decoding at Stage 1 possibly with enough skill to score well on a standardized test. But these decoding skills may not have been confirmed. The subjects in the Isaakson and Miller (1976) study may not have passed through Stage 2 or reached a level of automaticity. The fact that the oral reading of the difference readers was not disrupted by confusing words does not mean that these readers were unable to attend to or unable to use language structure as Isaakson and Miller (1976) maintain. An alternative suggestion might be that these readers were reading in a word-by-word fashion because they needed to...to gain fluency...to confirm their knowledge of sound-symbol correspondence...to reach a level where they could identify words without conscious thought. Perhaps then, after they had really mastered word identification they would on their own attend to the organizational structure of sentences.

Advocates of the difference model and comprehension instruction may be attempting to force students to perform a skill they are not ready to learn. These students, namely difference-
poor readers may still be at Stage 2 and to repeat what Chall (1979) said, "Stage 2 reading is not for gaining new information but for confirming what is already known to the reader."

A Critique of the Practice of Using Standardized Test Scores to Identify Difference Readers

A comment made earlier in this paper was that even though so-called difference readers may score at or above grade level on word identification, their scores are usually not as high as the word identification scores of students who are also good comprehenders. A reason for this might be that (a) good comprehenders who score substantially above grade level on word recognition subtests have really mastered decoding and the process functions automatically and (b) the so-called difference readers have a grasp but not a mastery of word identification. These readers would still be at Stage 2 of Chall's (1979) model.

The Nelson Reading Test (The Nelson), 1977 has been administered in grades three and six over a period of three years in the school system where I teach. The Nelson consists of a word meaning subtest for which students are required to select a word from a list of three that has the same meaning as another word. Brief reading passages followed by comprehension questions make up the comprehension subtest of the Nelson. The results from several years of district-wide testing support the comment above—even though difference readers score at or above grade level on vocabulary, their scores are usually not as high as those of students who are also good comprehenders.

From 1980 to 1982, the mean grade level vocabulary scores of good readers, those who scored above grade level on both vocabulary and comprehension ranged from 5.65 to 5.7 for the third graders and from 8.29 to 8.38 for the sixth graders. But the mean grade level vocabulary scores of the difference readers, those who scored above grade level on vocabulary but below grade level on comprehension ranged from 4.80 to 4.96 for third graders and from 6.98 to 7.35 for the sixth graders. In all cases the mean grade level vocabulary scores of the good readers were higher than the mean grade level vocabulary scores of the difference readers. According to a computed t-ratio these differences were significant at the p .01 level or better. The difference between the mean scores of the good readers and the difference readers was an entire grade level in two cases. These results suggest that difference readers have not attained word identification skill to the same degree as good readers. And contrary to Isakson and Miller (1976) these results indicate that difference readers may differ from good readers in their ability to read individual words. One question about the results quickly comes to mind though. Are Nelson or any other standardized test vocabulary scores good indicators of word identification proficiency. Both the content validity of vocabulary subtests and the validity of assigning grade level scores are at question here. And the answer to this question would have implication not only for the results presented here but for the many other studies in which grade level vocabulary scores were used to determine assignment to difference reader groups.

Conclusion

The argument presented in this paper is that the difference model as developed in the work of Wiener and Cromer may not describe a real phenomenon. That is, difference readers, students who are poor comprehenders but good word identifiers, may not really be good word identifiers or at least not as good as readers who are also good comprehenders. The first point made is that the theory of automaticity as developed by LaBerge and Samuels (1974) and Chall's (1979) discussion of stages in the reading process suggest that word identification mastery means that a reader can identify words easily, quickly, and with little conscious effort. The second point made is that standardized test scores as used in the studies which support the difference model may not be accurate indicators of word identification mastery or automaticity. So the comprehension difficulties of the students who participated in these studies may have been related to poor ability to recognize words.

Recent work in the area of reading comprehension has shifted the focus of reading instruction away from word identification. Such a shift may be appropriate for the many good readers who are ready to use reading as a way of learning. But comprehension instruction may not be appropriate for all students. Some may still need to develop word identification skill. The question, "Should we teach comprehension or word identification strategies?" needs careful consideration.

REFERENCES


AN ANALYSIS OF THE AMERICAN HERITAGE WORD LIST—IMPLICATIONS FOR TEACHING BEGINNING READING

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Basic word lists have been a part of reading instruction since Thorndike (1921) published a list of 10,000 words in 1921. Edward Dolch (1936) published the Dolch 220 fifteen years later. Thousands of young readers have been influenced by the Fry (1957, 1980) Dolch, and other word lists.

The research that is now dominant in this area has been generated from the American Heritage List (Carroll, Davies, and Richmen, 1971). This is a count of approximately five million running words selected from approximately 10,000 samples of 500 words in 17 different curriculum areas in grades 3 through 9. Samples were also drawn from magazines, fiction, and nonfiction books. There were 87,600 different words in this computerized study. Sakley and Fry (1979) edited the list down to the 3000 most frequently occurring words. Fry (1980) further refined the list and condensed it to 300 words. The first 100 words and their variants from Fry’s list account for 50 percent of the 5,088,721 words taken from 1,045 different books in the American Heritage count. The 300 words from Fry’s list account for 65 percent of the 5,088,721 words in the American Heritage count.

The implications here are obvious. Beginning readers must learn to recognize these words instantly in order to achieve fluency in reading. Beginning readers who stumble over these words are going to encounter grave difficulty in getting the meaning of sentences.

The major rationale of this paper is that by using such a sound research base as the American Heritage word count, practical conclusions about word lists, syllabication skills, vowel rules, etc., can be established which will economically assist teachers of reading in the classroom.

Problem

This paper will attempt to answer some basic questions about beginning reading instruction by using the American Heritage data. These questions specifically ask:

1. Are the 95 Most Common Nouns by Dolch the “most common nouns”?
2. Does the Dolch 220 list include the most frequent words in beginning reading?
3. Since the Dolch 220 list is used so widely by practitioners, does it indeed meet the teacher’s and beginning reader’s need for a basic word list?
4. What could a teacher show a teacher about syllabication that would help most frequently in recognizing unknown words in a textbook?
5. What, if anything, needs to be taught regarding syllabication?

METHOD AND RESULTS

Basic Word Lists

To answer questions 1, 2, and 3 stated in the problem, a new list was compiled of the 95 most common nouns from the 3000 instant words of Sakley and Fry (1979). Sakley and Fry listed the 3000 most frequently occurring words with their variations (water, watered, watering, waters) and frequencies (number of times each variation occurred in the original five million word sample). This writer subtracted those variations which were clearly not nouns and revised the frequency counts accordingly. The new noun list was developed in rank order according to the frequency counts.

There is no guarantee, since context was omitted from the research by Sakley and Fry, that a word such as “water” appeared only as a noun in the original five million word sample. But since a development of instant sight vocabulary is the objective, this is not a major limitation. For example, the new list of 95 most common nouns was retrieved from the first 387 words of highest frequency. There is little doubt that these words must be mastered for fluent reading of school material.

The Dolch List of 95 Common Nouns was then compared to the new list derived from Sakley and Fry’s condensation. A total of 54 words (56.8%) of the 95 Most Common Nouns by Dolch were not included in the new list of 95 most common nouns, nor in the first 400 words of highest frequency by Sakley and Fry. Furthermore, 56 words (59%) found on the new list, and pulled from the first 387 words of highest frequency by Sakley and Fry, were not found on the 95 Common Noun List by Dolch.

The Dolch 220 list was then compared to Fry’s (1980) compilation to determine how many words on the Dolch 220 failed to appear in Fry’s high frequency list. The number of words appearing in the 300 words of highest frequency by Fry (1980), but omitted from the Dolch 220, were also identified.

The findings produced some very interesting results. Fifty-two of the words (23.6%) on the Dolch 220 list are not on Fry’s list of 300 words of highest frequency. Additionally, 134 words (44.6%) from Fry’s list of the 300 most frequently occurring words are omitted from the Dolch 220 list. A total of 105 words (33%) from Fry’s list of 300 are not found on either the Dolch 220 or on the Dolch 95 Common Nouns.

Syllabication

To answer questions 4 and 5 raised in the problem regarding syllabication, the writer used Sakley and Fry’s (1979) condensation of the American Heritage Count. A multisyllabic word had to appear at least 500 times in the original sample count to be included for analysis. Five hundred multisyllabic words met this criterion. Since syllabication is ostensibly an aid to pronunciation, all words which had a visual pattern in common were listed according to patterns, i.e., af ter, num ber, mat er. Each list was then checked to determine which visual patterns appeared most frequently, and which would predict pronunciation with the highest utility.

Table 1 shows the number of words which presented a certain visual pattern in some part of the word, the rule for dividing that pattern into syllables, and the percentage of words that show an instance of correct pronunciation.

In Table 2, there were three basic visual patterns that emerged as significant. The first group contained words with two consonants (the same or different) that occurred between two vowels. The standard approach is to divide syllables between

The second group included words which showed an instance of one consonant occurring between vowels. A standard syllabication rule states that when a vowel in a multisyllabic word is followed by only one consonant; the first syllable may end either with that vowel or with the following consonant. Examples are: pa per, ti ny, and la dy or niev er, mod ern, and

The last group (Suffixes) included words which had a suffix or a group of letters visually similar to a suffix (nev er; prop er). The approach is to detach the suffix and look for a root word which might be known.

Frequency refers to the number of times (out of the 500 most common multisyllabic words) a given visual pattern occurred. Utility refers to the percentage of words in a given pattern that can be pronounced accurately when applying a rule based on that pattern.
Many words contained more than one syllable or visual clue. Therefore, the aggregate frequency exceeded the 500 count of the basic list. The Thorndike-Barnhart Beginning Dictionary, Fifth Edition, was used as arbiter.

Conclusions

If the first 300 words of highest frequency in the American Heritage Word Count make up 65 percent of our written school material, it is safe to conclude that these words must be recognized instantly by beginning readers of any age. This includes remedial students in middle or secondary school, and adult functional illiterates. Since so many of these high frequency words were omitted from Dolch’s lists, it appears that the once extremely useful lists are now suspect. Teachers are advised to consider the newer Fry list (1980) of 300 words, and Sakley and Fry’s (1979) longer list. These lists were derived from a very wide sampling and basic research that is quite impressive.

It seems evident from this study that there is no rigid hierarchy of syllabication rules which must be followed sequentially. There are, however, some inferences that need to be stated. It seems that the most significant patterns are the VCCV (as in num ber), the VCV sequence (as in sto ry and mod ern), and the suffix pattern (as in arm er and lift ed). These will be seen very often by the student and need to be mastered. Teachers would be justified in stressing these patterns. It should be noted that although only 45% of the words which contain a VCV pattern can be predicted to have a preceding long vowel, this still includes 103 words or over 20% of the 500 most frequently occurring multisyllabic words.

This study attempted to identify some important aspects of syllabication. Because certain patterns were not found to appear frequently in the most common words is not a reason to dismiss them totally. There needs to be further investigations regarding their frequency and utility.

REFERENCES


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<td>(rath/er, ev/er)</td>
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*Seventy-five percent of the 50 words which had non-morphemic "suffix look-alikes" were correctly pronounceable as closed syllables once the letters were removed (rath/er).
DEVELOPMENT OF A SCALE FOR ASSESSING THE ATTITUDES OF COLLEGE STUDENTS TOWARD READING

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A review of the literature revealed a paucity of research available on the attitude of college students toward reading. Although research has been done at the elementary and secondary levels on the effects of attitude and achievement and attitude and self-concept, a review of the literature revealed no assessment scales as well as very little research related to the attitude toward reading for the college-level student.

According to Zirkel and Green (1976) and Tullock-Rhody and Alexander (1980), the way students feel about reading is closely related to reading achievement at both the elementary and secondary levels. Although studies have been conducted on the reading habits of adults and/or college students, a review of the literature revealed little research relating to how college students feel about reading.

An individual's attitude is usually expressed in terms of personal preferences or beliefs. Any instrument surveying attitudes should arouse students to respond to statements that are personal, are within the respondent's social milieu, and are action-centered (Hess, 1978).

This study was designed to develop a reliable and valid instrument to measure the attitude of college students toward reading and to recommend uses of the scale.

Development of the Scale

The following procedures were used in the development of the college reading attitude scale: a) selection of instrument type, b) selection of the population, c) development of statements, d) establishment of subscales, e) determination of data analysis, f) pilot study, and g) administration of the scale for the purpose of establishing reliability and validity.

READING ATTITUDE SCALE

Selection of Instrument Type

In the selection of a technique for designing an attitude scale for college students toward reading, several approaches were considered such as the Thurstone Technique (Oppenheim, 1966), Osgood's Semantic Differential (1971), and the Likert Analysis (Edwards, 1957). Alexander and Filler (1976) ascertain the teacher observation of relevant behaviors over time is the most reliable way to assess attitudes, however, time and schedule constraints at the college level make this inappropriate. Since no scales for assessment were apparent in the literature, this investigator chose to use the Likert summated rating technique because its design permits students to express degrees of feeling concerning the behaviors reflected in the items sampled. Since degrees of feeling exist, this type of pencil and paper technique was considered to be the most appropriate and expedient for use in the college classroom.

Selection of Population

The population used in this study was students who were sophomore through senior elementary education majors enrolled in a state-owned and a state-related university in Pennsylvania.

Development of Statements

Approximately 50 sophomore through senior-level elementary education majors were asked to write four or five statements which reflected their personal attitude toward reading. After reviewing the literature, this investigator wrote several statements which research showed that were related to reading attitude. From a synthesis of the 70 initial statements, the investigator selected 50 statements which were placed in random order for the pilot study.

Establishment of Subscales

This investigator chose the areas of school-related reading, recreational reading, and general reading as subscale groupings. If the data are organized into these groupings it can be used to aid in diagnosing a student's attitude toward reading. Sample items on the scale from each subscale were as follows:

School related reading—I avoid taking courses that have a reputation for requiring much reading.

Recreational reading—I often read in my leisure time.

General reading—I like to read books written by well-known authors.

Determination of Data Analysis

The literature did not reveal any specific or preferred means to use for analyzing data on the Likert scale. This investigator used the Likert Attitude Scale Analysis Main Program by Kohr (1974) which was made available to her by The Pennsylvania State University.

Pilot Study

The pilot study was completed after having the questionnaire, composed of 50 statements, read by colleagues and having 40 preserve elementary education majors at Indiana University of Pennsylvania complete the questionnaire. The data were analyzed and the items were revised. The questionnaire was then administered to 86 sophomore through senior elementary education majors at The Pennsylvania State University.

Administration of the Scale for Reliability and Validity Measure

The data from the 86 students were analyzed for reliability and validity checks of the attitude scale. Crano and Brewer (1973) suggested a coefficient alpha of .80 or above indicated a highly reliable instrument. The results of the analysis of the data as computed using the Kohr Program showed the instrument to be highly reliable with the t obtained on 50 items being 0.92. Likewise, on 38 items the t was 0.90. Even with decreasing the items to 17, the t was 0.80.

Downie and Heath (1970) suggest ranges between .40 and .60 are accepted as validity coefficients. Of the 50 items on the pilot scale, the correlation of 35 items was sufficient for their inclusion on the final scale. The scale was reduced to 26 items to keep the scale brief for ease in administering and scoring. Other indications of validity for this scale are as follows: a) the items came from a synthesis of comments by college students, b) the individual items retained on the final scale are correlated at an acceptable level with the total scale, and sufficient T-scores.

Factors to Consider When Developing an Attitude Scale

The following factors are suggested by the author for consideration when developing an attitude scale.

1. Look at the nouns used in each statement.
2. Include a word in the statement that will "trigger" reading.
3. Omit double-barrel statements. Example: I enjoy reading and sharing what I have read with others.
4. Use statements that contain I or me.
5. Do not use factual statements, i.e., I can learn something from reading my textbook, because these do not reflect attitude as well.
6. Some key words to use are dislike, boring, unimportant, confuse, reluctant, fear of, and ridiculous.
7. The questionnaire should comprise an equal amount of positive and negative statements.
8. In analyzing the data and determining items to select for a scale, ascertain the number of high and low responses as well as whether there is a large number of high undecided responses.
9. Note the statements to which all responses are either strongly agree or strongly disagree by both the high and low response groups.

Discussion and Recommended Uses of the Scale

The development of a positive attitude toward reading is important at all levels of instruction. The complexity of learning in higher education often requires that the student complete research papers or additional readings to master course content. Students with a poor attitude toward reading may not readily complete their assignments satisfactorily. They often rely on information from a classmate, instruction of content for the subject area by the professor or by logical reasoning in order to pass the course.

The following uses for the attitude scale are recommended for consideration:

1. It is suggested that the scale be used at the beginning of a course. The results could be used by the instructor to motivate students to complete the reading for course requirements or to go beyond the assigned reading and read for pleasure.

2. It is believed the scale could be used as a means of counseling students to seek remedial instruction should their poor attitude be a result of the student's inability to read at the difficulty level of the material.

3. If a student indicates a negative attitude toward school related reading on this scale and a positive attitude toward recreational reading, then more diversified strategies might be provided for accomplishing course content.

4. Using the questionnaire with elementary education majors to determine their attitude toward reading is important because their enjoyment of reading determines the influence they will have on young children.

5. The questionnaire could be administered to college freshmen and correlated with their Scholastic Aptitude Test Scores and then correlated with their achievement after four years of college.

Anyone wishing a copy of the completed scale may contact:

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REACTION: ELLIOTT'S SCALE FOR ASSESSING THE ATTITUDES OF COLLEGE STUDENTS TOWARD READING

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Professors of college courses constantly search for predictors of success in their courses. Grade point averages, various subject area tests, measures of attitude toward the subject area, National Teacher Examination scores, Graduate Record Examination scores, and Scholastic Aptitude Test scores have been among the predictors most often used by researchers. Often results have found none of these measures to be good predictors of success in a particular course. Elliott has developed an assessment scale that heretofore has been missing from the literature - one that measures attitudes of college students toward reading. With so many college courses requiring outside readings, interpretation of research reports, and the writing of papers based on those readings, it would seem worthwhile to include this measure as a possible predictor of achievement. If results of each study indicate that attitudes toward reading is significantly correlated with achievement in courses requiring a good amount of reading, then it would seem, as Elliott suggests, that college instructors should take time to motivate students, to counsel them, and to provide proper motivation for doing the readings.

Elliott has suggested that the 26 items on the scale can be grouped into one of three rational subscales—"school related reading," recreational reading," and "general reading." It would seem worthwhile to collect more data and submit the data to factor analyses to determine if these three rational subscales are indeed separate factors. Oftentimes in factor analyses the results will produce different subscales from those expected. Using the factors obtained from factor analyses, researchers could then determine whether any or all of the factors correlate with achievement in college courses.

Elliott suggests that in developing attitudes scales one should avoid factual statements such as, "I can learn something from reading my textbook" because those do not reflect attitudes. Yet she has two such items. These items "I could easily suggest two or more books that a friend might read for entertainment" and "I read at least five books a year" perhaps need rewording. It would be interesting to see how these two items, as they presently are worded, load in a factor analysis.

Another suggestion made by Elliott is that "the questionnaire should comprise an equal amount of positive and negative statements." While Elliott holds true to this suggestion, two items on the scale stated positively - "I prefer to read rather than to listen to music" and "I almost always finish a book I have started to read" - are simply negatively reworded to make two additional items - "I would rather listen to music than to read" and "I frequently fail to finish a book that I have started to read." Since the pairs of items are measuring the same attitude, one item from each set should be removed from the scale.

Even though some questions can be raised about it, the scale developed by Elliott shows much promise. Results from future studies with the scale will give college teachers at all levels of instruction much needed information on reading attitudes and whether or not they need to spend time on a topic that frequently gets neglected.
THE USE OF COMPUTERS IN THE EDUCATION OF PRESERVICE READING TEACHERS

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Introduction

Although computers were initially designed to speed mathematical calculation and guide industrial production, their pedagogical potential was quickly recognized. Pressey developed programmed teaching machines in the 1930s, and predicted an "industrial revolution" in education as early as 1932 (Unwin and Atkinson, 1968, p. 7). B. F. Skinner's work on teaching machines and programmed instruction began receiving public attention in 1954. With the increasing availability of computers to university researchers in the 1960's, several large scale studies were undertaken on the pedagogical use of computers. These studies can be seen as part of the great expansion of research and education which followed the launch of Sputnik by the Soviets.

Research in the 1960's on the pedagogical applications of computer technology, however, was mostly confined to major universities with large mainframe computers. Thus, while these studies indicated that computer assisted instruction is feasible, they could not demonstrate its practicality (Baker, 1971). Systems were costly and complex so widespread utilization was unlikely. Some research, then, and more recently, brings to mind the danger, cited by Rusby (1979), that educational computing may be pursued to find an application for computing rather than to assist in the teaching and learning process. With the potential of the Technology Education Act of 1982 (H.R. 5773) to put donated microcomputers in every public school in the nation, an idea sponsored by computer manufacturers, this danger becomes more tangible (Practical Applications of Research, 1982).

More significant in the minds of teachers is the danger that educational computing will be instituted without teachers being properly instructed in the technology. Baker (1982) reports that over 40 percent of respondents in 15, 834 United States school districts desired teacher training in instructional computer materials and teachers. Teachers participating in a study reported by Morgan (1975) were strongly in favor of increased time and training being given to teachers using and preparing CAI lessons. Gage (1982) reports that nearly all the teachers attending a "microcomputer fair" in Janesville, Wisconsin, expressed concerns about inservice training in computer use. Others have noted the fear that teachers, especially those lacking computer skills, would be made obsolete or replaced by computers (Powers, 1981; PAR, 1982). The jealousy following from the attention and security offered the select few teachers who have computer skills has also been posted as a serious problem (Calkins, 1982).

It is not surprising that Stanchfield (1974) found ignorance of computers to be a primary factor in the resistance and neglect shown by many teachers toward classroom computer technology.

In order that the widespread confusion regarding instructional computing not be reproduced here, some distinctions within the instructional application of computer technology must be made. First, although it is often difficult in practice, teaching with computers should be distinguished from teaching about computers. This distinction becomes cloudy since students will learn about computers by working with them as instructional media and often use computers in courses directed to instruction about them (Rusby, 1979:9).

In teaching with computers, a distinction is generally drawn between CMI, computer managed instruction, and CAI, computer assisted instruction. Again, the difference can become fuzzy in practice. Computer managed instruction, CMI, involves the use of computer technology to aid the teacher in the management aspects of instruction and particularly in individualized instruction. That is, the computer is used here to coordinate and monitor students in non-computerized instructional programs. (The same functions of coordination and control may be performed by the computer in CAI which is why the distinction between CMI and CAI can be fuzzy.)

The four major functions performed by CMI systems are test scoring, diagnosing, prescribing, and reporting (Baker, 1971, p. 53). The benefits of CMI are to remove from teachers the burdens of managing instruction, of coordinating the learning of students, each of whom is progressing at a particular rate through an individualized set of instructional materials with personal successes and difficulties. CMI, then, is to free teachers from management so they may focus on instruction. Baker (1971) noted in his review of CMI systems that while a great amount of detail was provided on what could be done with the systems, very little information or guidance was offered on how they should be used. This was particularly true regarding computer generated reports for diagnosis and prescription. The teacher's role in utilizing such reports was entirely neglected. Little in more recent studies indicates that this omission has been remedied.

In computer assisted instruction (CAI), computers are used as instructional media, either alone or in concert with other media. Such computer assisted instruction can occur in one or more of a variety of modes, including drill and practice, tutorial, simulation, data/information retrieval, and testing. Within CAI, however, the computer is usually used in combined modes as a complex training aid.

This is certainly true of the published studies of CAI for preservice teachers in reading education. These studies primarily record a mixture of the Drill and Practice and Tutorial modes of CAI. The Simulation mode is also included, though less frequently.

Computers in Reading Education: The Undergraduate Level

While the use of computers in teaching has grown steadily over the past two decades, there appears to be little published research relating the specific application of computers to the instruction of preservice teachers enrolled in reading education courses. Although such applications might range from drill and practice to sophisticated problem solving modes and possibly to the integration of computer literacy modules within reading methods courses, the available published reports do not suggest that much has been done beyond the drill and practice, tutorial, or management stages. However, published reports may not be representative of the ways in which computers are used in education courses related to reading, since much of the information is not disseminated through journals, ERIC, or computer networks such as the Minnesota Educational Computing Consortium. In light of the preceding remarks, the following summaries are presented as ways in which the computer has been or is being used in courses directed to reading methods for preservice teachers.

Lorber (1973) described a self-paced competency-based program involving 1800 secondary level preservice teachers at Illinois State University. The program, known as the Professional Sequence, was designed to replace courses taught by the traditional lecture method. One of the courses in this sequence was secondary reading methods.

This new professional program for teacher education was designed to free students from regularly scheduled classes, eliminate non-essential information and duplicated course content, administer evaluations, and provide continuous information regarding learning progress. The Pyramid System was designed to present subject matter to students. Pyramid (Program Yielding Rapid Access Major Information Devices) consisted of a series of audiovisual storage and playback systems and a Nova mini-computer control unit. In addition to controlling audiovisual materials, Pyramid also recorded information about...
the user, called up software programs, and processed CAI programs on topics such as writing objectives.

Students followed a booklet, the Professional Sequence Guide, which contained self-instructional packages written by faculty members and students. At the end of the week students received a printout of objectives which were attempted, objectives mastered, and objectives not mastered. Each week the student and the advising faculty member reviewed the printout to determine what the student's difficulties were and how these problems might be overcome.

Advantages of the program, according to Lorber, were that faculty knew when students stopped working. Also, the effects of individualized weekly conferences between faculty and students was reported to be positive. The revision of packages within the Professional Sequence was based on several data which included the number of times each package was attempted, passed, or failed, the mean number of hours students spent completing packages, and the average ratings students gave learning activities in each package.

Semmel (1976) developed and evaluated a rather elaborate Computer-Assisted Training System (CATTS), which was used in conjunction with a pilot study of a competency-based class at Iowa State University. The objectives of the project were to enable student tutors to evaluate their questioning behaviors and to use the relevant questioning behaviors in various instructional settings. In the class, handicapped children (tutees) received one-to-one reading instruction from tutors. In order to measure and modify the tutors' questioning behaviors, a validated interaction scale, the Teacher-Pupil Interaction Question Response System (Sitko & Heshusius, 1975) was used by trained teachers connected with the project.

During the pilot study of the project, preservice teachers tutored children in a laboratory classroom equipped with desks, microphones, chairs, and a long, one-way mirror. Scopes or TVS were also placed within view of the desks. In addition, videotape cameras were installed in two of the three tutoring stations. Behind the one-way mirror was a small room where the rater coded the teacher and pupil behaviors. The rater used a coding button box which was tied into the computer. Other parts of the coding station were, two videotape recorders, a videotape monitor, and earphones.

Preservice teachers in the pilot study were randomly assigned to one of three treatment groups: (1) CATTS Instantaneous Scope Feedback, (2) CATTS Delayed Video Feedback, or (3) Supervisory Feedback. Following the tutoring session, the Scope Feedback group received feedback on their questioning behaviors. During the lesson, teachers could observe a moving bar graph on the TV or scope which rapidly displayed the levels of questions posed by the teacher immediately following each query. Thus teachers received feedback as they were engaged in the lesson. The Delayed Video Feedback group also received a printout of their performance following the lesson and they were given the opportunity to review each lesson videotape following the tutoring session. The Supervisory Feedback group received verbal feedback from a supervisor along with a printout of their questioning behaviors.

Several conclusions from the project's pilot study are of significance for the present discussion. First, the two CATTS feedback groups, both of which made maximal use of the computer, performed most effectively in terms of the project's objectives. Second, although all groups evidenced an increase in asking high-level questions, the CATTS Delayed Video group demonstrated the greatest mean increases of this behavior followed by the Scope Feedback group. Analysis of answers to a student questionnaire revealed that 24 percent of the tutors in the Scope Group felt the scope was distracting, but 38 percent disagreed with this opinion. Sixty-two percent of the preservice teachers receiving printouts felt these computerized references enabled them to observe trends in pupil performance.

The majority of tutees, all of whom had been administered preand post-reading measures, made marked gains in reading comprehension and sight vocabulary.

Northwestern University also adopted CAI and CMI as part of a pilot program for their competency-based Tutorial-Clinical Program in Education (Berquist and Blachowicz, 1977). The computer integrated three elements into the Tutorial-Clinical Program:

1. The management system—This use of the computer held information on students, tested students, assigned appropriate instruction, and monitored student progress.

2. The reading information retrieval system—In this instance the computer cross-referenced bibliographic data with abstracts contained in ERIC.

3. The instructional component—This component used CAI for..."instructional lessons, preclassroom activities and simulations, and in-class utilization of prepared lessons and activities" (p. 42).

Ten lesson modules consisted of audiotapes, print assignments, and computerized lessons directed to reading readiness, approaches to beginning reading, word attack and phonics skills, informal and formal diagnosis and record keeping, and comprehension questioning. At this writing, no evaluation data concerning the program has been published.

Thompson (1973) described a pilot study of a computer-aided program in phonics analysis for 36 elementary level preservice teachers at The Pennsylvania State University. The purpose of the program was to "...appropriate branch a student to instructional material based on his/her prior knowledge of the concept to be taught and thus individualize instruction" (Thompson, 1973, p. 92). Students in the sample were administered a pretest on the computer. Items on the pretest were reflective of course objectives which related to phonics instruction.

During the pretest students were branched to various instructional questions or activities depending on their ability to correctly respond to the preceding questions. Here, the audiotape and images on the computer were integrated into the program. The post-test questions were essay type or short answer. These questions were not evaluated by the computer because of limitations on the machine's ability to "read" correct responses stated in a number of ways. The data revealed that students did not make significant improvement in knowledge of phonics as measured by pre- and posttest data.

Among the problems cited in the study was the "guessing factor." That is, students might correctly guess the answer to a question or questions. In such a situation, the computer branched over information which the student did not know.

Mason and Blanchard (1979, pp. 43-44) reported on efforts at the University of Delaware's project to help inservice and preservice teachers develop skills in reading instruction. FASTER (Fast Accurate Symbol Transcription for Evaluating Reading) was composed of games to help students learn how to score and interpret word recognition test, to use error marks necessary for scoring an IRI, and to interpret IRI passages and word tests.

Also used was a program called the "Site Word Method Trainer" for instruction in methods of teaching sight words. Mason and Blanchard (1979, p. 44) stated that students watched cartoon sequences showing a teacher involved in sight word instruction. These cartoons appeared on the computer. When the teacher in the cartoon made an error, the student was to stop the cartoon and identify the error. If the student did not detect the error, then the computer stopped and asked the student what error had been made.

A highly innovative treatment was conducted by Blough (1982) in which computer aided glossing was applied to test passages. This use of the computer is especially promising since students decided when gloss should be used as they engaged in
reading. As Blohm (1982, p. 1) points out, computer aided glossing affords a vehicle for individualizing instruction and for permitting the learner to be consciously aware of his or her comprehension. Another advantage cited was that the professor organizes the courseware content and thus it reflects the professor's expectations.

Conclusion

Consideration of the foregoing research regarding the utilization of computers in undergraduate reading education courses gives rise to several remarks. Initially, it would seem that CAI and CMIs have been used largely in competency-based teacher education programs. Today there are indications of a more integrated incorporation of computers in methods courses as demonstrated by the use of single programs. This tendency is promising because it suggests a more complete utilization of the technology's pedagogical potential. That is, content and process may be merged if students are taught how computers facilitate learning and are given the opportunity to interact with computers in a meaningful way (e.g., through glossing, teaching simulations, etc.).

Earlier in this paper a distinction was drawn and immediately qualified, between learning about computers and learning with computers. It was suggested that the distinction is difficult to maintain in practice. The proposal here is that it be overcome actively by putting the content presented in computer assisted instruction with a reflection on the mode and process of that presentation. To draw an analogy, such an integration is appropriate and desirable with regard to modeling a comprehension strategy for teachers which they will later use independently. This sort of integration is proper whenever a behavior, approach, or tool is to be treated as both a topic of learning and a resource for learning. The computer is such a tool.

This integrated utilization of the computer would overcome several potential problems in the educational use of computers at the undergraduate level, which could also be taken as areas for future research. First, reflective utilization of the computer in reading methods courses should serve to reduce possible fears students have of the machine, especially those students who may well be faced with computers when they begin teaching. Second, it combines reading methods content, the advantages of CAI, and some of the goals of the more popular courses on computer literacy. This second point is noteworthy is that some universities may find it impossible to require additional coursework related to computers without simultaneously reducing baccalaureate degree requirements, a reduction unlikely to meet with the approval of university administrators. On the other hand, preservice teachers can be advised and encouraged to enroll in computer literacy courses, but not all will choose to do so. However, these problems could be efficiently addressed by infusing awareness of computers and how they affect the learner into reading methods courses. Such an integration of computer instruction in reading methods courses could also begin to bridge the gap between awareness of computer techniques in general and knowing how to apply them in classroom situations.

Bringing reading methods and computer literacy together, though, presumes that reading professors will be knowledgeable about computers; they will know how to create programs or will be able to work with programmers to develop programs suitable for undergraduate reading methods courses.

The introduction of computers into the classroom raises questions which will be of interest to scholars across the disciplines. Increasingly, it will be important in the years ahead to consider how this emerging technology will affect the broad spectrum of variables related to learning and thus to reading methods.

REFERENCES


PEER TUTOR TRAINING IN READING AND STUDY SKILLS: A RESEARCH REVIEW

ALICE L. RANDLETT

Something funny happened to me on the way to this Forum. I now understand why all those conference sessions I attend never seem to have much to do with the titles in the brochures. When I set forth to examine the research about peer tutors in college reading and study skills, I didn't know what purported to be research would turn out to be largely assertion, mainly of the how I-do-it-real-good-in-my-reading-study-skills-program. Now, as a librarian, I'm familiar with this approach, but I had been led to expect that this was not the case in "real" disciplines. Not wishing to incur the wrath of a horde of reading teachers, I am saying in no way that this is an unreal discipline, more, that the study of human effects on others' learning is at best chancy and fraught with politics. The use of peer tutors is based on a rickety statistical foundation. It's source is really an 18th Century American optimism in the goodness of human
nature: the illimitable improvability of humankind.

Part of the difficulty in getting hold of the philosophy underlying peer tutor studies lies in the fact that most writers/researchers in the topic seem unsure as to whether an increase in self-esteem is the same as an increase in learning, or indeed, if self-esteem is a prerequisite to learning. Most agree that there has been an increasing need for tutorial services with the advent of open admissions in the 1960's. What seems to somewhat surprise writers on the topic is that more and more traditional students have been availing themselves of these services.

Having read what seems to be every ERIC report and journal article from 1970 forward, I feel sure only of the uncertainty of most of the conclusions. A true research design is missing in most cases, and in many that claim to use external criteria as evaluative measures, the measures themselves are perhaps inappropriate, i.e., grade point averages (GPA) and persistence in college. Both of these are so composite in nature as to render them doubtful as standards for the effectiveness of one treatment. In fact, the nature of any tutoring is so variegated as to make it unapt to yield to traditional research methodology.

Evaluation

The chief difficulty in evaluation of tutoring programs at the post-secondary level lies, however, in the almost universal lack of specific, defined goals and objectives for those programs (Reed, 1974). Other authors recognize the need for comprehensive planning and statement of purposes, goals, objectives and standards (Arndt, 1975; Starks, 1980).

An interesting formatative evaluation was conducted at the Ohlone College Reading and Writing Labs by a team of five outside investigators who employed individual interviews as the data gathering method. The interviews were triangulated using repeated sessions and alternate interviewers. The labs were found to be successful according to their established goals (Stone, 1980).

Improved scores on standardized reading tests is frequently used as a measure of success of tutoring but it is difficult to find adequate tests of college level skills (Wassman, 1977). Also, the skills they do test may not transfer to real life situations. Several reports, e.g., Tatham (1973) and Dylla (1980) base significant improvement for their programs on pre-and post-tests in skill areas but again leave room to wonder at whether these improvements were transferable to regular class assignments. This may be a reflection of the confusion as to the real purpose and role for reading and study skills. Can skills be taught in isolation so that carryover to content occurs? Almost all studies which report an evaluation component used either the combination of GPA retention or pre/post-test scores.

Another problem with evaluation of programs lies in the confusion of long and short range goals (Reed, 1974). Clarke (1976) says that evaluation should always be both short and long range with short-range measuring progress by improvement in cognitive areas, and long-range looking at the degree of relevance to student goals as well as examination of post-target success after leaving school.

Hubin (1978) reported an interesting twist to evaluation in that academic performance of both tutee and tutor in terms of GPA and retention is performed. Curran (1978) suggests measuring GPA against ACT scores, with the ACT figure acting as a prognosis standard. Schulman (1980) stresses the importance of running a tight ship and keeping files on everything, e.g., logs, contracts, pre-tests, post-tests, attendance counts, brag files, etc. The motivation here may be “Show them under in paper when they ask how you’re doing.” Many studies, e.g., Gudan (1981) report using questionnaires sent to tutees to evaluate both tutors and programs. As expected, most report success.

Both Cohen (1981) and Sanders (1979) have performed meta-analysis on the outcomes of tutoring programs. Sanders’ work was specifically directed to college level studies. She found that in analyzing 28 studies done between 1960-1977, that 1) the programs were found to have a statistically significant overall beneficial effect of .94 standard deviations above the mean, and 2) that treatment groups surpassed untreated groups in changes in reading rate, comprehension, GPA, and vocabulary, but not in study habits. The change in reading rate exceeded all others. She found, as well, that most studies did not adequately describe the content and operational factors of programs to allow conclusive findings on her further hypotheses.

Cohen chose 65 out of a possible 250 studies using various study feature variables, e.g., methodological course setting, and publication type, while coding from variables describing types of programs used in the studies, i.e., structured/unstructured, cross-age or not, whether tutoring was a supplement to or a substitute for classroom instruction, and whether or not the tutors had received training. In general, he found tutoring programs to have definite and positive effects on academic performance of tutors. Structured programs were more effective than less structured. The degree of effectiveness depended on whether locally-developed or standardized tests were used to evaluate, with stronger effects found for locally produced instruments. Journal articles report stronger effects than do dissertations. Cohen was looking at all kinds of tutoring at all levels but taken together with Sanders, we can probably agree that tutoring is a good thing in general even though we are unable to thus far identify the best training, selection, and reward methods for tutors. Could it be, however, that we are merely seeing one giant Hawthorne effect?

Tutees

It would seem a given that how the recipient of tutoring is perceived will help form the basic criteria for the selection of tutors and this seems to be so. Two broad categories are discernible; 1) increasing self-esteem as a requisite to upping academic performance and 2) increasing skills to increase self-esteem. Programs that stress improvement in self-esteem tend to select tutors who have a helpful attitude, enthusiasm, an ability to get along with others, and sensitivity to the problems of others. (Sakley, 1979; Driskell, 1975; Peer Teaching Program, 1972; Cooke, 1977; Nelson, 1981). Those programs stressing improvement of skills look for tutors with high GPA’s, majors in education or teaching, good recommendations from faculty, and screening interviews. (Kay, 1978; Shaye, 1976; Water, 1976; Gudan, 1981; Benz, 1970; Schulman, 1981; and Wood, 1978).

Soll (1981) described the teaching of reading to the under-prepared at the seventeen colleges of the City University of New York and found two major philosophies in operation: skills-based or psycholinguistic-based. She also found an increasing dependence on the use of adjunct faculty rather than tutors to do this teaching. Richardson (1980) thought that personality type might influence choice of independent projects to improve skills in reading. She found, instead, that a student’s current situation and expressed goal, not social characteristics, led to project success. So far, there is no cut and dried evidence to show what is the best method of tutor selection.

Training Methods

The evidence on training methods is even cloudier than that on tutor selection. Mulcahy (1981) presents some very long lists of tutor roles and skills but doesn’t suggest how to identify their pre-existence or inculcation procedures. Many studies use in-service sessions, usually consisting of at least an orientation session, one on interviewing techniques and diagnostic skills, and a third on study skills for tutors (Driskell, 1975). Many have ongoing sessions either face to face with supervisory staff or through the use of videotapes. (Maloney, 1976; Kay, 1978;

Hammond and McKay (1980) found that while the literature is full of exhortations to build good tutor/tutee relationships, there are seldom reports of developing tutoring strategies and management techniques. They also found that existing how-to-teach material was addressed to trained teachers, not tutors. Grimm (1981) wrote an excellent paper on the instinctive/intellectual aspects of tutoring which would encourage readers to discover the teaching instincts we all possess and provide further food for thought on how to exploit them. Brown (1979) trains tutors in five types of probing skills: clarification, critical awareness, refocusing, prompting, and redirecting. The training information, actually the lack thereof, is a reflection of the aims of tutoring programs. Just who is it we wish to serve, and why? What is academic performance and how can it be measured? We need to make up our minds as to whether the tutee needs an empathetic and caring friend or inspired one-to-one instruction or both. In fact, we need to define our wants before we train.

A closely related issue to the training of tutors is the content of what they are to tutor. Again, a broad spectrum of possibilities appears. Many are trained to use kits or programmed learning material in conjunction with a tutor’s manual. (Dylla, 1980; Williams, 1971; Nelson, 1981; Adams, 1970; Gudan, 1981; Stone, 1980). Billiard (1977) was against the sort of individualized instruction which gives students kits and then isolates them. Hammond & McKay (1980) taught tutors SQ3R as a management technique which would then be used with the tutee’s own text materials. Hubin (1978) reports that his college developed a team approach, each team consisting of two counseling assistants, one study skills advisor, and up to a dozen subject area tutors for a discipline. They felt the addition of the subject area specialists brought the program both depth and breadth. Harding (1981) found that students give noncredit remediation programs low priority and do not seem to transfer learned skills to content courses. In response, they developed a system of adjunct courses; freshmen level courses with two extra class sessions per week where reading and study skills applicable to the content area are taught. Johnson (1977) trains tutors to teach study skills in context, i.e., using tutees’ textbooks. Eisenberg (1978) based instruction on textbooks in the content area contracted with instruction using general materials and found reading instruction in context was significantly more successful.

Rewards and Benefits

Information on rewards and benefits for tutors is scant. In many cases, if the subject was mentioned, the method and amount of payment was not stated clearly. Certainly, method and amount of payment varied from faculty to paraprofessional housewives to students. Other methods of reward included the granting of credit for simultaneous enrollment in a course (Walker, 1980); and giving opportunity to students to try out a career (Ledermen, 1974). Boraks (1977) found elementary and secondary students who got to perform in the roles of tutor and tutee both made the greatest learning gains. This role reversal technique would be interesting to try with postsecondary students. If successful, it would provide support for the idea of "Qui docet dissi: Who teaches, learns," a certain reward for participants (Dillner, 1972). Much of the literature on tutoring does show a gain for tutors both in learning and self-esteem, though the reports lack much empirical support for the notion.

Costs

The use of GPA and persistence in school as measures of the worth of tutoring programs are, by inference, related to cost benefits of programs. Achieving, persistent students keep on coming back and paying tuition. This is the message of most of the reports but only seven of all I considered mentioned cost more directly. Water (1976) suggested that tutors could perform carefully spelled out clerical and academic functions. An efficient program needs good clerical help for scheduling, record keeping, receptionist work and the like and students, at minimum wage, would be less expensive than regular clericals. However, perhaps the greatest value, among many, of secretaries is having their ongoing, overseeing intelligence. Scattering clerical duties among students is probably inefficient and, ultimately, not cost effective.

Driskell (1975) reported the most interesting source of funding for a program: student government funds. Unfortunately, insufficient detail of the program and its effectiveness were reported to allow further speculation on what sounds like a good idea for promoting involvement in a program. Lederman (1974) saw English majors as a source of qualified, supervised, and cheap labor. (Most faculty probably view themselves in the same light ten years later.) Curran (1978) reported attribution of greater persistence due to tutorial programs which she translated into tuition savings for the university. Pascal (1974) thought the use of undergraduates valuable because limited resources made it difficult for an instructor to pursue and achieve objectives via traditional teaching methods. By using this additional source, instructors would be able to pursue new objectives and all students would benefit from enhanced teaching. Armstrong (1979) studied cost-effectiveness in elementary/high school cross-age tutoring programs. Direct cost considerations included paraprofessional salaries and FICA, costs of teachers and consulting teachers, and tutor supervision. Indirect costs were personnel hours costs to high school tutors, and “opportunity” costs of consulting and classroom teachers. This seems a promising set of criteria for cost considerations. However, at the college level we have not yet developed a strict idea of academic success against which to measure cost factors. Reed (1974) thought that both implementation and evaluation of tutoring programs was hampered by the lack of funding. I note a vicious circle here; inadequate funding until you can prove your worth leading to not being able to prove worth because you are inadequately funded.

Conclusion

What do we know, finally, about tutor training? We know that there has been a proliferation of programs since the 1960’s (Reed, 1974). This has occurred despite the lack of empirical evidence of success for tutoring programs. The research, what there is of it, is unsatisfactory. Even if we grant credence to GPA and persistence as standards, there is still a lack of fully described program content and operational factors to allow a choice of the best methods of training for peer tutors. So far, we have no tests able to measure the diverse skills necessary to function in college courses, nor do we have a body of research indicating the transferability of study skills taught in learning labs to subject-matter courses (Soll, 1981). These lack many avenues for further research on the topic.

The growth of peer tutoring reading and study skills programs reflects a finger-in-the-dike fluid set. We need to say to administration “Look, we’re doing something. And we’re doing it using warm, friendly students and everyone at least feels better.” There is much subjective evidence (Reed, 1974) to show that the programs are favorably perceived by administration and the people involved. Other faculty have often not been so sanguine. Perhaps we should also be looking towards a greater use of anecdotal research techniques in this area. The fate of one individual is at least as important as the mean standard deviation of an N of eight.

Boraks (1977) identified three trends in reading research: 1) a shift to an emphasis on examination of individual and contextual variables, 2) interdisciplinary thrust, and 3) an effort to develop more comprehensive models of the reading process. And, the four programs that appear to be most interesting and
successful reflect those trends. (Eisenberg, 1978; Johnson, 1977; Harding, 1981; and Walker, 1980). All basic instruction on the content of students' texts, sometimes using adjunct classes or having tutors attend class with tutees.

Kulik (1980) meta-analyzed the effectiveness of computer-based college teaching and found that CBI (Computer-Based Instruction) at the college level has had a modest positive accomplishment. Students score slightly higher on post-tests, show no difference in drop-out rate, and tend to like and be more interested in courses with CBI. His most dramatic finding was that CBI saves about 33% in instructional time. Blohm (1982) merged glossing, a technique that involves the use of marginal notes and other intratext notations to direct readers' attention while they read, with CBI. The program he developed allowed students to determine when they might need a specific gloss to help their comprehension and to call it up on the computer at time of need. He found that reader-activated gloss paraphrase was significantly helpful to students in a recall task. This technique seems promising as a way to individualize reading skill instruction and promotion of metacognitive strategy learning. Preparing glosses for the materials would be a Herculean task but perhaps one might train tutors to do this in the future.

Subjective evidence suggests that tutoring situations which are contextual in nature, e.g., writing labs, math tutoring (where students are working on real class assignments), may have greater success than reading and study skills centers. Writing an assigned paper for a sociology class in a writing lab situation produces an actual, valuable commodity. The student will receive a real grade and real credit. It is not an empty exercise in yet another skills workbook.

The University of Wisconsin-Stevens Point began a project to enable writing across the curriculum with help from a Mellon Foundation grant in 1981. Some of the money has been used to train faculty in the disciplines to encourage good writing for majors in their subject fields. In conjunction with a writing lab which employs peer tutors, we have begun to see good things happen. Writing instruction in context is being provided more generally throughout the university and one-to-one help for many at all levels is given in the lab. The development of a parallel reading-across-the-curriculum program holds promise.

Finally, what of the usefulness of peer tutors and the peer tutoring experience? There is an accumulated body of evidence (Boraks, 1977; Reed, 1974) to show that the experience is at least as and probably more valuable to the tutor than it is to the tutees. Perhaps we should continue and expand our programs wherein all students could have some experience in the tutor role, so that all learners become teachers.

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ARF '83


A PROPOSED TAXONOMY OF
MATHEMATICAL VOCABULARY

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tax-on-o-my (tak-sun'-mi). n. 1. the science of classification; laws and principles covering the classifying of objects. classify (klas'-fi). v.t. 1. to arrange or group in classes according to some system or principle.

Biologists make use of taxonomies to delineate the interrelationships between various plants and animals in the attempt to make their organization more meaningful and understandable. Mathematicians also use taxonomies, as when illustrating the interrelationships in number theory (see Figure 1). The arrangement of a taxonomy reflects interrelated characteristics of its elements and their relative complexity. The precision of language used in such taxonomies is intended to make communication more precise and, therefore, more effective.

Need for Vocabulary Taxonomy

Most teachers of mathematics would agree that a student’s major difficulty when studying mathematics is the mastery of “vocabulary.” Mathematics teachers say this as if it was a global difficulty, unaware of the existence of various levels of vocabulary type and complexity. A taxonomy could provide an outline for the various types of vocabulary, and would suggest their relative interrelationships. How would this help the teaching of mathematics?

Preview Materials. The teacher could preview materials to identify potentially troublesome words. Once teachers are aware that certain terms are relatively more difficult to master because of the peculiarities of their function, such terms could be taught prior to the time when the student is asked to read mathematical material for meaning. Standard mathematics instruction would be rendered more effective because mathematical terminology would be taught with a focus on function, not as a global entity.

Diagnose. Taxonomy levels could assist the teacher in informally diagnosing student difficulties. Many students may reveal, during instruction, a pattern of difficulty with a particular type of vocabulary.

Prescription. Taxonomic precision could be used to identify or develop materials that would be prescriptive of assessed weaknesses. Likewise, the teacher could direct pointed, taxonomically identified, terms to students with diagnosed weaknesses.

*The vocabulary levels in this article were originally developed in cooperation with Sue Don, Anne Etter, and Mary Ann Byrne. The authors express appreciation for their creative professional involvement.

Scope and Sequence of Vocabulary Curriculum. Used as a curriculum guide, the taxonomy could outline and define the range of levels to be used when planning a full and continuous range of vocabulary teaching as a part of normal instruction.

Material Preview. Potential materials could be reviewed prior to purchase using the taxonomy as an evaluative tool. Those materials which provide effect development of higher levels of vocabulary could be separated from those less adequate.

Communication. The more precise definition provided by the taxonomy would certainly enhance more effective communication about the nature of vocabulary within the area of
Figure 1.

THE SYSTEM OF COMPLEX NUMBERS

\begin{center}
\begin{tikzpicture}
  \node[align=center] (complex) at (0,0) {\textbf{COMPLEX NUMBERS}};
  \node[align=center] (real) at (0,2) {\textbf{REAL}};
  \node[align=center] (irrational) at (0,-2) {\textbf{IRRATIONAL}};
  \node[align=center] (rational) at (0,-4) {\textbf{RATIONAL}};

  \node[align=center] (pure) at (-1,3) {\textbf{PURE IMAGINARY}};
  \node[align=center] (imaginary) at (1,3) {\textbf{IMAGINARY}};
  \node[align=center] (algebraic) at (-1,-1) {\textbf{ALGEBRAIC}};
  \node[align=center] (transcendental) at (1,-1) {\textbf{TRANSCENDENTAL}};
  \node[align=center] (integers) at (0,-3) {\textbf{INTEGERS}};
  \node[align=center] (fractions) at (0,-5) {\textbf{FRACTIONS}};

  \draw[->] (complex) -- (real);
  \draw[->] (real) -- (irrational);
  \draw[->] (real) -- (rational);
  \draw[->] (pure) -- (imaginary);
  \draw[->] (algebraic) -- (transcendental);
  \draw[->] (integers) -- (fractions);
\end{tikzpicture}
\end{center}

'Numbers of the form a + bi, in which i is imaginary
'Numbers of the form a + bi, in which i is imaginary and b = 0
'Numbers of the form a + bi, in which i is imaginary and a = 0


mathematics. Teachers and researchers would be able to better communicate about the precise nature of student vocabulary difficulties, the need for instructional revision, the usefulness of particular instructional techniques, and, thus, greater strides could be made to render vocabulary instruction more effective.

Word Problem Vocabulary Difficulty. A taxonomy could also be helpful in further defining readability level as it relates to mathematical text materials and word problem solving. Beyond the problem-solving competencies involved in word problem solving, the more elusive factor of readability confounds the mathematics educator's efforts to level word problems by difficulty. The taxonomy has the potential of allowing the mathematics educator to give word problems (and indeed all mathematics materials) a "rigor level" based on vocabulary difficulty. This would offset the somewhat superficial readability formula valuation of difficult words being multisyllabic words. Vocabulary difficulty could be explored in terms of vocabulary function, a more complex valuation.

Relevant Research

Previous researchers have attempted to use the idea of vocabulary types. Packman and Riley discussed four types of vocabulary involved in word problem solving: technical, symbols, everyday, and general. General use words are those involved in many situations that maintain a common mathematical meaning (example: find and equal). Technical terms are those whose meanings are specific to mathematics (example: integers and consecutive). Everyday terms would be those non-mathematical words commonly used in oral and written language. Symbols included all numbers or graphic representations of mathematical concepts. The discussion within this article was limited to the solution of mathematical word problems and did not propose that any one type might be more difficult for students than the vocabulary of another type.

Dunlap and McKnight, considering a three-level translation of vocabulary which included general, technical, and symbol terminology. They asserted that "the translation process among vocabularies and the thinking process within each vocabulary are essential to the conceptualization of the message contained in the word problem." They view the solution process as (a) perceiving, (b) decoding, and then (c) translating into an almost "visual" concept all the general vocabulary. This is then translated into technical mathematical context, and finally into a symbolic (computational) representation. A strength of their view involves the focus on meaning and visual conceptualization, but the visualization of terms which are commonly known in real life (for example, table, exercise) can cause mistranslation when encountered in a mathematical context (example: Use this table to solve the following exercises.). The terminology used in mathematics takes on differing functions, depending on context and vocabulary level. There is a need for specificity and definition when discussing effective use of mathematical terminology.

A Proposed Taxonomy

When examining the vocabulary within mathematics, five levels seem to recur. These levels appear to have interactive properties; that is a single term can be included in a number of categories, depending on context. This renders the levels somewhat overlapping, rather than exclusive. The various levels are discussed below, and are shown in abbreviated form in Figure 2.
### Figure 2. A Taxonomy of Mathematical Vocabulary

| I. Standard | Common words normally encountered in oral and written language; i.e. this, that, over, above, etc. |
| I. Transitional | Words which have both a mathematical referent as well as a common referent whose meanings are not the same; i.e. table, exercise, measurement |
| I. Technical | Words specific to mathematics; includes abbreviations and symbols; i.e. addend, decimal, divisor, fraction, triangle, lb., oz., +, -, inverse |
| I. Changeable | Technical terms whose meanings change within the area of mathematics; i.e. square, prime, complementary, etc. |
| I. Phrases | Multiple word terms with specialized meanings as a unit, the meaning of the unit is more than a compilation of the meanings of the parts; i.e. concrete number, square number, acute triangle, counting number, etc. |

(1) **Standard** words are those the student would encounter in any type of written or oral language. Their meanings would tend not to differ widely in the area of mathematics from their normal, everyday definitions. These terms are the words encountered in dialogue, reading, or writing. They might include such words as: is, word, there.

The poor reader has difficulty operating on the standard level of mathematical terminology, and would not be expected to be able to deal effectively with higher levels of vocabulary. Students who experience difficulty with these words would not be able to get much information from text materials without some instructional adjustment. The teacher needs to devise a system by which materials can be orally presented to the poor reader. Two students, the poor reader and a more able reader, can be temporarily paired. The more able student can read important text passages aloud to the reading disabled student. Tape recordings of this oral presentation can be made and reused in other classes for the same purpose. Study guides, consisting of pretaught vocabulary and questions of sequenced difficulty which are keyed to the text location can be used to direct the disabled student’s reading to help overcome text difficulty. The student’s task becomes that of skimming for selected information, thus eliminating much of the disabling nature of the text material. Although time consuming, materials can be rewritten, drawing the readability level down to a level more in line with the student’s ability. With reading disabled students, it is important that tests be given orally; otherwise the student’s ability to demonstrate content knowledge will be masked by their reading deficiency.

(2) **Transitional** terms are encountered in the reader’s daily experiences, but their meaning is decidedly different in the transition to a mathematical context. **Table**, for example, may evoke the image of a type of furniture instead of charted information that the mathematics teacher intended. Following directions like, “Use the table to solve the following exercises,” may cause confusion for the student entering the mathematics classroom from physical education where exercise takes on a different meaning.

(3) **Technical** terminology is readily acknowledged by mathematics teachers as the level of vocabulary most needing review to insure mastery. Technical terms are word encountered only in a mathematical context, such as hexagon, divisor, or inverse. Mastering these terms can be likened to learning a foreign language. Since these terms aren’t used in everyday conversation, they are difficult to remember because they aren’t practiced very often. Technical terms are learned only when maximally used by the student. The predominantly expository situation in many mathematics classrooms, however, is at odds with this principle of student use. The teacher generally introduces the terms, defines them, and uses them in an illustrative sentence. It is rare that students are given an opportunity to use them in their own verbalization. This is compounded by the structure of the textbook. Most terms are defined when they are first introduced. Rarely is a definition extended as the term is encountered on later pages; it is used as if the term were an old friend, or as if the definition were well understood and assimilated. To overcome this obstacle, mathematical terminology must be overlearned and used.

Activities like 20 Questions can provide an opportunity for students to engage in discussion and practice. A student can think of a term (like triangle). The class is provided with a general category for the term (like Geometry) and is invited to ask any question about the unknown term that can be answered by yes/no. Questions like, “Does it have four sides?” or “Is it a closed figure?” will provide for meaning and terminology practice in a highly motivating way. The object is to identify the terms using fewer and fewer questions, teaching students the economy of questioning strategies.

Adaptations of popular television shows like **$25,000 Pyramid** can be used in mathematical vocabulary practice. Student pairs can present each other with clues to the identity of specific vocabulary terms. For example, the unknown word might be triangle, and clues might be: “Three sides, right,” or similar phrases which will eventually evoke the term in question. Time limits are imposed to keep the practice lively.

Technical terminology also includes symbols and abbreviations. Abbreviations can be particularly difficult because they occasionally include none of the letters in the original word (as in pound = lb.), or may include additional letters not found in the original (as in ounce = oz.). The symbols of mathematics have their own unique problem. They must be instantly recognized to be understood. The student cannot apply phoneme (sound)-grapheme (letter) associations to “sound out” the pronunciation of a symbol in the same way a word can be attacked. Some symbols may also resemble other, more familiar, things to students. The use of $x$ or $\ast$ for multiplication may evoke the letter $x$ and the punctuation mark period making the use of the symbols in their newer context more difficult to understand.

(4) **Changeable** terminology is similar to transitional vocabulary in that multiple meanings of words are involved, but the changes of meaning occur within the area of mathematics itself. For example, square refers to “a geometric figure” and “the result when a number is multiplied by itself” as in $4^2$. Many symbols change their role depending on the mathematical context. The symbol “$-$” is minus in this context: $4-3=1$; but represents divide in this one: $\frac{4}{3}$. Later it is
used to indicate repeating decimals: \( \frac{3}{3} \) and mean: \( \times \). It is also used within the symbol for divisions: \( 8 \div 4 = 2 \). The context difference may only be a fraction of an inch placement on the page, a fine discrimination for students to confuse \( b - d = p \) and \( p - b \). A middle school student was experiencing difficulty with changeable vocabulary when she was unable to deal with the multiplication of decimal numbers. The teacher was puzzled by the student's reaction, knowing she could multiply and had successfully dealt with addition and subtraction of decimals before. The problem came to light when the student was asked to read the problem aloud. The student refused, saying, "I can't read it aloud; I don't understand why there are two multiplication marks." Recall that in the context of multiplication of decimals, the notation is: \( 3 \times 2 = 6 \).

Teachers who are aware of the sequence of mathematics learning remember that students have encountered the same word with a different meaning prior to the instructional unit under consideration. They assess students' concepts of the word and take time to preteach the change before dealing with the new mathematical idea involved in this change of meaning.

(5) Phrases in mathematics have been identified as a problem. They often appear to operate in an adjective-noun relationship; but, in fact, they project meaning only as a unit. Phrases can be detected by turning words around. A red triangle is a triangle that is red; the relationship is fairly direct and requires the insertion of few words to make the meaning clear when word order is reversed. Knowing that acute means "less than 90 degrees", it would be logical for an acute triangle to be a "triangle with less than 90 degrees." However, it actually means "a triangle each of whose angles is less than 90 degrees"—note the necessary addition of a great many concepts not subsumed within the terminology itself. Thus, a phrase is a case of the whole being more than just the sum of the parts. A triangular number does not mean "a number that is triangularly shaped." Nor does a counting number actually count, we use it to count. Mathematical dictionaries and textbook glossaries list these combinations as phrases. This unit-meaning relationship which occurs in phrases needs to be pointed out to students.

Conclusions and Implications

This interrelated taxonomy of mathematical vocabulary has implications for instruction, diagnosis, readability, problem solving, materials selection, the organization and development of instructional materials, curriculum development, and communication.

1. Instruction. As teachers become more familiar with the categories of the taxonomy, they would become more sensitive to the levels of terminology that might cause difficulties as students interact with mathematical materials. Teachers would know to preview materials to identify potentially troublesome terms which will need clarification or prior teaching.

2. Diagnosis. The taxonomy could be the basis of diagnosis, as a means of determining if specific students are experiencing difficulty at particular levels of the taxonomy. Materials could be identified or developed to provide remedial instruction for students who are unable to derive meaning from mathematical materials because of specific difficulties at a particular taxonomic level.

3. Readability. The taxonomy is a potential instrument for gauging the language difficulty (with relation to underlying mathematical meanings) of mathematical materials. This is a step beyond current readability formulae which tends to gauge difficulty on the basis of familiar words or number of syllables, not word function. Assuming the relative increase in difficulty of words within the taxonomy proves to be the case, this could be used to assign relative weights to vocabulary types to add a new dimension to readability formulae.

4. Problem Solving. This instrument would be helpful for categorizing word problems from lower to higher levels on the basis of the vocabulary content within the problem. This adds a further dimension to number and quality of operation, simple readability, abstractness, and other factors currently under examination to "rank" word problem difficulty.

5. Materials Selection. Teachers are provided an instrument which would be useful in selecting materials and tests appropriate for the learning levels of students. Materials heavy on phrases or changeable vocabulary would not be appropriate for student unable to deal with those language patterns. Materials which omit higher levels of vocabulary would, also, not be a prudent purchase, for they leave the student at the lowest levels of vocabulary understanding.

6. Organization and Development of Instructional Materials. The taxonomy offers suggestions to publishers as they develop new curricular materials. It could provide a guide for sequencing levels of difficulty within mathematical texts. It could allow for key vocabulary to be drawn from text materials, and would suggest a more function-oriented means of dealing with key terms. The key terminology could be used to serve as a structured overview, which could serve as a sort of study guide to aid the students in discovering the interrelationships between concepts.

It also allows the mathematics teacher to convert real-life materials into instructional devices, rendering them useful motivators for classroom mathematics materials. Consider, for example, the mathematical terminology in a telephone or electric bill. A telephone book or rental lease all can, with the use of the taxonomy, yield realistic, motivating vocabulary practice.

7. Curriculum Development. Suggested vocabulary procedures could be critically viewed: "Do they provide for higher-level learning which involves multifaceting and phrase-level instruction?" The knowledgeable teacher would provide a full range of instruction at all levels of vocabulary. The taxonomy would guide curriculum specialists to a more comprehensive curriculum.

8. Communication. The taxonomy is a beginning to devising a more precise means of talking about the process(es) of mathematical vocabulary. With precise categories, discussions of vocabulary functions, instruction, deficits will be much more effective and task-focused.

Further work needs to be done to refine the taxonomy. More discrete categories, a more precise hierarchy would make such an endeavor more effective. Its use as a tool for sequencing word problems, in relation to their relative vocabulary difficulty, is strongly recommended. And, finally, level-specific instructional techniques should be developed.

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THE APPLICATION OF MEMORY RESEARCH TO READING INSTRUCTIONAL PRACTICE

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Introduction

Despite gains in reading methodology, significant percentages of students are failing to learn to read. An examination of current reading instructional techniques indicates the need for research that addresses the area of memory deficits that may be causative of reading failure, especially for slower learners. It is believed that by understanding the deficit memory processes in the mentally retarded, the application of techniques to facilitate reading in those children who are failing to read can be facilitated.

Investigations of memory processes in the mentally retarded have attempted to attain a clearer understanding of intellectual functioning and how memory relates to mental operations (Detterman, 1979). Motivated by the finding that mentally retarded and normal children of equal chronological age tend to behave in a different manner, efforts have been directed toward defining these observed differences in terms of learning and memory. Detterman (1979) has noted that the last fifteen years of research on memory in the mentally retarded can be described as a search for a deficit. It was anticipated that when a deficit was identified, it would be beneficial in assessment and intervention techniques. However, research findings have indicated that there is not one simple deficit responsible for memory differences in the retarded, but are multiple. Some of these deficits include the difficulty to focus attention on task-relevant stimuli (Zeaman and House, 1963), problems in handling multiple cues (Ullman and Routh, 1971), selectively organizing material at input (Spitz, 1973; Spitz, Goettler, and Webreck, 1972; Spitz and Webreck, 1972), and transferring information in discrimination learning and memory tasks (Borowski and Wanschura, 1974; Kaufman and Prehm, 1966). According to Brown (1974), other deficits involve problems in control processes which result in weaknesses in the ability to perform rehearsal strategies that facilitate the recall of information. Additionally, motivational problems have been found to be an impediment to the retarded’s performance in memory tests (Zigler, 1973).

Early research examining memory in the retarded focused on measures involving structural deficits (Ellis, 1963; Zeaman and House, 1963). Structural features of memory refer to those elements of the system which are not “programmable,” or cannot be modified due to the structural limitations of the individual (Brown, 1974). Ellis’ (1963) stimulus-trace theory exemplifies one of the major structural deficiency positions in the literature. According to this theory, Ellis posited that biologically fixed central nervous system defects underlie the memory problems in the retarded. Ellis hypothesized that the retarded have subnormal nervous system efficiencies in short-term memory, such as stimulus-trace persistence. This postulated stimulus-trace, created in the nervous system when a stimulus is presented to a learner, decays quickly and is lessened in intensity in the retarded, thereby resulting in deficits in learning and retention. Later reviews of stimulus-trace research (Belmont and Butterfield, 1969; Holden, 1971) did not support Ellis’ theory and failed to demonstrate a relationship between stimulus-trace duration and intensity of the stimulus.

Numerous studies by Ellis and others in the 1960’s led Ellis to alter his rationale for the short-term memory deficits of the retarded from a structural deficiency approach (e.g., stimulus-trace theory) to that of a control-deficiency view as exemplified by this multiprocess model of memory (Ellis, 1970). Control processes are those aspects of the system which are capable of being “reprogrammed,” or varied through training (Brown, 1974). In Ellis’ multiprocess model of memory (1970), he proposed that the retarded were deficient in rehearsal strategies, thereby decreasing their short-term memory performance. This differs greatly from Ellis’ 1963 stimulus-trace hypothesis, as a rehearsal deficit in the retarded’s memory process suggests a failure to efficiently utilize control processes rather than the existence of a structural limitation of the memory system. Other researchers have sustained Ellis’ findings concerning deficiencies in the retarded’s control processes as evidenced by their failure to utilize active rehearsal strategies during encoding, storage, and retrieval (Butterfield, Wambold, and Belmont, 1973; Fisher and Zeaman, 1973). Furthermore, these results parallel Gates’ research on reading readiness (1937), when he concluded that training would offset developmental deficits.

A direct implication of these research findings involving the short-term memory deficits of the retarded can be directed toward the rote memorization of sight vocabulary. These research-identified deficits can be organized into an observational checklist for the identification of specific memory deficits. These deficiencies can be linked to particular reading techniques for teaching sight vocabulary to demonstrate potential remediation strategies specific to each deficit area. This direct link between learning and memory deficits and remediation strategies should make sight vocabulary instruction more efficient for the slow learner. Table 1 charts the five research-identified areas of memory deficits, linking each with existing reading remedies; an additional reading research-identified deficit is included with its accompanying remedy (i.e., oral command).

LOCUS OF CONTROL

Assessment

The first area of memory deficit involves locus of control, or how an individual interprets the consequences of his own behavior (Lefcourt, 1966). An internal locus of control individual perceives positive and negative events as the direct result of his own behavior while an external locus of control person views events as the result of being controlled by outside forces such as fate, chance, or other individuals (Lawrence and Winschel, 1975).

A young normal child is inclined to exhibit an external locus of control and as he matures, this changes to an internal locus of control. However, it has been shown that the retarded demonstrate an external locus of control and that their locus of control scores are directly related to their low self-concept (Fox, 1972). In order to assess whether a student has an external or internal locus of control, ask him a series of questions related to events in his environment. For example, if you ask a child what makes him happy and he says other people, he probably has an external locus of control. If you ask a student why he thinks he could not remember a sight vocabulary word and he blames it on himself for not studying adequately, he will usually have an internal locus of control.

It has been shown that external locus of control individuals, typical of the retarded, tend to lack motivation and have a high expectancy to fail (Grune, Ottinger, and Ollendick, 1974). The retarded, and this has implications for the slow learner, have high expectancies for failure since they have experienced a high degree of failure in the past. Zigler (1973) has suggested that individuals with past failure experiences tend to set lowered goals for themselves to escape additional failure. This fear of failure is circular, as expectancies of failure decrease the amount of effort placed into the task, the performance is inferior to the capabilities of the individual, and the predicted failure becomes a reality (Heber, 1964). It is suggested that a remediation strategy should be utilized if a student demonstrates an external locus of control and high expectancy to fail.
A MEMORY DEFICIT/TRAINING APPROACH TO TEACHING SIGHT VOCABULARY (Goldstein/Kossack; F.I.U., Miami, Fla.)

MEMORY DEFICIT/ASSESSMENT

1. LOCUS OF CONTROL
   Fox, 1972; Lefcourt, 1966) Does the child have an external locus of control? (Related to expectancy to fail, Zigler, 1973)

   1a Restructure Task (Grun et al., 1974) Move performances from a. easy to more difficult
      b. concrete to abstract

   1b Give positive reinforcement contingent on appropriate behavior immediately after correct response, consistently (Skinner, 1968)

   1c Help students move to less impulsive responses (Shipe, 1971)
      a. visualize word pictures
      b. sound-trace

REMEDIY—APPLY ONLY IF NEEDED

2. RECALL PROCESSES
   (Brown, 1974; Ellis, 1963, 1970) Can child remember words by flash presentation after a short period of elapsed time?

   4a Repetition
      a. simple overt (Hagen & Kingsley, 1968)
      b. cumulative (Brown et al., 1973, 1974)

   4b Verbal Elaboration (Taylor et al., 1972; Whiteley & Taylor, 1973)
      a. recall oral command sentences, restructure new sentence with all words in it
      b. T models sentence using all focus words

   4c Visual Imagery (Lerario & Ellis, 1974; Taylor et al., 1972)
      a. S elicits active image
      b. T models visual image

   4d VAKT (Fernald & Keller, 1921; Fernald, 1943; Gillingham & Stillman, 1977; Karpacz, 1976; Wilman & Riley, 1975)
      a. Trace-erase
      b. Clay tray
      c. Tracing
      d. Language Master

3. SELECTIVE ATTENTION TO TASK RELEVANT CUES

   (a Modeled sentences—repetition
   (b Modeled sentences—rewording
   (c Forced structure sentence creation
   concrete, pictorial, word bank

   2a Provide Cue Distinctiveness (Clinton & Evans, 1972; Gruen & Berg, 1973; Ullman & Routh, 1973)
      a. underlined
      b. circled
      c. highlighted
      d. color-printed
      e. raised-letters

   2b Provide visual discrimination practice (Brown, 1970; Fisher & Zeaman, 1973)
      a. tracking
      b. scrambled letters
      c. correct-it
      d. fill-in word puzzle
      e. make-it, slow/rapid flash

4. TRANSFERRING INFORMATION
   (COMPREHENSION)
   (Borowki & Wonschura, 1974; Kaufman & Prehm, 1966)
   Can child insert word in a new printed sentence?

   5a Oral Cloze
   5b Language Experience Cloze (Wilson, 1972)
   5c Visual Cloze (Wilson, 1972) with cues:
      a. No cue
      b. Word bank
      c. Phonetic
      d. Maze
      e. Picture

5. SELECTIVELY ORGANIZING MATERIALS AT INPUT
   (Spitz, 1966, 1973)
   Can child independently group words using structural elements (word families, common initial consonants) (Gerjuoy et al., 1969) or by categorical meaning? (Bilsky et al., 1972; Bilsky et al., 1972; Gerjuoy & Alvaras, 1969; Palmer, 1974; Palmer, 1974; Riegel & Taylor, 1974)

   3a Tracking structural-elemental cued word by cue:
      a. No cue
      b. Underlined
      c. circled
      d. highlighted
      e. colored
      f. raised

   3b Category Sort (function/structure/meaning categories which are:
      a. Unguided
      b. Inferred from examples
      c. printed
      d. pictured
      e. orally presented

   3c Category-Irrrelevant Deletion
Remediation*

Should diagnosis indicate that the student has an external locus of control, low motivation to attempt learning tasks, and high expectancy to fail, research indicates three strategies to offset memory deficits of this type: (a) task restructing, (b) positive reinforcement, and (c) eliciting less impulsive responses (Gruen, Ottinger, Olenfield, 1974; Skinner, 1968; Shipley, 1971).

Task restructing parallels the notion that success is a motivator. The practical implication of this idea suggests that the educator should sequence tasks in order to facilitate a student's success. The problem lies in identifying ways of structuring difficulty sequences. Psychological, linguistic, and reading research reveal three such sequences: (a) levels of abstractness, (b) levels of phonemic regularity, and (c) levels of difficulty. Psychological research indicates that words become less readily retained as their level of abstraction increases; thus, educators can sequence sight vocabulary exposure along a concrete to abstract continuum, saving the more abstract words for later study. Linguists (Fries, 1966) indicate that words are best learned and retained if they are phonetically regular (regular spelling patterns); suggesting the educator begin word study with the more regular sound-symbol associations and move to more complex interactions. Reading research has contributed a number of sequenced lists of sight vocabulary (Dolch, Fry, Dale-Chall) which can be followed along an easy-to-difficult continuum when providing ordered instruction.

A major violation in sight vocabulary instruction which results in lowered student achievement is quantity. The number of words taught at one time very often determine the number of words remembered. Vocabulary studies indicate that the normal child can retain from six to eight new words a day, including words taught in content subjects, those learned on the playground, those heard during television watching or radio listening, and those experienced throughout the child's day. Thus, classrooms promoting lists of ten or more new words each day during reading instruction inadvertently assure frustration and failure. The teacher should spend instructional time presenting specific and realistic learning goals for the student. Three to five new words per reading period is a more realistic goal.

Positive reinforcement (Skinner, 1968) should be immediately and consistently applied contingent on appropriate behavior after the student's correct response. Informal charts of progress (e.g., word banks, stars, and good notes home) become motivators as the student gains pride in their achievement. Not only can the student be shown appropriate behavior and progress, but additional commitment can be secured by allowing the student to choose from a menu sampling of reinforcements, ranging from primary (edible) reinforcers to secondary (social, word banks, progress charts). As the student chooses the particular reinforcements, there tends to be greater commitment to the task generated by desire for the chosen reinforcement.

Impulsive students have a tendency to guess at the identity of a word based on extraneous, irrelevant factors. For example, blue might be misread as black due to exceeding attention to the similarity of initial consonants or configuration. Such students need guidance in less impulsive responses (Shipke, 1971). Mnemonic devices wishing the student to write the words in a way which causes the student to visualize the meaning of the word (e.g., circle written in a circle, big printed in large print), tend to make the student slow down to capture a mental image which provides meaning and, in turn, assist in recognition. Other techniques such as sound tracing (e.g., tracing over the word written in chalk on a blackboard or construction paper), or tracing the word in sand, rice, etching it in clay, or tracing by any other kinesthetic means will cause the student to focus on the word more deliberately, thus fostering less impulsive responses to word identification.

* A copy of all remedial activities may be obtained from the authors.

ORAL COMMAND

Assessment

Learning and retention relate as much to what the student brings to the learning experience as they do to what is experienced in the learning environment. If the educator attempts to teach vocabulary terms that are not natural to the language use of the student, poor retention is inadvertently assured. Oral command is the student's ability to use the word in an original, unmodeled sentence. This task is especially difficult for the inner city or bilingual child. For example, if the teacher required a limited English proficient student to use the word fish in a sentence, the student may lack oral command of the English term but, concomitantly, understand the Spanish equivalent pecesado. The inner city child may never have experienced fish at all, and lacks oral command for lack of background. In any case, it is fruitless to insist on retention of words for which students lack language referent. Before intensive instruction is initiated, the educator should check students' oral command of focus words by requesting that they use them, independently, in unmodeled sentences.

Remediation

If the student is unable to use the word in unmodeled natural language, a series of tasks involving sequential language formation can be provided. Throughout the remainder of the remedial suggestions, the reader will note a presentation sequence which provides the least amount of cues first moving to greater cuing. The student should be given the least number of cues necessary to foster learning. The cues, as crutches to normal learning, will be faded out as soon as possible to facilitate the mainstreaming of the student into usual classroom learning patterns.

The least amount of structure is provided in a forced-structure expressive language situation where the student is provided with a visual change in language structure. In this task, the teacher provides the language pattern for the focus word jump and the student is required to recombine jump in a slightly different context with a visual cue, physical gesture, teacher-presented word. Examples of this series of three tasks follow:

a. Visual cuing
Teacher: "I jump over. (Teacher points to picture of jump under.)"
Student: "I jump under."

b. Gesture Cuing
Teacher: "I jump here. (Teacher gestures "there.")."
Student: "I jump there."

c. Verbal Cuing
Teacher: "I jump high. low."
Student: "I jump low."

If the student is unable to recombine language with visual, physical, and verbal cuing, oral practice must be conducted with simple, repetitive practice which does not involve any student translation. The student required response is simple, direct rote repetition of the teacher's oral presentation, as follows:

Teacher: "I jump high."
Student: "I jump high."

If the student experiences continued difficulty with verbal situations, the educator must move to concentrated practice in more concrete situations, perhaps using pictures or objects to generate and sustain language production. The student can be shown a picture suggesting language relationships and be asked to form a sentence describing it, e.g., Student: "The ball is under the box." If the student is unable to suggest a sentence, the teacher can model one using the focus word under, requiring the student to repeat it. Further practice with under can be elicited with pictures of balls under chairs, tables, beds to provide the student with the concept of under and elicit language
recombination in the use of the term. Once the student is able to give sentences with single pictures, the teacher should move the student to the use of multiple pictures, where the student recombines the multiple pictures to form under relationships, e.g., Student: "The tree is under the sun." If the student is unable to combine multiple cues, the teacher may wish to orally present such combinations, allowing the student to respond by arranging the pictures in response to the teacher's oral statements. For example, Teacher: The sun is under the tree. Student: (Places the picture of the sun under the picture of the tree.)

More concrete situations can be provided, prompted by pictured situations. Students draw cards which are acted out as a means of generating language from a student partner. For example, the student draws a card which requires the student to pantomime the word jump in an effort to elicit from a partner, "I jump over the ball." In a similar task, the teacher can give descriptive statements and the students can be required to arrange objects on their desks or in the room to demonstrate understanding. They should then be asked to repeat the language pattern, modeling the teacher's sentences.

SELECTIVE ATTENTION TO TASK RELEVANT CUES

Assessment

This area involves the student by focusing attention on the relevant dimensions of the learning task. The student scans the stimulus field, searches for the relevant stimuli, and attends to those stimuli over a designated period of time (Fisher and Zeaman, 1973; Hagan and Kall, 1975; Zeaman and House, 1963).

Zeaman and House (1963) attributed the many deficits of the retarded to selective attention problems. They surmised that these attention problems resulted from the retarded individual's inability to sample the stimulus field and select the relevant stimulus. These researchers advanced the Attention Theory which posits that the visual discrimination learning of retarded children requires the acquisition of a chain of two responses: (a) attending to the relevant stimulus dimension, and (b) approaching the correct use of that dimension. They suggested that the impasse that retards exhibit in discrimination learning is related to deficiencies in the first phase, or attention, of this twofold process, rather than the second. To illustrate this point, it was shown that the lower mental age (MA) students needed more trials in the attention phase than the higher MA students for learning to occur.

The implications of this data suggest that the retarded and slow learners need more trials to attend to relevant stimuli. In order to determine if the student is paying attention to relevant stimuli, check if he can track the focus word in a paragraph by circling it each time it appears regardless of color, shape, typeface, or size.

Remediation

If the student shows difficulty tracking words within paragraphs, various visual discrimination tasks which provide least cues to the student have proved helpful (Brown, 1970; Fisher and Zeaman, 1973):

a. Tracking

Provide tracking exercises using visual stimuli. The student can be asked to track words without the visually-presented focus word, or, if that is too difficult, the focus word can be provided. The student is asked to move through the paragraph underlining or circling the focus word wherever it appears. There is no need to say the word, merely find it visually.

b. Scrambled Letters

Provide scrambled letter exercises, taking care to pair them with meaningful context so as to provide cues for unscrambling (i.e., saw can be unscrambled as saw or was, but a context of "the desk" requires the student to unscramble saw).

c. Correct It

Students 'correct' misformed focus words using flash card comparison. A word, with a purposeful mistake, is provided for the student. The student compares it to the focus word and adjusts the order of the letters to conform to the focus word, as illustrated in figure 3. The student must reorder "ont" to form not.

d. Puzzle

The student is provided with a missing letter puzzle. The student copies the puzzle just as it is written and inserts the appropriate missing letters.

e. Slow/Rapid Flash

Students spread alphabet letters on their desks. The teacher exposes one of the focus words and asks the students to duplicate it at their desks. Initially, the flash should be held until all students can duplicate it. The teacher moves as quickly as possible to a more rapid flash, in an effort to move the image of the word into the students' memory, so the duplication is from memory rather than visual match. This task allows the teacher to work with groups of students. Also, visual diagnosis can be done within this group context as the teacher observes students forming their words by copying classmates work. Those students having difficulty will show either hesitancy during the task, confusion, or "cheating" behaviors observable to the teacher in front of the group.

If the students show difficulty with these tasks, the teacher will need to provide cue distinctiveness that will allow the students to focus on the word during tracking. The least amount of assistance is provided by simply underlining the focus words. In ascending order of assistance the focus word can be circled, highlighted, presented with colored letters, or presented with raised letters to allow the student to recognize the focus word in the context of a paragraph.

SELECTIVELY ORGANIZING MATERIALS AT INPUT

Assessment

The process of input organization occurs after a student has attended to relevant stimuli, as the student must then organize and store the information in order to enhance recall ability. Research with the retarded involving organization of materials deals with the encoding of information using a structure that can increase the number of items recalled. Most of the work in the area of input organization has been advanced by Herman Spitz (1966, 1973) who stated that a major difference between the mildly retarded and equal chronological age normals occurs at the retrieval stage and results from the retardates' inefficient organization at input. He postulated that organized input for retarded learners would facilitate the retrieval process. Studies with the mildly retarded and normal children matched on a mental age demonstrated the retarded used less clustering, were unable to use mnemonic devices, and were deficient in the use of categorical cues (Blinsky, Evans, and Gilbert, 1972; Gerjayo and Alvarez, 1969; Palmer, 1974; Riegel and Taylor, 1974).

As the research indicates, the process of input organization is more difficult for the mentally retarded than the normal child and the same difficulty is expected with slow learners. In order to assess whether the student can organize materials at input, determine if the student can independently group words by structural elements such as word families and common initial con-
sonants or by categorical meaning such as content or commonality of items.

Remediation

If the student is unable to group words by structural elements (e.g., word families, common phonics elements, categorical meaning), a series of tasks similar to those suggested for cue distinctiveness can be used where element or meaning categories are emphasized. Techniques, in ascending order of structure, can be used such as underlining, circling, highlighting, colored letter presentation, and raised letter presentation. The student must read through the paragraphs, tracking the focus words using structural element or category cues as a means of recalling the focus words. Note in the structural element tracking exercise, only the first element is cued, whereas in the meaning category track, the whole meaning-category word is cued.

If students are unable to identify the words with the cues above, the teacher can assist the student in sorting word cards with the idea of transferring them into a paragraph context later. The sorting is done as follows, from least cue to greatest:

a. **Category Irrelevant Deletion**
The student is to infer a major category among a set of word cards and delete the one card in the set which does not belong.

b. **Unguided**
The student sorts four to six word cards by unguided categories, that is the student must determine the categories and conduct the sorting.

c. **Inferred by Example**
The student is given a pair of word cards from which a category is inferred. Additional cards are sorted based on the inferred category.

d. **Printed Category**
The student is provided a printed (specified) category by which to sort cards.

e. **Pictured Category**
This can only be done with the meaning sort. The student is given a picture from which a meaning category can be inferred and on which word sorting is done.

f. **Oral Category**
The teacher indicates, orally, particular categories which the student used to sort word cards.

RECALL PROCESSES

Assessment

Recall involves the process of retrieving information that has previously been stored in one’s memory store (Ellis, 1963). According to Ellis (1970), primary memory is a limited storage system in which the capacity to recall is limited to seconds and displaced items are permanently forgotten. After an item has been adequately rehearsed, it is moved from primary memory to secondary memory (similar to short-term memory). The retention interval for recall in secondary memory is from seconds or minutes to hours or days, while the mechanism for forgetting in this store has been reported to be interference (Dettman, 1979). Tertiary memory, synonymous with long-term memory, is the retention of information for recall purposes over days, months, or even longer (Ellis, 1970).

It has been shown that short-term memory deficits occur in the retarded due to their inability to utilize rehearsal strategies (Brown, 1974; Ellis, 1970). Rehearsal strategies are active processes ranging from simple repetition to complex organizational processes that increase the probability of recalling information. An implication of these findings suggest a similar short-term memory deficit in slow learners; however, further testing in this area needs to be conducted. In order to test for recall, assess if the student can remember the focus words after a short period of time and then after a prolonged period of time.

Remediation

If a student has difficulty remembering words over short or long periods of time, one of two things are functional: a) either the teacher has taught too many words at one time, or b) the quality of the presentation was such that the child is not able to retain the words.

How many words at once?

As stated earlier, research has shown that normal students learn from six to eight new words a day, including all home and school encountered words. Thus, educators tend to frustrate students when long lists of words are presented for memorization. A rough method of determining how many words a student can learn in one lesson involves concentrated teaching within a one-day interval of ten unknown words. The number of words the student is able to retain the next day is a reasonable gauge of learning rate for word recognition.

Adjusting quality

Children learn through the multiple modalities of taste, touch, sight, hearing, and movement. In classrooms, we deprive students of all but two of these avenues for learning: (a) hearing and (b) seeing. As we consider the quality of teaching, we must seriously think about putting movement and touch back into teaching to enhance learning.

There are many ways of doing this, presented in order of ascending cues:

a. **Visual Imagery** (Lebrato and Ellis, 1974; Taylor et al., 1972)
The student is required to imagine an active context for each of the focus words, for example “The cow jumped over the moon.” for the focus word *jump*. Since the image is vivid, it is easily recalled, and the word is easily recalled since it is linked with the image. If the student is unable to do this, the teacher models an active image context and encourages the student to pattern one after the model.

b. **Verbal Elaboration** (Taylor et al., 1972; Whitely and Taylor, 1973)
The student is asked to recall oral command sentences for each focus word and to structure new sentences with all (or many) of the focus words in it. For example, the student forms, “The dog jumps over the blue ball.” for the embedding of the underlined focus words. If the student is unable to chain focus words in this manner, the teacher should model a sample sentence (e.g., “The blue ball is thrown over the dog who jumps.”). The student is then encouraged to develop similar embedded sentences.

c. **Repetition**

If the student is unable to generate language in verbal elaboration tasks, the teacher must move back to repetitive tasks, similar to those found in oral command. In order of least cues, the student engages in cumulative and then simple, overt repetition tasks:

1. **Cumulative Repetition**
The student is guided into cumulative repetition, where the first word is remembered, then the second and first, and so on:

   Teacher: “Blue”
   Student: “Blue”
   Teacher: “Blue, red,”
   Student: “Blue, red, etc.”

2. **Repetition**
The student repeats words after oral presentation by the teacher.

   Teacher: “Blue,”
   Student: “Blue,”
   Teacher: “Red,”
   Student: “Red,”

   Teacher: “Red, etc.”

   d. **Visual, Auditory, Kineshetic, Tactile**
If the student experiences difficulty with the short term recall involved in the above audiotically-cued exercises, more physical cues (that is, touch and movement) may need to be included in the tasks:

1. **Trace-erase**
   The focus word is printed in chalk on a blackboard or piece of construction paper. The student must trace over the word, sounding the blended phonemes, until the word is obscured by the repeated tracings. The focus word is on view for the first three repetitions, and covered for the last three in an attempt to move the student to memory storage.

2. **Clay Tray** (Jerriolds, 1972)
   The student, using a slightly sharpened dowel or inkless ballpoint pen, carves the word in a thick layer of oil-based modeling clay, associating the sounds with the appropriate printed symbols. Again, the focus word is in view the first three times, removed for the last three repetitions.

3. **Sand Trace**
   Students, viewing the focus word, trace the word (while sounding the associated letters) in sand, unprepared cooking mixes, rice, beans, or other “loose” material. The word is viewed the first three repetitions, and then removed for the last three.

4. **Rubbing**
   Students place ordinary typing paper over a rough surface (e.g., screen, sandpaper), and write the focus word on it with a crayon. The result is a raised-letter image that the student may trace and sound.

5. **Language Master**
   It is advisable to use Language Master cards for the focus cards. If the student forgets the identity of a word, the card can quickly be moved through the Language Master to re-identify the word's identity.

### TRANSFERRING INFORMATION

#### Assessment

After several trials on a particular task, a student will develop a learning set, or an awareness of the problem-solving strategies needed for the specific problem (Kaufman and Prehm, 1966). The ability to utilize that knowledge for new tasks or problems is known as transfer. It has been shown that the retarded demonstrate great deficiencies in transferring information (Borowski and Wanschura, 1974).

With regard to sight vocabulary, the slow learner has difficulty in dealing with word meaning, especially as it relates to context. In other words, the slow learner will have pure rete memory of the word as opposed to the comprehension of it. In order to assess whether the student can transfer, determine if he can insert a focus word in an unknown sentence. This will indicate whether he can transfer from word recognition to meaning level of comprehension.

#### Remediation

Should the student have difficulty placing the words in context, a series of language activities should be used:

a. **Oral Close**
   As the teacher reads a short story or poem to the student, purposefully omitting some of the focus words, the student can gain understanding of language and focus words word meaning by reinserting the words in the oral context.

b. **Language Experience Story Close**
   Using the student's own language experience story, the teacher cuts out the focus words. The student is required to reinsert the words in the context of that story. The student is generally able to reinsert the words, since the language is natural and familiar.

c. **Printed Close**
   The teacher can give the student a series of selections with doze deletions, offering a sequence of cues to help the student progress through the stages to printed close with no cues. In ascending order of support these tasks include:

   1. **Printed Close, No Cue**
      Students puts in focus words, no phonics, visual, word bank, or maze cue is provided.

   2. **Printed Close, Word Bank Cue**
      Student uses a printed word bank to insert omitted words.

   3. **Printed Close, Maze Cue**
      Word choices are provided, from which the student selects the appropriate insertion.

   4. **Printed Close, Phonics Cue**
      Student is provided with an initial consonant cue in order to reinsert omitted words.

5. **Picture Cues**
   The student inserts pictures from a picture bank to replace omitted words.

### Summary

A collation of the Memory Deficit research in special education provides reading educators with a diagnostic-prescriptive approach to a more focused and rational pattern for sight vocabulary instruction. With knowledge of specific memory deficits and a means of identifying them, the reading teacher can better pinpoint the casual factors for lack of retention of focus words. Armed with an understanding of casual factors, the reading teacher is in a better position to prescribe efficient remedial procedures that match student need. In short, memory research provides a “Why?” to the “How?” of remedial reading prescriptive techniques. This match enables reading educators to do a better job of matching remedy to specific need.

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DIFFERENTIAL EFFECTS OF COGNITIVE, AFFECTIVE, AND PROPRIOCEPTIVE INSTRUCTIONAL APPROACHES ON VOCABULARY ACQUISITION

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Few would argue that acquisition of a rich vocabulary benefits listening, reading, speaking, writing and thinking. Nonetheless, there has been relatively little interest in the study of this process in recent years. Ironically, the conclusions reached by two independent and extensive reviews of the literature on vocabulary acquisition may have further muted the very interest these intended to stimulate. That conclusion was that most any method to improve vocabulary seems to result in some gains, but no method appears to have a significant edge over the others (Petty, 1967; Manzo & Sher, 1972). This conclusion seems a bit unsettling in view of the established relationships between vocabulary and most all other developmental functions.

This study re-examined the question of how best to facilitate vocabulary acquisition. The basic research question was made more precise by the addition of two distinctions. First, the three instructional methods were drawn from three categorially different general approaches; and second, the learning outcomes were evaluated qualitatively as well as quantitatively. A small sample, counterbalanced design was employed, primarily to control for the “teacher” variable which tends, in most methods research to overshadow the treatment effects. A dictionary worksheet method represented the traditional Cognitive Approach. The Affective Approach was represented by a newer and somewhat less conventional method stressing subjective-affective associations with new words. The Proprioceptive Approach was represented by an entirely new and quite unconventional method which sought to achieve cognitive growth in vocabulary by means of motoric associations and learnings.

The research design and findings follow a fuller description of the teaching strategies represented. The basic paradigm for each teaching method is described in order to permit the reader to form a personal appraisal of each strategy and potentially to be able to employ the method(s) of choice. The last two steps of each method were conducted in an identical way so as to reduce differences other than those which could be attributed to the generic approaches.

APPROACHES

Cogitative Approach: Dictionary Worksheet

This method was fashioned to resemble the most commonly employed approach to teaching new word meanings. Its form is based upon the findings of a study of teacher opinions which indicated that most teachers tend to prefer vocabulary activities which involve little or no direct teaching, and which stress dictionary use, context, and incidental attention to new words (Adley, 1941, as cited in Spache & Spache, 1973).

1. Students were given a “word learning worksheet” consisting of 8 words, each followed by a sentence using the new word.

2. Students were instructed to look up each word in a dictionary and to copy the definition which best fit the use of the word in the worksheet sentence.

3. The teacher supervised the students’ work by observing their individual progress, pointing out errors, and/or discussing selected word meanings with a student.

4. Students read a short passage containing each of the 8 new words.

5. The teacher directed a discussion of the passage, using the new words as often as possible so that these might be further refined and reinforced through oral language usage.

Affective Approach: Subjective Approach to Vocabulary (SAV)

SAV (Manzo, 1982) is a procedure which urges students to “anchor” new word meanings to subjective associations and/or prior experiences. The associations evoked in a typical lesson are intended to represent a subjective-affective counterpart to conventional objective-cognitive learnings. Presumably, new word meanings would become labels for existing knowledge and feelings, and therefore a basis for expanding student schemata, or structures and strategies for word learning. The SAV steps followed in this study are described below.

1. The teacher showed a word (printed on a card), pronounced it, and told what it means. The students wrote the word on the front of an index card, and the meaning on the back of the card.

2. The teacher asked the students what the word reminded them of. (The teachers were ready with a few examples in case the students were unable to respond initially.)

3. After various associations were offered, students wrote one association (their own or someone else’s) below the definition on the back of their index card.

4. Students read a short passage containing the 8 words.

5. The teacher directed a discussion of the passage, using the new words as often as possible so that these might be further refined and reinforced through oral language usage.

Features of this approach are rooted in studies and approaches employed by Haggard (1980) and Duffelmeyer (1978, 1980).

Proprioceptive Approach: Visual-Auditory-Kinesthetic Vocabulary (VAK)

Kinesthetic, or proprioceptive instructional methods are those which “incorporate muscle movements to supplement visual and auditory stimuli” (Baker & Waugh, 1982). Developmental psychologists have observed that young children first respond to a stimulus with gross motor movements which signify that stimulus. Over time, the motor movements become increasingly refined until the “motor meaning” is interiorized as a “symbolic meaning” (Piaget, in Phillips, 1923, p. 36). In this way, the meaning for the word has an internal and potentially self-stimulating, counterpart to the cognitive association. The VAK Vocabulary Method, then, simply attempts to connect a new word (a “symbolic” label) with a student-suggested “motor meaning”. The procedure, developed by Casale, has been employed with students from intermediate through college freshman levels.

1. The teacher showed a word (printed on a card), pronounced it, and told what it meant.

2. The teacher asked students to imagine a simple pantomime for the word meaning (“How could you ‘show’ someone what the word means?”).

3. When the teacher gave a signal, the students did their pantomimes simultaneously.

4. The teacher selected the most common pantomime form, “showed” it to the students, who then said the word while doing the pantomime.

5. The teacher repeated each new word, directing the class to do the pantomime and say a brief meaning, or synonym.

6. Students read a short passage containing the 8 new words.

7. The teacher led a discussion of the passage, using the new words as often as possible so that these might be further refined and reinforced through oral language usage.

This strategy is cognate to ideas and strategies such as are represented by the “neurological impression” method of teaching word recognition (Heckelman, 1969), the Fernald-Keller VAKT method of word recognition and spelling (Fernald, 1943), and the value assigned to “proprionicceptive” learning by behavioral therapists such as Wolpe (1958).
METHOD

Subjects
The subjects were 27 fifth and sixth graders from a midwestern private elementary school.
Subjects were randomly assigned to six treatment groups: fifth graders to 3 groups and sixth graders to 3 groups. These six small groups were rotated by treatment, lesson time, teacher, and lesson content.

Design
A modified counterbalanced design, using latin squares for the rotation system, permitted each of the subjects to receive each of the three treatments, and controlled for teacher, lesson content, and lesson order. Random assignment of subjects to groups controlled for the effects of prior knowledge. The independent variable was method, and the dependent variables, described ahead, were post test scores on three subs tests and a total score.

Teaching Materials and Instrumentation
Words to be taught and tested were taken in a two-stage process from the Teacher's Word Book of 30,000 Words (Thordike & Lorge, 1963). Initially 100 words were identified from that list which met the criterion set by Thordike & Lorge for 5th and 6th graders (p. 30). From these, 24 words were selected randomly and assigned to 3 lists of 8 words each. The practice passages employed in each treatment also were constructed from each set of 8 words. The readability of the passages, by Fry's formula (1977), was estimated at 6, 6, and 5.

Three post test scores were derived by manipulation of the test task. Post test I required students to write the meaning of a word, with only the printed word as stimulus. Post test II required selection of a word's meaning from 4 possible choices with no other cues. Post Test III required completion of a sentence from three choices, thus providing the most cues of the three test tasks.

Instructional Provisions
Instruction was provided by 6 volunteer teachers participating in a graduate level summer workshop on vocabulary methods. Each instructional strategy was described to the 'teacher-agents' (to coin a needed term for teachers acting as representatives of the researcher). These six volunteers were provided with practice in each of the three lesson strategies prior to implementation.

Statistical Analyses
A randomized block analysis of variance was employed to test for treatment effects. This statistic provides a correction factor to control for the repetition of subjects across treatments.

FINDINGS
Treatment effect was found to be statistically significant at the .01 level for post tests I, II and Total.

DISCUSSION
The VAK and SAV approaches to word learning appear to be more enhancing of word-concept formation than does the traditional approach, which was adequate where the test was least demanding of deep learning.

In general, these findings seem to concur with Piagetian stages of development, popular 'needs' hierarchies, most phylogenetic and ontogenetic theories of brain development, and to common sense.

The data appears to be saying that verbal learning has primary proprioceptive (nerve-muscle-motor) properties, secondary emotional (subjective consciousness) properties, and tertiary cognitive (sedentary) features. This seems to suggest that to the extent that it is possible, it would be prudent to organize teaching-learning experiences to conform to this seemingly natural order.

Replication of this study with "normal" subjects at different stages of development would lend further credibility to the generalizability of these conclusions. The glaring implications in these findings to those judged to be remedial readers, learning disabled, neurologically dysfunctional, and/or different in language or cultural background also appears to deserve further empirical inquiry.

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<td>Post Test Mean Scores by Instructional Approach</td>
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<td>Randomized Block Analysis of Variance</td>
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<td>Post Test of Recall</td>
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<td>Mean = 8.06</td>
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Post Test of Recognition

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Fry, Edward "Fry's Readability Graph: Clarifications, Validity and Extension to level 17" *Journal of Reading*, 1977, 21, 242-252.
Manzo, Anthony V. "Subjective Approach to Vocabulary Acquisition (of, ...I think my brother is arboreal)" *Reading Psychology*, Summer, 1982.

### Table 5
Randomized Block Analysis of Variance:
Post Test of Context

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### Table 6
Randomized Block Analysis of Variance:
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REFERENCES
A QUALITATIVE ANALYSIS OF MIDDLE SCHOOL STUDENTS' AWARENESS AND PROCESSING OF TEXTBOOK METASTRUCTURE

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When students independently use textbooks as resources for learning, awareness of the components may be as important as the contents of the texts. It would be difficult to think of occasions when students could not benefit from using a table of contents, an index or a heading in order to facilitate learning. Students' abilities to deal with the technical, linguistic vocabulary employed to describe textbook components and the relations between and among components, text and graphics may determine the level and success of learning. From this perspective, it may very well be that students' processing of the organizational features of their textbooks influences the processing of information in their textbooks.

Investigations employing quantitative methods have revealed part of the relation between students' cognitive functioning and levels of knowledge of textbook organization. In a study of secondary students' knowledge of textbook organizational structure, or metastructure, Mateja and Wood (1982) reported main effects for reading achievement and grade level, with reading level accounting for a greater proportion of the variance in scores. Similar results for middle school students were found by Mateja (1982). He reported that an achievement factor, as measured by performance on standardized reading and mathematics tests, could predict awareness of textbook metastructure as well as achievement in combination with academic, attitudinal and intellectual factors.

Additionally, quantitative analyses of metalinguistic awareness (Downing, 1969, 1970, 1972, 1978) have found positive associations between students' knowledge of the technical, linguistic vocabulary used to refer to concepts about print and students' academic achievement. Research on metacognition and metacomprehension (Brown, 1978, 1980;
Canney & Winograd, 1979; D’Angelo, 1981; Garner, 1980) has found that high-achieving readers not only exhibit greater facility when engaging in problem-solving activities with printed materials, but also that they possess greater awareness of their misunderstanding and greater control of their ability to get back on track than low-achieving readers.

A concern with the quantitative analyses in the literature is that researchers have failed to seek the students’ descriptions of the internal operations that occurred during attempts at learning. Such information is invaluable for understanding students’ everyday techniques for learning from content area materials (Herber, 1978; McCallister, 1930; Readence, Bean & Baldwin, 1981) and methods for either working through lessons successfully on the first attempt or for changing strategies when comprehension is encountered on the first attempt in order to be successful on later attempts (Raphael & Tierney, 1981).

At this point, the much more valuable questions appear to revolve around the kinds of knowledge students bring to bear when engaging the structure of reading materials, the cognitive strategies employed to process such structures and the relations between knowledge and processing. In an effort to elucidate further the manner in which sixth grade students might engage the organizational features of their textbooks when learning on their own, students were interviewed in-depth, and their self-reports were tape-recorded and fully transcribed. The qualitative data were collected for two purposes. The first was to provide a description of the cognitive processing strategies for students in the sixth grade. The second was to suggest a tentative theory of metastructure processing.

METHOD

Subjects

Twelve sixth-graders provided verbal self-reports during the interviews. Six subjects were identified as above-average readers; four were average, and two were below-average. Subjects were roughly equally divided numerically for males and females and blacks and whites.

Instruments

Three instruments were employed in this study. The first instrument consisted of a two-page, content-deleted excerpt based on a middle school science textbook (Heimler & Lockard, 1977). The content of the first two pages of a typical chapter was deleted by replacing all letters and numbers with Xs of equal point size and weight. Graphics were reduced in visibility so that they maintained their spatial configurations and locations, yet did not communicate their contents to the subjects. The second instrument was a test of textbook metastructure, which was designed to assess subjects’ knowledge of the components of the textbook and the relations between components.

The last instrument was a structured interview form, which was designed to gather information relative to the strategies that subjects used in order to complete the textbook metastructure instrument and explain their thinking on a correct and incorrect item. Structured questions (Patton, 1980), or direct probes (Ericsson & Simon, 1980), were aimed specifically at subjects’ thinking during the planning, responding and checking stages of completing the metastructure test. Open-ended, or retrospective structuring, questions (Ericsson & Simon, 1980) encouraged subjects to use a think-aloud technique to explain their processes for figuring out an item they answered correctly. Current and retrospective structuring questions (Ericsson & Simon, 1980) encouraged subjects to use a think-aloud technique while making changes on an item they answered incorrectly.

Procedures

Subjects were administered the test of textbook metastructure in their intact content area classes during normal classroom periods on two consecutive mornings. Six students who were tested in the morning were interviewed on each of the two days. Two subjects were randomly selected from each of the six homogeneous content area classes for interviewing. Subjects were interviewed individually, and their responses tape-recorded for later transcription. During the interviews subjects were supplied with the content-deleted text and the test of textbook metastructure.

Data description

Subjects’ verbal self-reports were described in terms of the strategies for working on the test of textbook metastructure, and for explaining their thinking on one correct and one incorrect item. A general description of the cognitive processing strategies was formulated from five factors: a) basis of processing, b) features used to gain understanding, c) application of strategies, d) referents for strategies, and e) awareness of textbook metastructure. The descriptions of the qualitative data were used to suggest a tentative theory about the relations between subjects’ levels of knowledge of metastructure and modes of processing.

QUALITATIVE DESCRIPTION

Subjects related that they processed the textbook metastructure represented by the two-page, content-deleted text in two basic methods, although combinations of the basic methods were common. The first method appeared to be based on the reader, the second on the text. The combinations seemed to utilize differentially various aspects of those bases. Reader-based strategies drew primarily on the subjects’ prior knowledge and previous experiences with printed materials. Subjects using this method to process textbook metastructure reported relying on preexisting internal representations of the layouts of chapters to discern the identity of the materials. Text-based strategies emphasized heavily the surface structures of the content-deleted text and the contents of the textbook metastructure instrument.

Subjects processing textbook metastructure in this method relied on information in the reading materials to ferret out the identity of the materials. Combination strategies exhibited a “more or less” criterion of processing which fluctuated between the resources of the reader and the information from the materials.

In order to reach at least a working level of understanding as to what the two-page excerpt represented, subjects related utilizing various aspects of the layout and surface structures. Among those aspects of layout used for gaining understanding were organizational structures, e.g., title, heading, caption, and the graphics as well as the relations between and among access (organizational) structures, graphics and text. Surface structures of note were the sizes of paragraphs and columns and punctuation marks. Subjects reported attending initially to the signaling aspect of the typographic cueing system, the graphics and the surface features. Areas of the typographic cueing system to receive early attention from subjects were the specific arrangement of ink and white space on the pages, typographic structures which provided access for both planning and executing reading strategies, and the relative degrees of emphasis accorded certain features as indicated by the size and weight of the typesetting. Although graphics were noted in the locations of a photograph (accompanied by a caption), a figure and a demonstration captured subjects’ attention upon first viewing the stimulus materials. Surface features referred to by subjects included the number of letters in particular arrays of Xs and the punctuation, especially question marks and periods.

In applying their cognitive processing strategies, subjects indicated that they consistently employed a basic sequence, although variations existed within and across sequences. Subjects approaching the processing of metastructure from a reader-based point of view: 1) tended to bring a great deal of information to bear during the question-answer paradigm, 2) used a relatively abstract, or context-free, system for answering and
3) exhibited specific knowledge of the layouts of printed materials. Subjects approaching the processing of metastructure from a combination of reader-based and text-based perspectives: 1) appeared to need considerable information from the reading materials in order to activate their own knowledge, 2) engaged in both concrete and abstract reasoning for answering and 3) possessed nonspecific knowledge of the layouts of printed materials. Subjects characterized by using text-based, or context-bound, processing strategies tended to rely almost exclusively on information from the context of the reading materials, 2) reasoned on a situational, or item-by-item, basis, and 3) were generally unaware of the structure of layouts presented by reading materials.

The texts related using several sources as references for working on the science textbook excerpt. Three of the most often mentioned were: 1) themselves, 2) the reading materials and 3) other resources. Those relying mostly on themselves as sources of information indicated that they summoned prior knowledge and previous experiences for making decisions while working on the reading materials. Subjects relying on the reading materials believed that they attempted to use the available information from them (the materials) in order to help themselves work through the assignment. For subjects referring to the influence of outside sources in aiding themselves to complete their assigned task, teachers, lessons from teachers and modeling from a teacher-like authority were named.

All subjects made at least some allusion to using the three referents during the course of the interviews, so the categories held some processes in common. The interesting finding was the relative and functional usages of the referents. Subjects relying on themselves activated information from reading materials and other resources to test their expectations and confirm or disconfirm their predictions or when they encountered processing difficulties. Subjects expressing reliance on the reading materials more often used the materials to help figure out answers, and used other resources in times of difficulty. Those subjects attempting to transfer knowledge from other sources to the metastructure situation expressed difficulty, and found little aid in either the reading materials or themselves.

Findings from the verbal reports indicated there was a direct relation between the subjects' reading levels and their awareness of textbook metastructure. Of the 12 subjects interviewed, five expressed an awareness that the two-page, content-deleted text represented an excerpt of a chapter from a content-based textbook. All five of those subjects were designated as above-average readers. That means that two subjects who were identified as below-average readers, four subjects in the average range and one subject from the above-average group did not relate recognizing textbook metastructure. Above-average readers reported their reasoning processes with a great deal of precision and explicitness for both the metathird structure and reading situations in general. Their self-awareness seemed to transcend the immediate situation, and actually appeared to be independent of it. Average readers related using strategies from inappropriate specific instances, e.g., reading a novel or a story in a book or a magazine, and generally described their mental operations in broad and global terms. Below-average readers expressed a belief that reading situations were discrete and that there was no generalization across situations. Their descriptions focused almost exclusively on the situation at hand, and they made little or no reference to specific occasions in their prior experiences to which the metastructure situation may have been analogous.

Descriptions of processing for textbook metastructure

The verbal data from the student interviews suggest that direct, though imperfect, relations exist between students' levels of knowledge and strategies for processing textbook metastructure. The association seemed to be such that if one of the variables were known, the other generally could be predicted. For example, if a student's level of knowledge were known, then the strategies for processing usually could be identified. Obviously, predictions could occur from types of strategies to levels of knowledge. The direction of influence suggested by the verbal data, however, indicated that a student's knowledge level had a greater impact on processing strategies than vice versa.

It appears that the greater the knowledge of textbook metastructure, the greater the likelihood that processing strategies would be based on prior experiences and abstract reasoning. Similarly, the greater the knowledge of textbook metastructure, the greater the likelihood that metastructure would be processed on the bases of information in the reading materials and concrete operations. For students with average knowledge of the metastructure, the more likely they would process the metastructure on the bases of both reading experiences and information in the materials. The inverse of these relations also seemed to be true. It appeared that the students with high knowledge were not likely to be processing metastructure on the basis of the reading materials used for the assessment. Likewise, students processing the metastructure on the basis of the reading materials tended not to be those with high knowledge. Those students reporting heavy reliance on both the contents of the materials and their experiences were probably not those with either high or low knowledge of the metastructure.

Toward a tentative theory of metastructure processing

The theory suggested by the qualitative data is that the type of strategy used for processing textbook metastructure is a function of students' knowledge base. This theory proposes that modes of processing and levels of knowledge exist on interrelated continua in such a way that students engaging textbook metastructure summon information from their stored knowledge base in order to initiate strategies for processing. The influence of knowledge is stronger on processing than vice versa because students at different levels of knowledge tend to exhibit the same facility to process in several modes. Rather, the relation seemed to be such that the greater the level of knowledge, the greater the range of processing. Although students with a high level of knowledge of textbook metastructure were most often characterized by abstract processing, they were quite capable of changing into other modes when situations demanded it. This type of flexibility was not recorded for students in either the average or low-knowledge ranges.

Students in the average range for knowledge of textbook metastructure generally employed strategies that involved concrete and abstract processes. Students with high knowledge usually employed abstract processes, and students with low knowledge used predominantly concrete operations. These were the normal levels of functioning that students operated at when they were engaging familiar concepts and contents.

The theory suggests that changes in operations occur at two interfaces, i.e., 1) when students are learning new concepts and contents and 2) when students are encountering difficulties in comprehension. At these times, changes are predicted for students and their modes of processing. When students are attempting to learn new ideas or are encountering difficulties in comprehension, they have to employ a level of processing one step below their usual level. For instance, high-knowledge students shift from abstract processing to a mode which combines abstract and concrete processes; average-knowledge students shift to a concrete mode, and low-knowledge students shift to a lower level of concrete operations. Students maintain these levels as long as they continue attempting to gain understanding of the new knowledge. Obviously, two outcomes are possible: 1) no learning occurs or 2) new knowledge arises. If no learning occurs, then students stay at the same level of processing with regard to the prospective new knowledge. If new knowledge arises, then one of two shifts can take place. In the first, students resume processing at their accustomed level. In the second, students integrate the new knowledge with prior
knowledge, and shift up a level from their usual level of processing. In that case, for example, low-knowledge students may process at a combination of concrete and abstract operations, average-knowledge students at an abstract level, and high-knowledge students at a more sophisticated level of abstraction than their usual one.

Summary

The qualitative data have proved useful on several counts. First and foremost, they have provided the basis for a testable theory of textbook macrostructure processing. The self-reports suggested possible links between knowledge bases and processing strategies as well as the directionality of influence. Additionally, verbal data not only identified the influence of knowledge on processing, but also pointed at likely occasions and directions of change. Lastly, the interviews revealed the relative levels of knowledge of textbook macrostructure achieved generally both by sixth grade students as a group and within homogeneously-grouped classes.

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In order to present a more thorough analysis, reactions to the Mateja paper will be presented in three specific areas. These areas are: 1) the theory, 2) the nature of the experiment and 3) the implications for future study.

The Theory. With the emergence of the discipline of cognitive psychology, researchers have directed attention to the covert, mental processes engaged in during reading and learning. The development of metacognition and metacognition or the knowledge and control of one's thinking and comprehending activities, extended this emphasis on "process" to an even greater degree. The theory of metastructure proposed by Mateja in this paper and earlier by Mateja and Wood (1981) represents yet another dimension of the processing strategies engaged in by readers as they try to make text more meaningful.

Textbook metastructure focuses on students' understanding of the functions of and technical vocabulary associated with various textbook aids. In this sense, it differs from the theories underlying other test-processing research which focus on within-text organizational patterns (i.e., Kintsch, 1974; Meyer, 1977). The use of X's to replace letters eliminates any interference from the actual semantic content of the textbook material and makes the task largely structural and spatial in nature.

Much of the value of the theory of metastructure rests in two areas: 1) what it has left unexplored due to its newness as a field of study and 2) the tendency of educators to overlook this aspect of textbook knowledge. Herber (1970) described this phenomenon as "assumptive teaching" or the practice of assuming that students possess the prerequisite abilities necessary to master the subject to be studied. To circumvent this problem, teacher educators have recommended the use of content reading inventories to assess, among other things, existing knowledge of textbook aids. Yet, the theory of metastructure raises deeper and more pervasive questions about students' underlying knowledge and understanding of the functions of these most vital textbook resources.

The Nature of the Experiment. In recent research, self-reporting instruments in the form of surveys, questionnaires and oral probes have been used to provide descriptive data regarding the internal operations which occur as students attempt to learn (i.e., Baker, 1979; Carey, Harste & Smith, 1981). Such investigations, with their elements of naturalistic research and, because of the invaluable and seemingly inaccessible information they provide, are being advocated in the professional literature (Aullius, 1981; Carey, 1981; Snow, 1974). The Mateja study has adhered to the tenets of naturalistic inquiry in that the data were collected under ecologically valid circumstances using school age students as subjects and actual textbook material (although modified) as the experimental stimulus.

Additionally, the students in the Mateja study were interviewed in depth and their self-reports tape-recorded and transcribed. The questions which comprised this structured interview necessitated that the students retrace their thought processes and attend to and analyze the mental routes taken to reach particular conclusions. This structured interview was comprehensive in that it included questions identifying subjects' strategies in five areas: 1) planning, or how the students decided to approach the task, 2) responding, or how the students went about answering the test items, 3) checking, or what, if anything, the students did in the way of proofreading the completed test, 4) and 5) answering either correctly or incorrectly, or what the students were
thinking as they eliminated alternatives and finally decided upon an answer. The interview provided information on a wide scope of behaviors beginning with the students' preliminary reactions to this most unusual stimulus material and culminating with their reasons for responding to test items. Another interesting component for self-reporting instruments could involve the students' perceived purpose of the experiment. Asking questions such as "Why do you think I asked you question number — ?", "Why would I present information using X's?" or "What do you think I will do with this information now?" may prove most enlightening to educational researchers. Perhaps knowing students' perceived purpose of an experiment may give researchers more insight into the reasons behind poor versus good performance and the Hawthorne Effect.

Implications for Future Study. As was mentioned previously, the theory of metastructure because of its fledgling status as a field of inquiry, has raised as many questions as it has answered. From these questions are the following implications for future study:

1) A logical follow up to the present study would be the development of an instructional model for metastructure based systematically on the analysis of the self reporting data. Knowing what strategies students do and do not use, without benefit of prior instruction, would be most helpful in determining the strategies needed for learning to take place.

2) The extend to which knowledge of metastructure is related to other cognitive and affective variables is yet another open field of study. Correlational studies could be conducted to determine relationships between tests of metastructure and tests of cognitive style or personality traits, for example.

3) While educational research abounds with postsecondary subjects (Durkin, 1981), exploring the metastructure concept with college students, specifically those students enrolled in developmental reading programs, could be advantageous given the paucity of research on effective study skill strategies.

The fact that this list of implications for future study is not exhaustive is what makes the theory of metastructure an important and exciting contribution to the field of reading. It would be interesting to note what future research will reveal about the transfer effects of metastructure training on students' ability to learn from text.

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REACTION: QUALITATIVE ANALYSIS OF MIDDLE SCHOOL STUDENTS' KNOWLEDGE AND PROCESSING OF TEXTBOOK METASTRUCTURE

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The attempt to explain middle school students understanding of the structure of text organization is a meritorious one. The fact that the attempt has resulted in a thought-provoking and logical theory of the processing of knowledge of textbook metastructure is further evidence of Mateja's success. The theory is a workable one, backed by the research of related areas (e.g., metacognition and metacomprehension, Brown, 1978, 1980; D'Angelo, 1981; Garner, 1980; metalinguistics, Downing, 1972; Mattingly, 1972) and is well-presented here. Qualitative analysis, while difficult to structure and more difficult to interpret, is the obvious best choice for approaching the problem of explaining the relationship between levels of knowledge of metastructure and the processing of metastructure by middle school students.

It has long been accepted by reading specialists that the format of textbooks, organization and typographical cuing all aid the student's comprehension of the text content. Mateja's content-deleted, X-text research materials have contributed unique information about the varying abilities of good and poor readers to use this structure of text to facilitate comprehension. Historically, by the time the child reaches middle school grades s/he is expected to have developed sufficiently the skills to pursue independently content-laden text material. Mateja's research suggests the need for instruction and a better understanding of textbook metastructure by reading specialists and teachers.

The strengths of Mateja's work lie in the use of the structured interview format used to gather the necessary data. The interview took place almost immediately after the student completed the content-deleted, X-text activity, thereby permitting responses with minimal error due to delay after exposure. Adequate information was obtained for qualitative analysis through the structured use of both closed and open-ended probes and through the talk-aloud procedure. This talk-aloud technique permitted Mateja to look at two kinds of mental processing in his subjects. In the student's explanation of his thinking on a problem s/he knew s/he had answered correctly, the process of retrospective structuring could be observed. In the oral explanation of an item on which the student was informed that s/he was incorrect, it was possible to observe both retrospective and current structuring of the problem solving process.

Another strength of the structured interview approach is that it did not interfere with the actual testing procedure. Quantitative data gathered during an earlier study (Mateja, 1982) suggesting the important link between reading level and knowledge of textbook organizational structure, serves as an important cornerstone in the development of Mateja's theory of middle school students' knowledge of textbook metastructure. Obtaining the other important cornerstone from the qualitative data did not involve interrupting a student during active problem solving of the metastructure test. Permitting the student to complete all of the twenty questions of the content-deleted, X-text activity before interviewing may have permitted the students a necessary number of repetitions of problem solving to enable them to more accurately articulate what it was they were doing. Interrupting a student mid-question or mid-test might serve to interrupt his/her flow of thought, leaving the student slightly disoriented and less able to accurately describe his mental processing. Thus, the research design itself likely facilitated the best possible information from every student during each type of data gathering procedure.

Since better readers, according to Mateja, apparently possess better awareness of textbook metastructure (at least at the middle school age ranges), implications of his work suggest that...
reading specialists should consider the importance of teaching poorer readers such skills. Since content textbooks are written in definite organizational styles, a student's ability to recognize these patterns should help to improve reading comprehension of such material. The concrete, text-based, reader who is largely unaware of the structure of text layouts, and reasons on situation, item-by-item bases, might be freed from his heavy reliance on information from the content of reading materials to become more abstract in his reasoning and problem solving. One approach to this might be to teach the features and functions of text patterns. Such training has the obvious advantage of being generalizable to all structured situations which require planning for problem solving. Students with special learning problems, such as the learning disabled or bi-lingual learner as well as the remedial reader, could benefit tremendously from such specific instruction. Such children often are characterized by lack of organizational skills, poor attention to detail, poor focusing ability, poor memory and weak reading skills, especially comprehension. These learners are lost in the heavy demands placed upon their processing skills by content area teachers.

It would be of interest to assess different populations with Mateja's approach to determine if his theory holds across developmental ages or progresses in some way. In another earlier work, Mateja and Wood (1981), reported that above average readers in both seventh and twelfth grades apparently enjoyed greater cognitive clarity than their average and below-average counterparts, who experienced greater confusion. This suggests that perhaps his results can be generalized across ages. The study of developmental college students, adult learners, and special education populations might yield some valuable insights into the mental processing strategies of each group. Another recommendation for future research is to look at actual, grade-level text materials instead of content deleted, X-text and ask children of varying levels of reading ability and grade levels how they used the organizational parts of the text to solve problems. The results of such work may provide the answers to some difficult questions concerning how to better prepare students for the increasingly complex demands placed upon them as they advance through the grades.

REFERENCES
EVALUATION OF A SECOND GRADE COMPENSATORY/REMEDIAL PROGRAM

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Act 433 of the 1980 Louisiana legislature funded experimental compensatory/remedial pilot programs for second-grade students who had failed or might fail the state test of basic skills in language arts and arithmetic. Seventeen grants of approximately $50,000 each were awarded to local parish school systems who developed experimental compensatory/remedial programs which might be used as replicable models by other school systems in the state during the next academic year. With the help of the investigator, Lafayette Parish school board central office personnel wrote and submitted a proposal which was subsequently funded. The pilot program focused on different instructional methodologies, parental involvement, and a structured inservice program for personnel involved in the program.

Specific program objectives included raising the average achievement of subjects in language arts and arithmetic, as measured by gains in normal curve equivalency on composite scores of the SRA Achievement Tests, increasing parental involvement both at home and school, providing inservice programs for parents and teachers involved in the pilot program, and developing a closer working relationship between project personnel and faculty members at the University of Southwestern Louisiana.

The general design of the study was that of a pretest/posttest control group type with match-paired analysis of data. Subjects (N = 141) included retainees and borderline students (those identified as needing compensatory/remedial education in order to pass second grade) enrolled in two elementary schools, which were matched on the basis of percentage of retention of second-grade students, race, and socioeconomic status of the student body. Individual subjects were matched on the basis of sex, race, socioeconomic status, chronological age, and mental age as determined by the Primary Mental Abilities Test. The students were then randomly assigned to eleven second-grade classrooms in the two elementary schools, while the eleven classrooms were randomly assigned to treatment or control groups.

In Treatment One (Experimental Eclectic Approach), a certified cooperating teacher (co-teacher) provided remedial instruction within the regular classroom for identified students, while the regular classroom teacher taught the remainder of the class Social Living. (Students enrolled in the compensatory/remedial program did not receive a grade in Social Living for the 1980-1981 academic year.) The co-teacher worked with the remedial student daily for 50 minutes using an eclectic approach which embodies basic principles of diagnostic/prescriptive teaching. Both the classroom and cooperating teachers reviewed the hierarchy of skills in language arts and arithmetic which were issued by the Louisiana State Department of Education, and upon which the basic skills test is based. Using both formal and informal diagnosis, the teachers determined students' instructional levels, diagnosed skill deficiencies, and applied prescriptive instruction, employing a variety of materials and appropriate methodology. Record keeping demonstrated both group and individual progress.

The classroom and cooperating teachers, school administrators, and central office personnel involved in Treatment One of the pilot program attended weekly inservice meetings designed to teach necessary theory and skills related to diagnostic/prescriptive instruction. College credit at the graduate level was awarded for completion of this inservice program; instruction was provided by the author, who was involved in the program from its inception.

In order to ensure that the presence of the two cooperating teachers was not the determining factor, and that classroom
teachers could also be taught to employ diagnostic/prescriptive techniques, the roles of the co-teacher and classroom teacher were reversed in two of the four classrooms assigned to Treatment One; i.e., in two classrooms the co-teacher taught Social Living while the classroom teacher provided remedial instruction.

A second component of Treatment One involved the parents of children enrolled in this phase of the pilot program. The co-teachers, classroom teachers, administrators, and central office supervisors, assisted by the university faculty member, taught parents in three two-hour evening sessions, demonstrating how parents could assist in instruction and reinforcement of children’s academic progress at home and at school. A weekly newsletter, delineating basic skills which were introduced, was taken home by the children, who were reinforced with Scratch and Sniff stickers when they returned the parents’ comments section of the newsletter to school the next morning.

In Treatment Two (Traditional Approach/Placebo Treatment) subjects enrolled in four classrooms (two in each school) worked with either the classroom teacher or the co-teacher for 20 minutes daily, while other students in the classroom were instructed in Social Living. However, the instructional methodology focused on simply reinforcing previous classroom instruction. No attempt was made to individualize instruction, or to diagnose children’s skill deficiencies and provide appropriate remedial instruction. Treatment Two was in effect a placebo treatment, designed to increase pupil time-on-task, and to lower pupil-teacher ratio for instruction. If subjects in Treatment Two outperformed those in Treatment One (diagnostic/prescriptive approach), then improved academic performance might have been due to simple reduction of pupil-teacher ratio combined with skill reinforcement, or to the physical presence of another teacher in the classroom, not to specific diagnosis and individualized prescriptive instruction.

Three classrooms were assigned to the control Group, whose subjects had been matched with those in Treatments One and Two. No treatment of any kind, including the assistance of the co-teachers, was administered to these children. (Since this was a pilot program, the school system was allowed to deny services to students in the control group.)

A simple one-way analysis of variance of the three groups' mean gain in normal curve equivalents on the composite score of the SRA Achievement Test (administered in November and May) revealed statistically-significant differences in student performance across the three groups (F = 10.36, p < .05). The mean gain of 35 students enrolled in Treatment One was 9.15 nce’s; of the 37 students enrolled in Treatment Two, 5.45 nce’s; and of the 28 students enrolled in the Control Group, 7.31 nce’s. Students enrolled in Treatment One gained the most as measured in normal curve equivalents on a standardized achievement test, which is probably not the most effective way of measuring achievement gains among these students, many of whom scored in the chance-level range of the test. However, the standardized achievement test was mandated by the State Department of Education.

While the parent inservice program component of Treatment One was not as great a success as had been hoped (attendance at the three meetings ranged from 10 to 17 parents present), parents involved in this pilot program demonstrated on an un-normed and non-validated questionnaire that they felt these sessions were valuable, appreciated the newsletter (which they felt to be a better means of communication), and valued the compensatory/remedial program.

The program objective “to develop a closer working relationship between university faculty and project personnel” appears to have been met. The principal of one school involved in this pilot program offered his campus to the university for extension courses, and he, as well as all three central office supervisors, and both co-teachers completed courses required by the State Department of Education for certification as Reading Specialists. In addition many of the classroom teachers at both schools enrolled in graduate-level reading courses at the university.

The compensatory/remedial program was funded partially by the state of Louisiana and partially by the Lafayette Parish school system for the academic years 1981-1982 and 1982-1983. Seven cooperating teachers were employed in 1981 to service 224 second-grade children; the diagnostic/prescriptive method was employed with all children. Some 242 (83%) passed the Louisiana State Basic Skills Test in language arts, while 259 (91%) passed the arithmetic test. Fourteen cooperating teachers were employed during the 1982-1983 school year in order to provide services to all second-grade children enrolled in the parish system who met the criteria of previous or possible retention.

The project evaluator encountered a classic problem traditionally associated with conducting experimental research in public school classrooms. The John Henry effect was definately in operation during the first year of the compensatory/remedial program. While the 11 teachers were randomly-assigned to treatment and control groups, all 11 were aware of the group to which they had been assigned. The John Henry effect refers to a situation often found in educational research in which a control group performs above its usual average when placed in competition with an experimental group that is using a new method or procedure that threatens to replace the control procedure. This phenomenon is probably quite common in educational studies in which a conventional teaching methodology is compared to a new methodology. Teachers in the control group feel threatened by the new methodology and make a strong effort to prove that their way of teaching is as good as the new method (Borg & Gall, 1979). The evaluator discovered that the Control Group teachers had obtained information about innovative techniques and diagnostic procedures from teachers involved in Treatment One; when questioned, teachers in Treatment One indicated that every child was enlisted to the best possible instruction, and that, if teachers knew of methodology that helped children, they were bound to share this knowledge with their colleagues. Following this line of reasoning, teachers in Treatment One shared new discoveries with the Control Group teachers. Both groups of teachers contacted parents: Treatment One teachers met with parents at the parent inservice sessions, and mailed home a weekly newsletter. One Control Group teacher called the parents of each child in her classroom once a week. Both groups (Treatment One and Control Group) employed individualized instruction geared to diagnostic information gleaned from the students, and both groups provided children with concrete records of achievement with progress charts, stickers, and graphs.

While the compensatory/remedial program as described above has been instituted in every school in Lafayette Parish, and has proved to be a cost-effective means of increasing students' achievement (the 1981-1982 evaluation demonstrated that the cost of the program was approximately $35.00 per pupil per month gain in grade level equivalency), some concern has been expressed by the school board about continuation of the program, due to the current economic recession and the drop in sales tax revenues within the parish.

REFERENCES

AN EXPLORATORY STUDY OF THE USE OF ORGANIZATIONAL PATTERNS AS AN AID TO COMPREHENSION

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Printed materials, whether they be content textbooks or newspapers, are written in a variety of styles. Some use a narrative descriptive style of presentation, while others use many examples or illustrations to impart information, with others presenting a number of facts which must be interrelated to reach a solution. In studying content information, students of all ages frequently experience difficulty comprehending ideas as they decode the symbols. This difficulty may be due to many factors such as the readability level of the material, the vocabulary, lack of related background experiences or any number of other reasons.

One factor which is currently receiving more attention is that of the organization or structure of the text. In 1917, Thorne (1917) suggested that one reason for failure in reading is the student's inability to organize and understand the organizational relationships in written materials. Later, Nila Banton Smith (1964) and James McCallister (1964) identified different patterns of writing which existed in various content areas and served as aids in understanding. Through the years, persons interested in the teaching of study skills have encouraged teachers to help students learn to look for the author's organization in a text in order to increase comprehension. These recommendations have been based more on common sense than research. However, current research in comprehension encourages further investigation.

Schema theory research findings suggest that individuals understand information based on their different backgrounds and the way they organize the information in their minds (Irannejad, 1980; Bartlett, 1978; Taylor, 1980; Meyer, Bransford, and Bluth, 1980; Rumelhart, 1978). Major schema categories have been identified by different researchers as they investigate the organization of text materials using discourse analysis (Meyer, 1979; Kintsch, 1977). However, these categories look at text organization from a writing or story structure rather than from the actual reading text structure as suggested by McCallister (1964), Niles (1974), Robinson (1978), and Shepherd (1982).

Cheek and Cheek (1983) reviewed middle and secondary content materials to determine the organizational patterns commonly used in text writing. The four patterns identified were enumeration, relationship, persuasive, and problem-solving. This study was designed to determine if instruction in the identification of these organizational patterns in content materials caused a significant change in comprehension scores on a standardized reading text. Specifically, the study:

(a) explored a procedure for relating the identification of the four organizational patterns and comprehension to seventh graders' study of content materials, and
(b) investigated the impact of this procedure on reading comprehension test scores.

METHOD

Subjects
The sample consisted of fifty-seven (57) students enrolled in two heterogeneously grouped seventh grade reading classes. Twenty-seven (27) students were in the section used as the control group and the remaining thirty (30) in the section used as the experimental group. Each group had a different teacher for the reading class.

Materials
Tests: The classes had been administered the Iowa Silent Reading Test, Level 1, Form F (1973), as a pre-test at the beginning of the school. The study was conducted eight weeks into the school year. Therefore, parts of the same test were used as a post-test measure at the end of the two week training period. The parts of the test used to measure comprehension were: Reading Comprehension, Part A; Reading Comprehension, Part B; and Directed Reading, Part B.

Part A of this test measures the student's ability to answer questions based on short passages to which he had ready access. Part B tests his ability to answer questions based on a longer, essay-type passage where short-term retention is required. On the Directed Reading, Part B, the student's skills in skimming and scanning an encyclopedia-type article for general impressions of content and specific information needed to answer particular questions are measured.

Tests: To teach the four organizational patterns, the students' content textbooks in social studies, science, mathematics, and language arts were used.

Procedures
The researcher conducted the instruction with the experimental group and the post-testing with both the experimental and control groups. The reading teacher for the experimental group observed in order to do follow-up instruction and work with the content teachers after this portion of the study was complete.

Using the four organizational patterns identified by Cheek and Cheek (1983 a), the students were involved with instruction in identifying and using these organizational patterns in their content materials for ten days, thirty minutes per day. The patterns were introduced in the order of frequency of use in the text materials with the enumeration pattern being first, then the relationship pattern, followed by the problem-solving pattern, and finally the persuasive pattern. The patterns were not introduced by name but rather as Pattern 1, 2, 3, and 4. An inductive procedure was used with passages taken from the texts, questions asked, and students led to see the existence of a pattern. Once students recognized the pattern by its function, they were led to give a name to the pattern. The only difference in the students' labeling and that of Cheek and Cheek (1983 b) were in Pattern 1 which they called an elaboration pattern as compared to Cheek and Cheek's name of enumeration pattern.

As a new pattern was introduced comparisons were made between the previously studied pattern and the new pattern. To help make the concept of organizational structure more concrete, students were provided duplicated copies of their text material to mark. Pattern 1 (enumeration pattern) was marked by circling the central thought and underlining information which expanded the idea. Pattern 2 (relationship pattern) was marked by underlining the two or more ideas which were related either by cause-effect relationships or comparison-contrast relationships. Pattern 3 (problem-solving pattern) involved the use of steps in problem solving with students following an outline of the steps proposed by Robinson (1978) and completing the outline as they read mathematics and science problems. For Pattern 4 (persuasive pattern) the students marked sentences which gave opinions and attempted to convince the reader about a topic.

As students were instructed in the recognition of the four organizational patterns, they were also informed about the importance of the different imbedded aids in recognizing patterns as well as remembering the information. Aids such as text headings, type size, signal words, and marginal notes were discussed with each pattern. Additionally, study questions provided at the beginning and end of the chapters were used to help the students establish purposes for reading. They were shown how their purposes for reading related to the way that the material is read — were they looking for details, comparisons,
opinions, etc.? This was further related to test taking skills by using sample test items from tests given by their content teachers and showing how the questions related to the information in the text and further how recognizing the organizational pattern in the text helped the students create questions which were similar to their test questions.

Following the ten days of instruction with the experimental group, the post-test was administered to both the experimental and control groups.

RESULTS

Table 1 provides the means and standard deviations for the two groups on each of the three subtests used as pre- and post-test measures. The planned comparisons were analyzed using a 2 x 3 analysis of variance (ANOVA), analysis of covariance (ANCOVA) and multivariate analysis of variance (MANOVA). The comparisons were investigating whether instruction in organization patterns was significantly more effective than no specialized instruction in improving the students' ability to:

1. answer questions based on short passages,
2. answer questions on a longer, essay-type passage,
3. skim and scan material to answer specific questions, and
4. perform on any combination of the above subtests.

The analyses indicated that the instruction in organizational patterns was not statistically significantly different from the no-instruction condition on any of the three subtests of the Iowa Silent Reading Test Level 1, Form F. In comparing gains on short passage subtest, there was no significant difference between the experimental and control groups, [F (1.56) = .4; p = .52]. There was no significant difference between the gain scores of the experimental and control groups when responding to questions on longer-essay passages, [F (1,56) = 1.94; p > .17]. There were statistically insignificant differences on the gain scores between the two groups in their ability to skim and scan material to answer specific questions [F (1,56) = .91; p > .34].

Using an ANCOVA to compare the raw scores of the two groups on each of the subtests, the following results were obtained. On the pre- and post-test scores of the subtest measuring responses to short passages, there was no significant difference between the two groups, [F (1.56) = .46; p > .49]. There were significant differences on the pre-and post-test scores of the two groups in response questions on longer-essay passages, [F (1,56) = 2.19; p > .14]. There was no significant difference between the groups in the pre- and post-test measuring skimming and scanning to locate specific information, [F (1,56) = 1.78; p > .19]. A MANOVA pooling the gains of the various subtests revealed no significant differences in scores. There were insignificant differences on the pre- and post-test gain scores of the two groups were all subtests were combined for each group, [F (3,53) = 2.06; p > .11]. A comparison of the gains when the subtest measuring responses to short passages and the subtest measuring longer-essay passages were pooled also indicated no significant difference, [F (2,54) = 1.74; p > .19]. When subtest scores measuring responses to short passages and measuring skimming and scanning skills were pooled, there were no significant differences in the two groups [F (2,54) = .73; p > .48]. The pooled results of the subtests measuring responses to longer-essay passages and that measuring skimming and scanning likewise yielded no significant differences, [F (2,54) = 1.83; p > .17].

DISCUSSION AND CONCLUSIONS

In light of the results of this study, one might conclude that the understanding of organizational patterns has no effect on comprehension. However, due to changes which students made in their study strategies and their approach to their content textbooks, organizational pattern instruction needs further investigation.

There are several variables that affected this study which must be addressed prior to further study.

1. The students were not randomly assigned to the experimental and control groups. Two sections of a heterogeneously grouped seventh-grade class were used and each section had a different teacher. The attitudes of the classes towards the post-testing were quite different and tended to reflect the researchers perception of the atmosphere of the classes. The control group was quite conscientious during their testing time while the experimental group seemed less concerned. Using classes which had the same teacher or who were randomly assigned to the groups is necessary.

2. Three days prior to the conclusion of the instruction and the beginning of the post-tests, the school gave four days of achievement tests. The students appeared to be tired of tests and both groups seemed to reflect a negative attitude toward more tests.

3. Students' mean scores on the pre-test of the Iowa Silent Reading Test placed them in the high average range for the norming sample, thereby precluding little opportunity for these students to demonstrate extreme gains.

4. Other measurement procedures must be identified or developed to determine the students understanding of organizational patterns and these scores then related to changes in comprehension. A process dependent procedure should be developed to determine the students' knowledge of the process involved in identifying organizational patterns.

5. The instructional program should be integrated into the content classes rather than taught as a separate and isolated unit in the reading class. A longitudinal study of at least a year is needed to determine the impact of this knowledge on content learning.

6. From the verbal responses of the students in the experimental group, there is every reason to believe that the use of these patterns could become a habit if the reading and content teachers arranged their curricula accordingly.

7. Because the results on the subtest measuring the reading
of longer-essay passages without the benefit of questions prior to reading was closer to significance than the other subtests scores which provided questions which could be viewed prior to reading, study should be made as to the helpfulness of advance questions in determining the pattern organization of a selection.

Although comprehension scores on a standardized reading test indicated no significant differences for students receiving instruction in using organizational patterns to aid comprehension, the verbal feedback from the students and teachers suggest that changes in study behavior did occur. Thus, further investigation is warranted.

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describe the complex processes of the reading act by emphasizing some or all of the components of the reading process. Consensus, however, among most model-builders and researchers is that comprehension constitutes the essence of reading.

Most of these theories and models of reading, with the exception of the affective model, focus principally on the perceptual and linguistic facets of the reading process. However, neither the accumulation of knowledge of reading nor the acquisition of reading skills functions in isolation. Variables, such as reading interests and attitudes, which emanate from the affective domain combine to mediate the cognitive processes of reading by either facilitating or impeding the ability to read. Therefore, if a thorough analysis of the reading process is to be effected, simultaneous assessment at both the cognitive and affective levels during the reading act should be conducted (Athey, 1976; Mathewson, 1976).

To this end, reading researchers have extensively investigated the evolutionary process which describes how elementary school children develop an understanding of what reading entails, since the knowledge of reading that a child accumulates and the reading skills that s/he acquires interact. Ostensibly, emphasis on how children derive meaning from print, spanning the spectrum from cognitive confusion to cognitive clarity (Downing, 1970), has been the main focus of these investigations. Findings at the elementary school level indicate that at the second and fourth grade levels, most good and poor readers focus attention primarily on the decoding aspects of reading. However, by the sixth grade level, good readers are more likely to focus on meaning while poor readers are still concentrating on decoding. This finding may imply that elementary school children's schemata for reading may be responsible for the children's failure to read for meaning instead of poor reading skills and/or a deficiency in prior knowledge (Canney & Winnograd, 1979). Furthermore, despite the finding that nearly half of the second graders view the goal of a story recall task as meaning construction, well over half of the second graders and most of the sixth graders believe that it is easier to read for the general meaning rather than word for word (Myers & Paris, 1978).

In viewing these findings on the cognitive aspects of reading as they pertain to children, Yusen, Mathews, and Hebert (1982) conclude that:

Many younger elementary school children do appreciate the value of deriving meaning while reading and understand something of how it is different from word calling or decoding. Just how much importance is attached to meaning or how central children think it is in the reading process remains an open question (p. 201).

It was the purpose of this paper to assess the ratings that elementary school children attached to five dependent variables of reading based on their importance to and equivalence to reading; to determine the concordance of agreement among the subjects’ rank ordering of the dependent variables; and to examine the correlation that exists between the subjects’ personal definition of reading and their rankings of the importance of each of the five dependent variables to reading. The five dependent variables consisted of four comprehension strategies and decoding. These four comprehension strategies were selected for this study because each strategy constitutes a pivotal aspect among the processes that may facilitate comprehension; in addition, reading research suggests that these comprehension strategies are developmental (e.g., reading with a purpose, Canney & Winnograd, 1979; searching for main ideas, Otto & Barrett, 1968; Danner, 1976; sensitivity to textual information, Brown & Smiley, 1977; comprehension monitoring, Markman, 1977). The fifth dependent variable, decoding or saying each word as you read, was included because the decreasing reliance on these skills serves to differentiate the novice reader from the
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more experienced reader. Finally, grade level constituted the independent variable.

METHODOLOGY

Subjects

Ninety elementary level school children were selected from the student population in two Lafayette Parish schools located in the southwestern section of Louisiana. Thirty children in each of second, fourth, and sixth grades were randomly selected without reference to reading grade level.

Instruments

Story Segments

Six story segments, written at fourth-grade readability level as measured by the Dale-Chall Readability Formula (Dale & Call, 1948), depicted all of this study's five dependent variables to be assessed in terms of their importance and equivalence to reading. The sixth story segment was a sample.

Criterion Scale

Ten concepts were generated to represent each of the five dependent variables to be evaluated in terms of two criteria: 1) How important is it to reading? and 2) How equivalent is it to reading? The ten concepts were: 1) Knowing that you understand or don't understand something is important to/is the same as reading; 2) Reading with a purpose is important to/is the same as reading; 3) Searching for main ideas is important to/is the same as reading; 4) Finding that some information is more important than other information is important to/is the same as reading. 5) Saying each word as you read is important to/is the same as reading. In addition, two sample concepts were employed to demonstrate the use of the criterion rating scale.

Criterion Rating Scale

A semantic differential was used to assess all ten of the aforementioned concepts. This instrument contained four scales; each scale had five steps. All four scales had each a pair of bipolar adjectives which were alternated in polarity direction to minimize the "halo" effect, e.g., good—bad; sad—happy; nice—awful; and unfair—fair. In each scale, the degrees—which correspond to each of the five steps, were equated with a face, i.e., a large smile or a large frown was equivalent to "very"; a small smile or a small frown was equivalent to "a little"; and a neutral face was equivalent to "in between".

Criterion Preference Scale

This instrument was included to indicate the order of preference regarding the five dependent variables used in the study. It allowed the subject to designate which variable was judged to be the first in importance on to the fifth in importance.

SCORING

For purposes of determining the weight attached to the ten concepts used to evaluate each of the dependent variables on two criteria, the following numerical values were assigned to each of the five steps on all four scales of the semantic differential: 1) large smile = 7; 2) small smile = 5; 3) neutral face = 4; 4) small frown = 3; and 5) large frown = 1. Thus, each concept had four numerical values with each ranging from a minimum of 1 to a maximum of 7; all four numerical values for each concept were added together and divided by five. The resulting value was converted to two decimal place accuracy. Although the semantic scale used in this study contained five steps in each scale, equal values were not assigned between adjacent scales (Bross, 1938).

PROCEDURES

All subjects were tested individually by the same researcher in a single session. Each subject was initially briefed on why s/he was asked to participate in the study. Then all essential material was distributed to the subject. Instructions on how to use the semantic differential were administered next by the researcher. The subject then read orally the first of six story segments—a sample. Afterward, s/he was asked to answer probe questions designed to assess the subject's awareness of the respective dependent variable in question. The researcher then read both criterion concepts, one at a time, that were pertinent to the variable. The subject then evaluated each of the two concepts through the semantic differential. All steps were repeated for the remaining story segments. Using the criterion preference scale, the five dependent variables were then rank ordered. Afterward, the subject was asked to provide his/her definition of reading which was evaluated on the model established in the study by Canney & Winnograd (1979).

RESULTS

Two one-way MANOVAs (Anderson, 1958) were used to analyze the weight attached to both sets of five criterion concepts collapsed across grade levels. In addition, Wilk's Criterion (Rao, 1973, p. 555) for the hypothesis of no overall grade effect was employed to confirm the results of both one-way MANOVAs. A Kendall Coefficient of Concordance (W) Siegel, 1956) was utilized to determine the concordance of agreement among the subjects' rank ordering of the five dependent variables collapsed across grade levels as well as for each grade level taken separately. The Pearson product-moment correlation coefficient (Mason & Bramble, 1978) and two one-way ANOVAs were used to examine the relationship between the subjects' definitions of reading and their ratings of the importance of each of the five dependent variables to reading. In order to use the subjects' respective scores for the 'decoding focus' and 'meaning focus' aspects (Canney & Winnograd, 1979) of their definitions of reading for proper statistical analyses, a variance stabilizing transformation (Daves, 1963, p. 43) was performed.

The results of the first one-way MANOVA revealed no statistically significant differences between the means for each of the five dependent variables in terms of their importance to reading (reading as a purpose, $F(5,87) = 1.82$, $p = 0.1675$); searching for main ideas, $F(5,87) = 1.82$, $p = 0.1675$); sensitivity to textual information, $F(5,87) = 1.12$, $p = 0.3322$; comprehension monitoring, $F(5,87) = 0.48$, $p = 0.8963$); decoding, $F(5,87) = 1.52$, $p = 0.2242$). Furthermore, results of the Wilk's Criterion for the hypothesis of no overall grade effect was also not statistically significant ($F(10/166) = 1.92$, $p = 0.0104$), thereby confirming the results of the first one-way MANOVA. Results of the second one-way MANOVA also indicated that there were no statistically significant differences between the means for each of the five dependent variables in terms of their equivalence to reading (reading as a purpose, $F(5,87) = 0.44$, $p = 0.6425$); searching for main ideas, $F(5,87) = 0.34$, $p = 0.7843$); sensitivity to textual information, $F(5,87) = 1.14$, $p = 0.3354$); comprehension monitoring, $F(5,87) = 0.74$, $p = 0.5364$); decoding, $F(5,87) = 0.49$, $p = 0.3528$). Also, results of the Wilk's Criterion for the hypothesis of no overall grade effect were not statistically significant ($F(10/166) = 1.21$, $p = 0.2862$), thereby confirming the results of the second one-way ANOVA.

A Kendall Coefficient of Concordance (W) performed on the rank ordering of all five dependent variables collapsed across grade levels was not statistically significant ($W = 0.0171$). In addition, the degree to which the second grade ($W = 0.1173$), fourth grade ($W = 0.0734$), and sixth grade ($W = 0.0356$) agreed on the rank ordering of the five dependent variables was also not statistically significant.

In terms of the subjects' definitions of reading, results of a one-way MANOVA for the decoding-focus responses were statistically significant ($F(2,87) = 7.83$, $p = 0.05$). Post hoc
analyses with t-tests for dependent samples indicated that fourth grades, \( t_{28} = 2.549, p = 0.0163 \), and sixth graders \( t_{28} = 3.872, p = 0.0000 \) had significantly fewer decoding-focus responses than did second graders. Although sixth graders did not have significantly fewer decoding-focus responses than did fourth graders \( t_{28} = -1.886, p = 0.0721 \), results indicated that a trend in that direction did exist. The results of a one-way ANOVA for the meaning-focus responses were statistically significant (\( F_{2,27} = 17.11, p = 0.05 \)). Post hoc analyses with t-tests for dependent samples indicated that fourth graders \( t_{28} = 2.842, p = 0.0081 \) and sixth graders \( t_{28} = 6.161, p = 0.0000 \) had significantly more meaning-focus responses than did second graders. Furthermore, sixth graders also had significantly more meaning-focus responses, \( t_{28} = 3.104, p = 0.0042 \) than did fourth graders. These findings are consonant with those of Canney & Winnograd (1979) in terms of children's schema for reading, i.e., their personal definitions of reading.

Results of the correlation tests revealed correlation coefficients at all grade levels that showed weak relationships between the subjects' personal definitions of reading (using only the meaning-focus responses) and each of the five dependent variables in their four components. Reading comprehension was positively correlated at all but one of the correlation coefficients at both grade two and six were negative whereas all but one of the correlation coefficients at grade four were positive.

**DISCUSSION**

The finding that there were no statistically significant differences between the means of the five dependent variables in terms of their importance and equivalence to reading was contrary to what was expected. In view of the literature which indicates that increasing expertise in the use of these strategies is 'developmental' and that the role of decoding decreases in importance as experience in reading increases, it was hypothesized that increasing sophistication in the application of these strategies to acquire meaning from print implied a greater awareness of the importance of these strategies to reading concurrent with a more perceptible cognizance of them as aspects of the reading act. One conceivable explanation for these findings might be that the semantic differential was not sufficiently sensitive to allow differences to appear. Perhaps use of a seven-point scale might permit more salient differences in assessment to be made—at least at the sixth grade level and even at the fourth grade level. Another possible explanation is that despite the design of the semantic differential the "halo" effect may have been a contributing factor since each subject was asked to evaluate ten variables consecutively. However, these explanations must be evaluated in light of the fact that the results of the subjects' definitions of reading were consonant with those of Canney & Winnograd (1979).

The absence of statistical significance in the subjects' concordance of agreement among the rank ordering of the five dependent variables collapsed across grade levels as well as within each respective grade level is perhaps linked to the nature of the task, i.e., of the four comprehension strategies and decoding, comprehension monitoring should be ranked first in importance because of its 'executive' function whereas decoding should be ranked last in importance. However, just how "reading with a purpose", "searching for main ideas", and "sensitivity to textual information" are to be ranked is not clearly established. In lieu of rank ordering these strategies per se, these findings suggest that an alternative may be that of focusing on the components of each of the separate strategies and having these components rank ordered within their respective strategy category.

Although each grade level had statistically significantly more meaning-focus responses in its definitions of reading than did the next grade level(s), the correlation coefficients between the subjects' definitions of reading and each of the dependent variables in terms of their importance to reading were not statistically significant. These results may in part be attributed to the nature of the variables in as much as three of them were not amenable to bring distinctly rank ordered.

Within the limitations of this study, the findings suggest that the ability of elementary school children to value comprehension facilitating strategies evolves in a manner, which if developmental, is nonetheless, more readily manifested than the ability to apply them in an increasingly more efficacious manner to derive meaning from what is being read. Consequently, these results may have implications for the classroom teacher. In knowing that a child's capacity to appreciate the use of comprehension strategies is evidenced at an early age, the teacher may be in a better position to match appropriate strategies needed at the moment with attitudes that may maximize successful comprehension of what is being read, i.e., if a child is using a strategy which is appropriate for the task at hand but does not 'value' this approach, s/he needs to be aware that a right choice was made for the problem situation. By the same token, if a child 'values' the use of a wrong strategy for what the solution demands, s/he certainly needs to be coaxed into realizing that an inappropriate choice of strategy is being used as well as valued. Ultimately, it is the transversal nature of the affective domain which is at issue because reading interests and attitudes combine to mediate the cognitive processes of reading by either facilitating or impeding the ability to read.

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THEMATIC ORGANIZERS: APPLICATION TO REMEDIAL READING

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Students with reading difficulties often are unable to comprehend thematic concepts of content materials. These students may not understand the concepts presented in the text because of limited background information and experiences. Even if students have knowledge of these concepts, they may not know how or when to activate this knowledge to help their comprehension.

Contributing to students' reading comprehension problems may be the text structure that lacks coherence or unity among the concepts. An inspection of social studies texts, for example, revealed that thematic concepts were often implied or ill-defined. Comprehension is made more difficult by "inconsiderate" texts, or those lacking in cohesion and clarity (Anderson, 1981; Anderson & Armbruster, 1982). Arbitrary facts are often presented without explanation or elaboration, and no relationship between these facts and the theme is illustrated. When poor readers are confronted with such abstract and/or poorly defined concepts, their understanding of these is so limited that they are unable to relate any prior knowledge to the information of the text.

BACKGROUND

Numerous studies have investigated the use of prereading instructional strategies which relate the learner's existing knowledge to new information presented in text. Many of these preorganizers reflect Ausubel's (1959) definition of readiness and the purpose of their use is to create a cognitive mind set prior to reading. These preorganizers have taken varied forms (e.g., advance organizers, Ausubel, 1960; structured outlines, Glynn & DiVesta, 1977; structured overviews, Barron, 1969; Earle, 1959; Earle & Barron, 1973; summaries, Reder, 1979; Reder & Anderson, 1980) and have produced variable results. A general finding of all of these studies though, has supported the theory that the degree to which new information is learned is dependent upon the congruency of ideas that is achieved between the reader and author.

One problem that was noted in our work with poor readers was related to the teachers' selection of information to be presented before reading. If teachers made an effort to develop or expand prior knowledge before reading they were inclined to introduce facts and details and relate these to facts that were already known to students. This type of instruction produced gains in comprehension if recall of facts was the goal. However, this procedure did not help students to relate these facts to each other or to the theme (which was most usually implied) to present an integrated, cohesive message about what they read.

A few studies have investigated the effects of preteaching the theme of a passage to facilitate comprehension. For example, thematic statements presented prior to reading was found to establish a relevant framework for some contexts which led to increased comprehension of implied information (Church, 1977; Bransford & Johnson, 1972; Bransford & McCarrell, 1974; Dooling & Mullett, 1973). In our work with poor readers, however, we found that thematic statements (i.e., titles which reflected the theme of the passage) were too global to aid comprehension. Because students didn't understand the concept(s) in the title, they were unable to use this information to set a purpose for reading. The thematic concept or central idea that connects the events, conditions, and/or happenings that occur in a passage, was not understood for many passages unless it was explicitly explained.

THEMATIC ORGANIZER STUDIES

Therefore, we conducted a series of studies to determine the relationship between teaching thematic concepts prior to reading and reading comprehension. Thematic organizers were written to define the major thematic concept of the passage, relate the reader's prior experiences to this concept, and instruct the learner to "actively" use this information prior to and during the reading of social studies materials. It was hypothesized that the information on the thematic organizer would contribute coherence to the text and a unifying framework which would enable students to relate prior knowledge to the thematic concept of the passage (i.e., facilitate interaction between the reader and the text). We questioned whether the use of thematic organizers could aid poor readers' comprehension of an implied concept by making it explicit and relevant to the readers' "schema". We attempted also, to gain insight into the optimal use of these preorganizers if they were found to encourage increased comprehension of text.

Thematic organizers were defined as an instructional strategy which contained several elements. First, each organizer had three paragraphs which defined the implied thematic concept of the passage and related this concept to prior knowledge and/or experiences of the reader. The concept was defined by presenting its various attributes and non-attributes. Examples of how the concept related to real-life experiences and the ideas in the text were given to further illustrate the meaning of the concept. Following the three paragraphs was a set of statements written on the interpretive level. The students were instructed to indicate whether they agreed with these statements during and/or after their reading.

Even though these studies analyzed the effects of this strategy with poor readers at various levels (i.e., fourth, fifth, and sixth graders, junior high school students, and college students), a common procedure for each experiment was followed. All students were pretested on targeted concepts. Stratified randomization with replacement by stanine level placed all students in the experimental and comparison groups. Passages were analyzed for structure with idea units rated for structural importance. Scripts of students' recall were divided into idea units. All protocols were scored according to the degree to which they preserved the meaning of the original textual units (inter-rater reliability was .97).

Group and individual data were analyzed to determine effects of the strategy. One way analysis of variance with repeated measures was used to determine whether the groups differed in their ability to recall structurally important ideas, preserve
the meaning of the literal ideas, and generate plausible inferences. Protocol analysis (i.e., student interviews at selected pauses during reading) was used to illustrate precise changes in strategies used by individual readers as they followed directions to use information from the thematic organizers.

The findings across the studies indicated a significant difference between experimental and comparison groups on literal and inferential comprehension (Alvarez, 1980; Alvarez in press; Alvarez & Risko, 1981; Alvarez & Risko, 1982; Risko & Alvarez 1982b; Risko & Smart, 1982). The ability to discuss and elaborate upon the implied conceptual framework enhanced by the relevant framework which was presented prior to and during textual reading. Students in the experimental group recalled more of the most important ideas and presented more complete propositions. Preteaching the thematic concept and relating it to students' prior knowledge facilitated student ability to explain and elaborate upon the central ideas and integrate details with these ideas to produce an integrated representation of the message. Students who did not receive the thematic organizer produced inaccurate retellings, often telling a "story" that was irrelevant to the theme and/or details of the passage.

**RESEARCH TO PRACTICE**

While the results of these studies indicated statistical differences in favor of the treatment across groups and textual passages, a closer examination of group and individual data clarified implications for using this strategy in a remedial program. Overall, the thematic organizer produces favorable gains in textual comprehension but individuals differ in their use of these. Adjustments in instruction would be necessary to appropriately use this technique with remedial readers.

The need for the thematic organizer varied according to learning needs of students. For example, students with limited prior knowledge or inability to activate this knowledge (as determined by their pre-reading statements) relied more greatly on information presented on the thematic organizers. These students were observed to go back to the organizers more often as they read and after the reading told how they used the organizer when they didn't understand what they were reading. Students with extremely low comprehension may need to have more than one major concept defined in the thematic organizer. Some of these low comprehenders were able to discuss the theme and related details but were unable to use this information to aid their comprehension of other "unknown" concepts in the same passage.

The need for the thematic organizer also seemed to depend on the structure of the text. When confronted with highly abstract concepts (those that were not defined in the passage), the students referred to information on the thematic organizer more frequently to understand the text message. Because of this variability, student use of the organizer varied across passages. Conversely, when concepts were defined more completely in the text, the information on the thematic organizer seemed unnecessary as both groups (experimental and comparison) performed in a similar manner.

It seemed that poor readers' use of this strategy varied according to interest and nature of reading disability. It has already been noted that the extremely low comprehenders seemed to benefit from the thematic organizer (i.e., they performed at a higher level than comparable students in the comparison group), but they still did not perform as well as other students in the experimental group because of their need to have several concepts taught to them in addition to the targeted thematic concept. Also students with a limited ability to express their ideas were more narrow in their elaborations of the theme. Interest, too, seemed to play a role in the quality of students' responses. When students displayed a high interest in the thematic concept and could relate it to something that was meaningful to them (e.g., the discussion of reform, on one pre-organizer, asked students to think about ways to change the rules of their school), they were able to remember important details and generate more plausible inferences about the passage.

Our findings suggest that thematic organizers facilitate and expand conceptual learning of expository texts. While this strategy may be appropriate for remedial readers, it is seen as one of several alternatives teachers could choose. Use of this strategy, as with the selection of any other, depends on individual needs of students.

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ARF '83
SHOULD WE ADAPT TO THEM OR THEM TO US?
MESSAGES FROM RESEARCH ON TEACHING
REGARDING THE READING RESEARCH TO READING
PRACTICE ISSUE

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The very fact that the American Reading Forum selected the research-to-practice issue as its conference theme is testimony to our concern in this area. In my opinion, the concern is justified, especially in light of the observational field studies conducted in recent years. Whether we examine the work of Durkin (1978-79), of Duffy and McIntyre (1982), of Anderson (in press) or any one of several others (Connelli, et. al, Note 1; Palmer, Note 2; Mason, in press), the message is the same. Classroom teachers of reading are conducting reading instruction in basically the same way they did decades ago; they take children through basal text stories, monitoring their oral reading fluency and checking their answers to workbook pages. There is little evidence that research has had an impact on practice.

Part of the problem is that we have little to say because of the way we conduct research in reading and the sparceness of the Instructional findings which result (Duffy, Note 3). Equally important, however, is how we talk to teachers about the findings we do have. This paper develops the premises that, as reading researchers and educators charged with translating our findings into their practice, we must be sensitive to classroom realities and adapt to teachers rather than requiring teachers to adapt to us. The difference between the perspectives of the researcher and of the practitioner will be illustrated with examples from recent research on teaching (as opposed to research on reading), and three steps for closing the research to practice gap will be suggested.

The Practitioner's Reality

The practitioner's reality consists of a complex set of contextual forces. The nature of this context is summarized best by Lanier (Note 4):

Effective research and practice in teaching requires the recognition that the role demands placed on the occupation of teaching are multiple and frequently competing. By the very nature of their charge, teachers must respond to a set of multiple demands and seek to maximize alternative desired outcomes. Unlike researchers, teachers cannot select a single goal, ignore the others, and attend only to factors that might optimize the attainment of the single goal. (p. 11)

This contextual complexity shapes practice. For instance, at the classroom level, the teacher's dilemma when coping simultaneously with academic, turn allocation and management activities during reading group instruction is discussed by Eder (1982):

Should she or he ignore the two girls who are comparing the different shapes they have made with their markers and devote attention to the student who is having trouble with the word "climb"? Or should he or she try and regain the attention of the two girls and other students who may not be paying attention, perhaps by inviting anyone to read the problematic word? If he or she ignores the two girls, they may continue to provide a distraction for others, and furthermore may not learn to read the word "climb" as quickly as they would if they were paying attention to the lesson. However, if she or he attempts to get their attention during the reading turn, she or he is likely to either interrupt the flow of the lesson or, if she or he combines management with academic activities, encourage the participation of others when perhaps the reader could have gotten the word her or himself with one more clue. (p. 158)

In such a complex and uncertain environment, nothing is as simple as it may at first appear. For instance, Brophy (1981) points out that teacher praise is used to keep the activity flow in the classroom moving and to build esprit de corps as well as to reinforce correct responses; Doyle (1977) suggests that correlations between time on task and higher student achievement occur not because teachers spend more time with students who need help but because students who perform well cause teachers to spend more time with them; and Shulman (Note 6) points out that academic tasks are seldom the stable entities we encounter in reading methods textbooks but, rather, are written by the basal author to accomplish an instructional goal, are used for management purposes by the teacher and are socially negotiated by students. Even instructional planning is affected. As Borko and Shavelson (in press) point out, because the complex and uncertain classroom environment conflicts with the assumptions undergirding the prescriptive planning model taught in most methods classes, teachers do not use the planning techniques we teach them.

At another level, we find that the mental lives of teachers are so crowded with competing forces that they must carve out a "problem space" in which some aspects of instruction are systematically ignored. This phenomenon is evident in several recent studies. In examining teacher conceptions of reading (Duffy & Anderson, Note 7), it was found that teachers who possessed preferred theories of reading when queried in non-classroom situations pushed these theories into the background when teaching because of concern about management, basal texts and low ability students. Similarly, Roehler, et. al. (Note 8) report that teachers can discuss content integration but, when observed in their classrooms, demonstrate virtually no evidence of such integration. In another fascinating illustration, Hodges (Note 9) reports a study in which pre-service teachers who had just completed their reading methods class were placed in student teaching situations without cooperating teachers on the assumption that prospective teachers are discouraged from implementing recommended techniques by cooperating teachers who require them to use more traditional methods. Despite the absence of cooperating teachers and stated intentions to carry out methods course recommendations, by the end of the term the student teachers had rejected the methods course procedures in favor of traditional reading practices. They attributed their behavior to school pressures, to the need for "survival" and to limited time. In short, the complexities of their environment had forced them to find alternatives which "work".

A major way in which teachers simplify their environment is by simplifying the task of teaching itself. They do this by focusing on the demonstration of reading competence; that is, they ask students to perform reading tasks but do not create in students strategies for reading better. Hence, the teacher in the following transcript, a typical example from a recent study of teacher explanation behavior (Duffy, Bock, & Roehler, Note 10), "teaches" main idea by asking students to generate the main idea.

T: Alright, now here are some possibilities. 'A Trip Downtown.' 'The New Shirt.' 'The Shirt That Didn't Fit.' Let me read them again. 'A Trip Downtown.' 'The New Shirt.' 'The Shirt That Didn't Fit.' Now those three possibilities, which one would go best? Angela?

C: A Trip Downtown.
C: A Trip Downtown.
T: O.K. Troy, what do you think?
C: The New Shirt.
T: David, what was your choice?
C: The New Shirt.
T: Suzanne, how about you?
C: The New Shirt.
T: I think the girls decided on the Trip Downtown and the boys liked The New Shirt. Mainly, what was the story about?
C: A trip downtown.
C: Getting a new shirt.
T: Getting a new shirt, wasn't it?

Another important aspect of the practitioner's reality is the fact that curriculum functions are not determined by teachers but by school boards, school administrators and commercial publishers (Brophy, 1982). This was recently demonstrated by Shannon (Note 5) who, in studying teachers and their use of basal textbooks, found that school administrators make virtually all the significant decisions about the basal and how to use it, relegating teachers to the role of simply taking students through the materials. In this way, says Shannon, administrators "alienate" teachers from control of their reading instruction.

In sum, the practitioner's reality begins with the realization that in most schools teachers have little control over the curriculum and that, as a result, methods course suggestions often cannot even be tried; that multiple classroom forces conspire to make the classroom a hall of mirrors in which everything loses the sharp identity it possessed in the methods class; that the complexity of teaching causes a 'cognitive overload' which forces teachers to limit what will be attended to, and that the issues which were most frequently discussed and debated in the methods class are irrelevant when one encounters the realities of surviving day-after-day in an elementary school classroom.

What Can Be Done?

What do such findings on teaching have to do with translating research into practice? I think it suggests that real classrooms constrain teacher behavior in ways we do not consider when we talk to them. As a result, teachers they cannot implement our research findings because our reports do not fit their reality; we leave too many contextual factors unaccounted for.

If this is so, what can we do in reading education to narrow the research-to-practice gap? I argue for greater sensitivity to the teacher's reality, and for changing our research dissemination efforts in accordance with our understanding of that reality. Three suggestions are made.

First, reading educators must base their research dissemination efforts on a firm understanding of what classrooms are really like, not on what we feel they ought to be or what we assume they are. As a group, researchers and scholars have little more than perfunctory contact with real classrooms. As a result, when translating research into practice, they use as a benchmark their own teaching situation remembered from years ago or a situation which is so atypical as to be unrecognizable (John Holt's, [Note 11] use of private boarding schools in the east as his benchmark is one flagrant example of the latter).

As a result, impractical recommendations are made. For instance, teachers are told that only language experience should be used in the first grade despite the fact that most urban teachers operate under a mandate to use an adopted basal text; they are told to make sure that each child is reading at his/her instructional level even though this often means upwards of ten reading groups in classrooms having thirty children or more; they are urged to provide spontaneity and meaningful encounters with print despite the reality that all classroom teachers must first be concerned with keeping everyone busy; they are urged to minimize drill and practice despite the fact that low group readers cannot learn to read without such structured in-

struction and they receive university training in the use of a diagnostic-prescriptive model despite its inappropriateness when applied to classroom groups. Such messages contradict the realities teachers face each day, and they reject them as "not practical". Indeed, they are NOT practical. We ourselves could not implement our own recommendations in today's classrooms. Consequently, we must, as researchers and reading educators, learn that life in today's classrooms is really like, a task which requires that we engage in substantive and sustained encounters with real classrooms. Conant's (1963) recommendation that teacher educators engage in teaching is appealing in this regard but, speaking as one who does this periodically, I must report that it is too difficult to accomplish in most university situations. However, the practitioner's perspective can be obtained by becoming a participant observer in qualitative studies of classroom reading instruction or by serving as a long-term collaborator (not consultant) with a staff or an individual teacher.

In any case, if the research-to-practice gap is to be closed, reading educators must possess the sensitivity to make recommendations within the constraints of the classroom teacher's reality.

Second, we must help teachers become thoughtful decision-makers who maintain control over their work despite the constraints of today's schools (Borko & Shavelson, in press). To do so, we must separate teaching from technical work. Lanier (Note 4) has characterized the problem as follows:

"In order to remedy the acknowledged problems of public education, the technician role that has been assigned to and assumed by teachers and the technician training that has been provided by schools and colleges of education needs to be changed. (p. 15)"

Technicians follow the prescriptive directions of others. Technical behavior in reading instruction is most frequently tied to the basal textbook. However, we cannot attack the problem of technical teaching by attacking the basals; neither the basal textbook nor the administrators who manage basal programs will disappear in the near future. Instead, making teachers decision-makers in reading means teaching them how to gain cognitive control over basal materials. To do so, we must accept the prevalent role of the basal in teacher's lives, set the expectation that teachers should make decisions about the basal and then show them how to make such decisions. For instance, teachers should be shown how to make judgements about (1) which objectives among the mass of content typically recommended in a basal unit are really important to teach to various ability groups; (2) how much instructional time to allocate to recommended basal activities under various instructional and classroom conditions; (3) how the typical instructional sequence of a basal lesson or unit can be reorganized to achieve certain goals under particular conditions; (4) how the content in a lesson or unit can be rearranged for diverse reading groups; and (5) what instructional strategies and explanations can be provided when those recommended in the teacher's guide fail. By putting teachers in cognitive control of the basal, we put them in a position to accept recommendations about research findings. As long as they remain technicians, however, they are at the mercy of the teacher's guide.

Finally, because few decisions can be made when knowledge is sparse, we must provide teachers with better information about how readers read and what one does when one teaches. This does not mean that teachers cannot now read. They can. However, they do not know how they read; they have little conscious awareness of what they do when they read; and they cannot analyze a reading task and identify the thinking one must do to complete the task. Instead, they are often taught that enlightened teachers do not analyze and fragment reading. For teachers who experienced little difficulty in learning to read, this makes sense; they forget that they were in the high reading groups in elementary school and that their ease in learning to
read stands in stark contrast to the difficulties encountered by their low group peers. Because they do not learn to analyze the tasks of reading in their training, they are unable to distinguish between syllabication and structural analysis, have no sense of the difference between inferring from background experience and inferring from word clues, and are so poor at analyzing the thinking that is in identifying main ideas that they cannot begin to tell a confused low group student what to do. When, as classroom teachers, they confront their ignorance (and the now-obvious fact that not all students learn to read naturally), they are powerless to make decisions and turn to basal textbooks, workbooks and other scripted or semi-scripted instructional materials for direction. Similarly, while teachers are very sensitive to the need for many diversified practice activities, they have not been taught how to teach: that is, they cannot create models, explanations, analogies, metaphors and cues regarding how to do the cognitive processing associated with reading tasks nor can they, when students respond with partial or confused answers, create spontaneous explanations to eliminate the confusion. Consequently, when children fail to learn, teachers are powerless to make decisions about how to create learning, and they assign the responsibility for teaching to the basal. The old adage about "Knowledge is Power" is quite appropriate here. Given knowledge, teachers can decide not only what to teach and how to teach it but also how to integrate research findings into their practice. In the absence of such knowledge, however, they are dependent upon instructional materials, and will use research findings only if they are built into the "system" beforehand.

Conclusion
Cognitive psychology suggests that effective comprehension depends upon cognitive congruence between the message-sender and the message-receiver. If the sender and receiver are operating from different cognitive frames, the message will be garbled.

I argue that researchers and teachers are operating from different cognitive frames, and that this explains the research-to-practice gap. The cognitive frame of researchers and reading educators is university life; the cognitive frame of teachers is the reality of classrooms. When the typical researcher or reading educator sends messages to teachers about research findings, they reflect the realities not of classrooms but of scholarship. The result is that teachers do not comprehend the message.

I see only one solution. Researchers and teacher educators are responsible not only for creating findings but for disseminating them in a form that can be comprehended. Consequently, we must adapt to the perspective of our audience. This means accounting for the realities of classroom life, showing teachers how to maintain decision-making control over these realities and providing the substantive information which is the raw material for decision-making. Failure to adapt in this way means that the research-to-practice issue will remain unresolved.

REFERENCES

RESEARCH NOTES
INCREASING THE COMPLEXITY OF CHILDREN'S WRITING USING A MEASURE OF READABILITY

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Researchers (Mellon, 1969; Vitale, King, Shontz and Huntley, 1971; Combs, 1976) have generally found sentence combining activities useful in increasing the complexity or maturity of children's written composition. This effectiveness has been found at varying grade levels whether or not there is direct instruction in transformational grammar (Combs, 1976).

It was the purpose of this study to explore the idea that activities other than sentence combining could produce the same kinds of results without requiring the preparation and instructional time needed for sentence combining activities. Arthur (Note 1) believed that children could learn to use the Raygor
Graph to rate the "readability" of their written compositions, the idea being that, once the children found out that to increase the "grade level" score of their work they needed to use longer sentences and bigger words, they would automatically, without instruction, use more embeddings and write in a more mature style. The efficacy of this idea was investigated in this study.

**METHOD**

**Subjects:**
23 fifth grade subjects, all reading in grade level materials and in an intact language arts class, were volunteered for this study by their teacher. They were students in a public elementary school in a rural community in Northeast Georgia and consisted of three blacks and 20 white, seven boys and 16 girls.

**Procedures:**
The subjects were divided into two groups. One group was taught to calculate their writing "grade level" based on the Raygor Readability Graph. Using the Raygor graph consists of four basic steps: (1) counting out a 100 word sample; (2) counting the number of sentences in the sample; (3) counting the number of words larger than five letters in the sample; and (4) plotting the number of large words and number of sentences on the graph, resulting in a grade level score. The students in this group each received a copy of the Raygor graph and numbered their plotted attempts so that they could keep track of their progress.

The other group, for the same amount of time, was told to draw pictures of the story they wanted to write. The two groups were each given four thirty minute sessions of writing during their usual language arts class period. During this writing period, they used the procedures described above to write about topics of their own choosing. Prettest and posttest consisted of fifteen minutes of writing on previously agreed upon topics of a narrative descriptive nature. (They were asked to volunteer topics and the researcher wrote the choices on pieces of paper that were "drawn" from a hat.)

**Analysis:**
The writing samples were then analyzed for total number of words, number of sentences, and number of larger words used, as these were directly related to the use of the Raygor graph. In addition, a syntactic density score was calculated on each pre and post sample using Golub and Kidder's (1974) syntactic density formula with Belanger's (1978) correction. The Golub and Kidder method requires the analysis of each passage for the presence of ten sentence variables, tabulating their frequency of occurrence, and computing them in a syntactic density formula. Belanger's correction factor was added to the formula to correct for the fact that the number of "T unit" accounted for most of the variability in the syntactic density score. The ten variables are as follows: number of words divided by the correction factor; number of subordinate clauses divided by the correction factor; average main clause word length; average subordinate clause word length; number of modals; number of forms of be and have which serve to expand predicates; number of prepositional phrases; number of possessive nouns and pronouns; number of adverbs of time and number of gerunds, participles and absolute phrases.

In addition to being analyzed for syntactic density, the postwriting samples were analyzed for number of cohesive ties between sentences. Cohesiveness in text refers to the features which "link component parts" to provide "unity and clarity, either within or between sentences and contribute to the reader's impression of text coherence" (p. 55, Harris and Hodges, 1981). Hallday and Hassan (1976) outline a specific method for analyzing the cohesiveness of text which requires the researcher to look for a number of variables which tie one point in a text with another. These variables are referents, conjunctions, substitu-

**RESULTS**

Comparison of the two groups pre-post change scores revealed that the Raygor group made greater gains in syntactic density scores (p .001) and use of larger words (p .005). They also decreased significantly the number of sentences (p .01) when compared with the other group. There were no significant differences on change scores for total number of words (production rate) or for total number of cohesive elements between sentences, although there was a tendency for the picture drawing group to use more cohesive ties, particularly references and ellipses.

Comparing the groups on pre and post measures, it was found that, even though the picture drawing group initially fared better on syntactic density scores than the Raygor group (p .05), the writing samples for the Raygor group were significantly more syntactically complex than those of the picture drawing group on the post sample. Furthermore, even though there were no significant differences between groups on the prewriting sample as to number of sentences and number of larger words, the post samples were significantly different favoring the Raygor group.

**DISCUSSION**

For the subjects in this study, it appears that teaching the use of the Raygor group significantly improves the complexity of their writing as measured by Golub and Kidder's (1974) syntactic density formula. In addition, this instructional tool was particularly easy to use and appeared to be motivating to the children using it. Goal oriented comments such as "I'm going to try to write on sixth grade level tomorrow" were common, and the children had little difficulty following the steps laid out for them prior to using the graph.

As to the cohesiveness of their writings, there are several explanations for the failure to increase the number of between-sentence cohesive ties. One is that, because there were more embeddings in their post writings, cohesiveness changed to more within sentence than between sentence. Within sentence ties were not analyzed.

Another explanation may be that, sometimes very immature writing samples may have a large number of cohesive ties in the text. The following paragraph is an example:

I like the dog.
The dog is good to me.
He is friendly.
He is nice.
He is my friend.

This paragraph has a large number of cohesive ties (I, me, dog, he, friendly-nice-friend, etc.), yet the style is not particularly mature. It may be that Hallday and Hassan's measure of cohesiveness may not be amenable to measuring maturity when simple counts are used.

A final explanation may be that, as cohesive ties are said to make text easier to read, it may be that the total number of ties is more a measure of non-complexity rather than complexity. If this is the case, then Christensen's (1968) words of warning need to be heeded. She says, "...we should not in our grammar and composition courses focus on tying syntactic knots that
we must add courses in reading to unite," (p. 576). It would be of interest to have independent judges rate the quality of the pre-post writings to see if the Raygor group's post writing really convey more maturity in style (as Christensen says "pack much into little, but to pack it so that it can readily be unpacked" [Christensen, 1968, p. 576]) or whether the more syntactically complex writings come across as more obscure and, therefore, less able to effectively convey the message. Indeed, there have been conflicting studies as to judgments of quality in the literature, some saying that the quality or maturity has not been improved (Melon, 1969) while others have found complexity to go hand in hand with judgments of greater quality (i.e., Combs, 1976).

Because of the intriguing results of this study, it is believed that more research needs to be done on this topic. It is suggested that larger sample sizes be used, quality ratings be employed, and the Raygor graph technique be compared to sentence combining techniques as well as control groups. If further research points to the efficacy of the Raygor technique, it may prove to be a valuable instructional tool for classroom use.

NOTE: The idea of teaching children to rate the "readability" of their written compositions using the Raygor Graph is attributed to Sharon Arthur while she was a doctoral student at the University of Georgia.

REFERENCES
EFFECTS OF NARRATIVE SCHEMA TRAINING AND PRACTICE IN GENERATING QUESTIONS ON READING COMPREHENSION OF SEVENTH GRADE STUDENTS

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To facilitate learning from the text, students should become actively involved in the reading process (Smith, 1978). Comprehension consists of an interaction between the resources of the reader and the characteristics of the text (Adam & Collins, 1977; Rummelhart, 1977). This interaction shifts along a continuum from reader-based to text-based processing (Tierney & LaZansky, 1980; Tierney & Spiro, 1979). When the text is familiar to the students, the level of processing is shifted toward reader-based processing and results in better recall of the text (Taylor, 1979). When the text is unfamiliar, the reader must then depend on the text and clues given in the text in order to comprehend the passage, thus making it more difficult. Clues upon which the reader depends may be various ones, such as analogies (Hays, 1979), metaphors (Orontoy, 1981), inference and summarization rules (Van Dijk & Kintsch, 1977), concept formation processes (Taba, 1965), or other metacognitive processes (Brown, 1981). In text-based processing, then, the reader must create knowledge structures for assimilating the textual content, using the aforementioned types of textual clues.

Past reading instructional practices have included questions to aid students in developing knowledge structures for the assimilation of textual content. Since the early studies done by Washburn in 1929 and Holmes in 1931, many investigators have shown that instructor-or experimenter-developed questions do facilitate comprehension and recall of textual materials. A considerable number of the studies has been concerned with the effect, nature, and type of questions used, as well as with the location and frequency of questions within the prose passage (e.g., Frase, 1967; Frase, Patrick, & Schumer, 1970; Rothkopf, 1966; Watts & Anderson, 1971; Strollo and Bliesmer, 1972). But where author- or instructor-generated questions are unavailable the "possibility exists that students can direct their own attention to relevant materials through self-questioning" (Morse, 1975, p. 2). Students might then be encouraged to ask their own questions while reading to develop as independent readers (Frase & Schwartz, 1975).

A few recent studies involving the use of student-generated questions and the effects of this strategy on comprehension have shown facilitative effects (Andrel & Anderson, 1978; Duell, 1977; Frase & Schwartz, 1975; Schelzer, 1975; Singer & Donlan, 1982). Positive results were also found in two exploratory studies reported by Bliesmer and Johnson at last year's American Reading Forum Conference. These studies involved students in a Pennsylvania State University college reading improvement program and students in grade eight in a rural community school system (Bliesmer & Johnson, 1981).

Of the reported studies concerned with the student-generated questioning strategy, only the one conducted by Singer & Donlan (1982) has incorporated training students to locate specific important points in a narrative selection and then having students generate questions about these points. Students who are not given instruction in locating important points in narrative prose have only an "experience" schema model to follow (Rosenthal, Zimmerman, & Durning, 1978). This experience model is developed as students read and continually respond to publisher- or instructor-type questions. The students must then model their own questions from this type, which then forces a knowledge structure to be developed.

The purpose of the investigation being reported, then, was to conduct a study somewhat similar to the one reported by Singer & Donlan, (1983). The study was to involve not only students generating questions while reading but also students being trained in narrative schema prior to implementing the question generating strategy. The latter was to aid students in locating important points on which to base these questions. The investigators wished to determine the following:

1. Whether students in grade seven could be trained to locate sections of narrative selections which contain main points and then generate story-specific questions concerning the points.
2. Whether knowledge of general narrative schema and the process of generating questions while reading would facilitate reading comprehension of narrative selections.

A sample of 81 seventh grade students, the entire seventh grade in a Pennsylvania rural junior-senior high school, was secured for the study. Prior to any treatment sessions, the students were tested with the Gates-MacGinitie Reading Tests, Level E, Form 1. This testing was a normal part of the school district's testing program. The sample was then divided into 3 groups: high, middle, and lower thirds according to the reading
comprehension subtest scores. Each reading level group was then randomly assigned to one of four treatment groups. This division into reading achievement level groups allowed for a comparison of treatment effects among types of readers.

The treatment conditions for each group were as follows:

1. TSGQ (Trained in narrative schema with students Generating Questions): These students were trained in narrative schema prior to practice sessions in which they read two narrative selections and answered instructor-provided questions about the selections.

2. TIGQ (Trained in narrative schema and responding to Instructor-Generated Questions): These students were trained in narrative schema prior to practice sessions in which they read two narrative selections and answered instructor-provided questions about the selections.

3. USQ (Untrained in narrative schema with students Generating Questions): These students received no training in narrative schema, but were asked to generate questions specific to the two selections read during each practice session.

4. UIGQ (Untrained in narrative schema and responding to Instructor-Generated Questions): These students received no training in narrative schema and answered instructor-provided questions about the two selections read during each practice session.

All groups met at the same time each day and read the same selections during each practice session. Prior to the training and practice sessions, the experimenter oriented the various participating teachers in detail in the procedures to be followed.

The training for the narrative schema groups (TSGQ and TIGQ) consisted of two 40-minute sessions in which the subjects were taught the five major areas of narrative schema: (1) The leading character; (2) his/her goal; (3) obstacles to achieving that goal; (4) the outcome; and (5) the theme of the story. The training involved the use of a list of schema-general questions pertinent to narrative selections and was adapted from a list presented by Donlan & Singer (1982). Each of the five major areas was discussed with a narrative story being used for examples. The training and practice selections were from the Educational Development Laboratories Reading Study Guides, Levels GH and HG (used with the permission of the publisher). The readability level of the training selection was 6.4 as determined by using the Fry Graph for Readability. The practice in question-generating consisted of students reading the selection until they identified story-specific relevant to each area of the schema. Students then generated story-specific questions for each area of the schema. These questions were then discussed in terms of relevancy to the schema and/or to the specific story. A story was then student-generated using students' responses to the schema-general questions.

To equalize the time spent in training for the four groups, the non-narrative schema groups (USQG and UIGQ) received two 40-minute sessions of library training, under the supervision of the school librarian, at the same time as the schema training sessions.

Treatment group practice sessions were then conducted over a period of five consecutive days, forty minutes per session. Students read two narrative selections each session and employed the respective assigned treatments. The instructor-provided (instructor-generated) questions for the non-generating groups (TIGO and UIGQ) were the accompanying comprehension test for each selection provided in the Ready Study Guides. The average Fry Graph readability of the ten practice selections was 7.1, with a range of 6.5 to 7.9.

On the day immediately following the final practice session, all groups were administered an experimenter-developed posttest. The posttest consisted of two narrative selections of the type used in the practice sessions with twelve multiple-choice questions per selection. The average Fry readability of the posttest selections was 7.4. The test items included six intentional-type questions, types of questions toward which training had been directed, and six incidental-type questions, types of questions toward which training had not been directed. The test items were developed by the experimenter and analyzed for type and for relevancy to the specific selections by the English department of the participating school. The posttest was piloted in a seventh grade in a second high school in the same school district for a check on accuracy of readability estimation and overall understanding.

The results of the posttest were analyzed by using Games' ANOVA, a computer package analysis of variance procedure, developed by a Pennsylvania State University Department of Educational Psychology faculty member, Dr. Paul Games. The various posttest scores obtained and used in the analyses were: Total Recall, Story 1 vs Story 2 Total Recall, Story 1 vs Story 2 Intentional Recall, Story 1 vs Story 2 Incidental Recall, and scores of the three Reading Levels groups.

A summary of the analyses of variance is to be found in Table I. The analysis of total recall scores yielded significant differences on two factors. Significant differences (F = 8.74, p = .004) were found in Factor A, trained vs. untrained, favoring the untrained group. This significant difference held true for both selections of the posttest (Story 1 vs Story 2) and for both the incidental and the intentional questions.

There were no significant differences found between the question-generating and the non-question-generating groups with regard to any of the variables.

Significant differences were found in all the analyses among the three types of readers (See Factor C in Table I.), favoring the higher reading achievement level students. Post hoc Newman-Kuels analyses revealed the significant differences to be from high to middle to low, thus supporting the hypothesis that better readers would score higher on the posttest regardless of the treatment.

Significant differences were also found between the scores on the two test selections, Story 1 and Story 2, in favor of the Story 2 selection (See Factor J in Table I.). This selection, a narrative of a hunter's brush with death as he physically wrestled with a grizzly bear and very nearly lost his life, was especially interesting to the subjects because hunting and an outdoor way of life are very common to the area in which the subjects reside; therefore, this difference might have been expected.

An analysis of the intentional recall scores for the combination of factors A, B, and C also revealed significant differences. Post hoc Newman-Kuels analyses revealed the significance to be between the trained, generating middle achievement level subjects and the trained, non-generating, middle achievement level subjects, favoring the group which generated questions while reading. Although this was not found to be an overall effect, it does lend some support to earlier findings of others that the generating of questions does facilitate comprehension.

Several possible reasons for the particular findings in this study may be considered. In informal discussions with the treatment groups following the posttesting period, the trained subjects indicated that they felt that searching for the specific items to match the schema and then pausing to generate questions caused them to lose the continuity of the selection. This loss of continuity could have been a major reason for their lower scores on the posttest as they again felt the need to read as they had been trained, following the given schema.

A second possible reason for the differences may be that students very likely have already developed an "experience" model schema for narrative stories. This model has been created and refined over the years as students have been taught to read and respond to instructor- or publisher-provided questions. The training, which introduced names and labels for each area of the schema and placed each area into a form, may have added confusion to an otherwise automatic, working schema. Students
may have forced the "new" schema model on each story and, in doing so, forced aside the workable experience model.

A further strong possibility is that two training sessions were not enough to allow students to become familiar with each schema area (to develop a knowledge structure in order to assimilate it with their existing experience schema model), to practice generating questions about the schema areas, and to receive feedback from the instructor. It seems quite likely that students need more time in training with each specific area of the narrative schema, with individual practice in generating questions for each of the areas. The Singer and Donlan study (1982) which was discussed earlier, did devote one session to each schema topic, with daily posttests. Their study did find facilitative effects for the trained, question-generating strategy. However, the Singer and Donlan study was limited to a comparison of only a trained, question-generating group and an untrained, non-question-generating group. This limitation did not allow them to delineate with regard to which factor or a combination of the two factors was responsible for these positive results.

The results obtained in the Singer and Donlan study, and those of the present study give additional indication of the need for further research. In a future investigation, students of a given grade placement level might receive one week or more of training in narrative schema, with a discussion of one schema topic per session, with definite immediate instructor feedback while students are generating questions. This training would again be followed by practice sessions in which the students would employ the same treatment strategies. The instructor-provided questions for the non-trained groups could be of a different type than the posttest question-type used in the present study. In the latter, both instructor-provided questions for practice and the posttest questions were multiple-choice types, which may have provided extra practice in test-taking and, thus, may have influenced the posttest scores of the generating-questions group and the non-generating group.

REFERENCES

Fraser, L. T., & Patrick, E., & Schum, H. Effect of question position and frequency upon learning from text under different levels in intensive. Journal of Educational Psychology, February 1970, 60, 52-56.

Table 1
Summary Table of Analyses of Variance

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TEACHER COMPETENCY TESTING AND READING SPECIALTY PREPARATION IN GEORGIA

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In an effort to control the quality of instruction offered by public schools, state departments of education across the nation are developing ways to test the competency of individuals who seek certification in their teaching specialties. This competency testing exists at various stages of development and at various levels of sophistication in many states. For example, Georgia, Oklahoma, Alabama, South Carolina, Florida, and Arizona have existing teacher competency test programs, while West Virginia, California, Maryland, Connecticut, Kentucky, New York, and Pennsylvania are in the process of developing programs or plans for programs. Georgia, Oklahoma, and Alabama have developed separate criterion-referenced tests for most of the areas in which they issue certificates. South Carolina has developed criterion-referenced tests for content areas not covered by the National Teacher Examinations (NTE) published by Educational Testing Service. South Carolina also uses the NTE area exams that correspond to the certification fields in which they certify teachers. Florida has developed one professional knowledge criterion-referenced test which all teachers in all fields must pass in order to be certified. Arizona developed one basic skills test that is required for certification in all fields. Additionally, some states require candidates to pass some component(s) of the NTE, and many other states are exploring options regarding teacher certification and competency testing (Priestley, 1982).

One state whose competency certification program has been characterized as extensive and sophisticated is Georgia (Stoltz, 1981). Georgia not only assesses the generic teaching competencies that state deems necessary for all teachers seeking certification but also administers 28 separate criterion-referenced tests, each for testing a different content/specialty area. Among the most recently developed of these tests is the Reading Specialist Test. This is a test that Georgia will require of all persons at the master's level and beyond who wish to become newly certified in reading in the state. Since Georgia has been one of the leaders in teacher competency testing and has often served as a model for other states planning such programs (e.g., Alabama, Oklahoma, South Carolina, and West Virginia), we thought it important to look carefully at the content objectives of this Georgia test and see how closely its objectives correspond with the content emphasized in graduate level reading courses in Georgia colleges and universities.

TEST DEVELOPMENT

In 1981 the Georgia Department of Education contracted with National Evaluation Systems to develop a criterion-referenced test for certification as a reading specialist. The development of the Reading Specialist Test involved three major tasks. Ascertaining the domain of knowledge required of reading specialists, analyzing their job activities, and constructing an appropriate test.

Defining the domain of knowledge required of reading specialists entailed developing a topical outline of that knowledge, elaborating that outline, and ultimately formulating 141 measurable objectives. This was accomplished by an ad hoc committee of Georgia reading professionals.

Job analysis involved the rating of all proposed objectives to determine the most critical job-related objectives. Two hundred educators certified in Georgia as reading specialists were sent surveys. These reading specialists were asked to indicate for each objective whether they had "taught or used" the content of the objective "during this year or the past school year." For those objectives they had taught or used, they were asked to rate the amount of time spent teaching or using the objective and the extent to which they considered the objective essential to their field. Job-relatedness was treated as a twodimensional construct consisting of "time spent" and "essentiality." One hundred and fifty-seven, or 79%, of the surveys were returned. Of those returned, 140, or 70%, were valid. (Only surveys returned by educators who were both certified and practicing were considered valid.) One hundred eighteen of the 141 proposed objectives were considered to be job-related by the reading specialists surveyed. Those 118 objectives were grouped into six subareas: (1) Language Development and Reading Readiness, (2) Reading Skills, (3) Developmental Reading Instruction, (4) Assessment, (5) Reading Disabilities, and (6) Program Management.

Test construction involved developing test items to measure each of the selected objectives. From these objectives National Evaluation Systems generated a pool of questions, and then an ad hoc committee of reading professionals approved or rewrote these test items. The items were then field tested with a sample of 23 students drawn from graduate classes in reading at colleges and universities in Georgia. A panel of Georgia reading professors and reading specialists then independently reviewed each item for content validity, determining whether the question elicited a response reflecting knowledge indicated by the corresponding objective. This same panel also participated in standard setting by reviewing the field test data and establishing a passing score for the test. Based on the field test results and the content validation, National Evaluation Systems selected a set of items for the item pool of the Reading Specialist Test.

RATIONALE FOR STUDY

Throughout the development of the Georgia Reading Specialist Test, great care was taken to assure that this certification test would not only reflect the content knowledge required of reading educators practicing in Georgia public schools, but conform to applicable U.S. constitutional requirements as well. The consulting firm, National Evaluation Systems, recommended the job analysis procedure used for this test in accordance with Supreme Court decisions regarding licensure tests and the job-relatedness of such tests, as cited in Rubenstein, McDouogh, and Allan (1982), and the 1978 Uniform
Guidelines content (EEOC, CSC, Department of Labor, & Department of Justice, 1978).

The validity and job-relatedness of the test having been established by the procedures thus described, our attention now turns to the formal training of prospective reading specialists. Does the test reflect the substance of their training? In the study reported here our attention focused specifically on the relationship between the objectives of the Reading Specialist Test and the emphasis placed on these objectives by faculty teaching graduate level reading courses in Georgia colleges and universities. Although the Georgia Reading Specialist Test was not designed to be a summative evaluation of one's college preparation, if we are to test prospective reading specialists for certification by an instrument constructed from certain content objectives, we are obliged to determine the extent to which professors perceive those content objectives as important and the extent to which those objectives are taught in graduate reading courses. If there is a discrepancy between the content of graduate reading courses and the objectives of the job-related certification test, then adjustments may well be indicated.

### Table 1

<table>
<thead>
<tr>
<th>Area of Preparation</th>
<th>No Attention</th>
<th>Mentioned</th>
<th>Stressed</th>
<th>Major Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language Development and Reading Readiness</td>
<td>4</td>
<td>12</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Phonology, morphology, semantics, and syntax</td>
<td>4</td>
<td>13</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>Psychomotor skills</td>
<td>2</td>
<td>4</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>Linguistic awareness</td>
<td>1</td>
<td>7</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Auditory and visual discrimination/perception</td>
<td>1</td>
<td>6</td>
<td>23</td>
<td>3</td>
</tr>
<tr>
<td>Auditory and visual memory</td>
<td>2</td>
<td>2</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Oral communication skills, concept awareness, and reading readiness</td>
<td>1</td>
<td>8</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>Sociocultural factors</td>
<td>3</td>
<td>8</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Emotional development</td>
<td>1</td>
<td>2</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Interest/motivation</td>
<td>2</td>
<td>14</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Health and physical development</td>
<td>2</td>
<td>5</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Reading Skills of Candidates</td>
<td>2</td>
<td>6</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Phonics</td>
<td>3</td>
<td>13</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Structural analysis</td>
<td>1</td>
<td>6</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Spelling, irregularities</td>
<td>1</td>
<td>2</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Synonyms, antonyms, homonyms</td>
<td>4</td>
<td>13</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Word meaning using context</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

* N = 33  
* Abstracted from questionnaire items and presented in abbreviated form

### Description of Study

A study was undertaken in the Fall, 1982, to examine the correspondence between the content objectives of the Georgia Reading Specialist Test and the content emphasized in graduate level reading education courses in Georgia colleges and universities. A questionnaire was sent to all faculty teaching at least one graduate level reading course in Georgia colleges and universities with a state-approved program in reading at the master's level and/or higher. The names of these faculty were gleaned from a directory of graduate faculty in reading education (Blomenberg, 1981) and by personal inquiries. In all, 55 questionnaires were sent.

The 118 job-related content objectives in the six subareas (Language Development and Reading Readiness, Reading Skills, Developmental Reading Instruction, Assessment, Reading Disabilities, Program Management) of the Georgia Reading Specialist Test were collapsed and reduced to 56 questionnaire items in an attempt to render the length of the survey manageable. Taking a Likert scale format, the questionnaire directed professors to indicate the extent to which they address each facet of instruction in their graduate reading education classes. There were four options for each set of collapsed objectives: no attention, mentioned, stressed, and major emphasis. Table 1 summarizes the responses to the questionnaire.
### Table 1
Emphasis Reading Professors Place on Areas of Preparation for Reading Specialist Certification in Georgia

<table>
<thead>
<tr>
<th>Area of Preparation</th>
<th>No Attention</th>
<th>Mentioned</th>
<th>Stressed</th>
<th>Major Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punctuation/capitalization and effect on passage</td>
<td>2</td>
<td>13</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Following directions</td>
<td>3</td>
<td>13</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Graphic interpretation</td>
<td>2</td>
<td>14</td>
<td>14</td>
<td>3</td>
</tr>
<tr>
<td>References sources</td>
<td>1</td>
<td>10</td>
<td>16</td>
<td>6</td>
</tr>
</tbody>
</table>

Developmental Reading Instruction

| Variety of approaches to teaching reading | 0 | 2 | 7 | 24 |
| Techniques to accommodate different language patterns | 3 | 4 | 19 | 7 |
| Techniques for word identification | 0 | 1 | 16 | 16 |
| Techniques for developing vocabulary | 1 | 10 | 14 | 8 |
| Techniques for developing literal comprehension | 1 | 2 | 10 | 20 |
| Techniques for developing interpretation of punctuation/capitalization | 5 | 13 | 12 | 3 |
| Techniques for developing inferential comprehension | 0 | 2 | 12 | 19 |
| Techniques for developing critical reading | 0 | 2 | 14 | 17 |
| Techniques for developing literary appreciation | 1 | 3 | 17 | 12 |
| Techniques for developing reading/listening skills | 0 | 3 | 19 | 11 |

Assessment

| Norm-referenced and criterion-referenced uses of tests | 1 | 6 | 17 | 9 |
| Attitude/Interest tests | 1 | 4 | 16 | 12 |
| Observation, cloze, and IRI | 1 | 1 | 10 | 21 |
| Concepts of validity and reliability | 3 | 15 | 14 | 1 |
| Selection of tests | 2 | 2 | 17 | 12 |
| Physical, psychological, intellectual, or socio-economic factors | 2 | 6 | 12 | 13 |
| Demonstrate an understanding of observation or referral procedures, and uses of visual/auditory screenings | 3 | 7 | 13 | 10 |
| Independent, instructional, frustration, and potential levels | 1 | 1 | 10 | 21 |
| Selection, scheduling, and grouping remedial instruction | 3 | 7 | 17 | 6 |
| Motivational strategies | 0 | 8 | 19 | 6 |
| Integrating remedial reading within regular classroom | 0 | 10 | 16 | 7 |
| Monitoring/recording student progress in remedial reading | 4 | 10 | 16 | 3 |
| Communicating with other professionals and agencies | 8 | 11 | 12 | 2 |
| Remedial reading materials/equipment | 1 | 6 | 19 | 7 |
Program Management

| Remedial, developmental enrichment programs | 0  | 4  | 23 | 6  |
| Interaction with students, parents, classroom teachers, administrators/support staff | 7  | 12 | 12 | 2  |
| Goals of comprehensive reading curriculum | 2  | 8  | 15 | 8  |
| Evaluating reading programs | 5  | 4  | 21 | 3  |
| Scheduling reading program | 4  | 13 | 12 | 4  |
| Placement of students | 3  | 7  | 19 | 4  |
| Education of the Handicapped Act (Public Law 94-142) | 10 | 15 | 8  | 0  |
| Selection of materials | 1  | 8  | 17 | 7  |
| Readability level | 0  | 6  | 23 | 4  |
| Selection of literature | 2  | 9  | 13 | 9  |
| Professional organizations and publications | 2  | 15 | 12 | 4  |

RESULTS

Forty of the 55 questionnaires sent were completed and returned. This represents a 69% return. However, of the 40 questionnaires returned, only 33 were considered usable for the purposes of this study. Response to the questionnaires was assumed to be based upon teaching classes across the general areas of language development, developmental reading instruction, and diagnosis and remediation of reading problems. In order that the results not be misleading, responses were eliminated from the sample if they were based upon teaching only narrowly specialized courses. The responses summarized in Table 1 and highlighted here by subarea are based on 33 usable questionnaires, representing 60% of the total population sampled.

Language Development and Reading Readiness

In the area of language development and reading readiness, stress or major emphasis is given to most instructional areas. Respondents indicated that they teach linguistic and concept awareness and that they stress auditory, visual, and communication skills. Additionally, they indicated that importance is placed on emotional development and sociocultural and motivational factors. About half of the respondents either do not deal with specific linguistic, medical, and maturational influences on language development or, if they do, they only mention them in their teaching.

Reading Skills of Candidates

By far the area receiving the least emphasis in all institutions is that of developing reading specialist candidates own reading competence. Respondents indicated that they do emphasize becoming aware of one's own use of phonetics, and structural analysis and that they attempt to extend comprehension skills and knowledge of appropriate reference sources. However, more than half indicated that little if any attention is given to students' abilities in spelling, mechanics of writing, graphic skills, and following directions.

Developmental Reading Instruction

Of all the areas of reading specialist preparation, developmental reading instruction clearly receives the major emphasis in all institutions. Response to the survey indicates that nearly all professors emphasize the development of inferential and critical reading abilities and that nearly all attempt to demonstrate a variety of approaches to developing reading ability. It appears that in general these approaches are presented under the rubric of developing comprehension skills traditionally identified by reading teachers and publishers of reading instructional materials. These skills include identifying main ideas, recalling details, following sequence, and detecting cause-effect relationships. To foster these skills, they indicate that they stress the need to accommodate variations in pupils' language background, to teach word identification skills, and to inculcate study skills. About half the respondents either do not deal with the functions of punctuation and capitalization or, if they do, they only mention them incidentally.

Assessment

In the area of assessment, reading specialist preparation appears to be strong in Georgia. Most professors indicated that they stress the characteristics and uses of different kinds of reading tests, nearly all giving special or major attention to informal reading assessment techniques. In general, professors seem not as concerned with technicalities of formal assessment as they are with appropriate selection and interpretation of these tests.

Reading Disabilities

Responses related to teaching about reading disabilities were somewhat mixed, as would reflect the controversial nature of this area. In general, where particular orientation to dealing with reading problems was left open, response was more clear-cut. Specifically, two areas strongly emphasized are identifying techniques for determining students' reading performance and identifying types and functions of materials or equipment used in remedial reading. However, where orientation to instruction takes a particular bias responses were substantially mixed. For example, matters related to either mainstreaming or clinical approaches are at best mentioned by a third of the respondents. This is not surprising given the variety of theoretical orientations which are represented in Georgia's colleges and universities. Theoretically strict orientations are less likely to give special attention to propositions considered inconsistent or unimportant. One aspect of reading specialist preparation not identified with any particular orientation was shown to receive little or no attention by over half of the respondents-teaching about purposes and procedures for communicating with related specialists regarding students in remedial reading programs.

Program Management

Response to the questionnaire indicates that Georgia colleges and universities are providing instruction in reading program management, but for the most part attention is limited to management concerns related to classroom reading instruction. Most respondents indicated that they deal with reading program goals and objectives and identify activities and materials ap-
propriate for developmental and remedial reading. Nearly all demonstrate readability prediction techniques. Most emphasize methods of evaluating and modifying instruction. However, few respondents indicated that they give important consideration to promoting interaction among teaching, supervisory and administrative personnel. Only a handful of respondents said that they deal with Public Law 94-142, Education of the Handicapped Act.

CONCLUSIONS

It seems reasonable to expect that reading specialist candidates will be successful on test areas/objectives in which stress or major emphasis was placed in their coursework. Conversely, on areas/objectives in which faculty indicated no emphasis, or as only mentioning in their graduate courses, potential deficiencies might exist. For instance, the cumulative responses of 60% of the graduate reading faculty in Georgia indicates that about half or less than half of them put little emphasis on: specific linguistic, medical, and maturational influences on language development; the reading specialist candidates’ own reading and study skills abilities; functions of punctuation and capitalization; concepts of test validity and reliability; cooperation with other professional personnel and knowledge of relevant professional affiliations/publications; and Education of the Handicapped Act (Public Law 94-142).

A common thread of weakness across the subareas was in objectives dealing with cooperation with other professionals. Additionally, there is evidence that little attention is paid to teaching reading specialists about other professional fields which are related to reading. The Handicapped Act is only mentioned, or not mentioned at all, in graduate reading coursework.

Generally, the results suggest that the reading specialist candidates in Georgia should do well on most of the objectives of the Reading Specialist certification test. Subarea responses looked very positive for all subareas, with the possible exception of “Reading Skills.” If these faculty perceptions are accurate, and if institutions have not in some way assured students’ competence in the reading/study skills, statewide test results are likely to indicate weaknesses in candidates’ own reading abilities and study skills.

REFERENCES


ORAL READING PRACTICES REPORTED BY CLASSROOM TEACHERS OF GRADES 1-6

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Alabama A&M University

A survey of current reading methods textbooks reveals continuing concern over the appropriate use of oral reading. Particularly is criticism leveled at the practice called "round robin reading" described as "going around the circle with each student taking his turn reading aloud" (Gilliland, 1978, p. 153). A number of negative effects from this practice have been detailed (Burns & Roe, 1976; Olson & Dillner, 1976; Gilliland, 1978; Heilman, Blair & Rupley, 1981; Stoodt, 1981; Daillman, et al., 1982).

Reading methods textbooks invariably suggest that oral reading in a group be preceded by silent reading (Smith & Robinson, Aukerman & Aukerman, 1981; Stoodt, 1981). Suggestions are also made for other procedures during students' oral reading. May (1982) notes the following trend in basal reading series: "No longer are teachers encouraged to stop a child every time he makes a reading error" (p. 295). Smith and Robinson suggest that "Unless meaning is distorted by pronunciations or substitutions that deviate from the expected response, pupils should not be corrected" (p. 354). Heilman, Blair, and Rupley (1981) contend that "Instruction during the oral reading itself will usually destroy the value of the oral reading" (p. 471). Current theory has undoubtedly been influenced by Goodman's (1976) research viewing reading as a "psycholinguistic guessing game." As such, teachers do not correct oral reading miscues which do not affect meaning.

Directions for administering oral informal reading inventories and analyzing the results are a part of survey and diagnostic/remediation texts in reading. Many basal series now also include such oral reading inventories with their series for individual testing. Assessment of oral reading in group settings is also suggested: "Even though a choral reading or the reading of a book report or poem is not planned as a diagnostic testing session, knowledgeable teachers use these opportunities to study their students" (Robin, 1982, p. 110).

Research has highlighted some dichotomy among different groups' views on oral reading practices. Taylor, Pickert, and Chase (1980) compared the views on language and reading of university faculty, teachers, and parents. Most of the parents (89%) surveyed thought teachers should correct mistakes in oral reading. Only 20% of university faculty agreed while 62% of the thirty-four primary teachers surveyed agreed that mistakes should be corrected.

Research indicates that teachers do frequently correct oral reading miscues (Weinstein, 1976; Allington, 1980). Immediate correction of students' miscues was found to have negative effects on their accuracy and self-corrections (McNaughton & Glynn, 1981; McNaughton, 1981).

Spiegel and Rogers (1980) observed the responses of sixteen second-grade teachers to students' oral reading miscues. They found that the teachers told the child the word miscued in 50.2% of the 181 responses coded. A cue related to the visual characteristics of the word was given in 29.7% of the responses. Meaning cues were given only 5% of the time.

The present study was designed to further explore teacher's practices, through a questionnaire, related to oral reading. How these reported practices reflect current reading theory and teachers' perceptions of the reading process need to be investigated.

Method and Procedure:

A two-page questionnaire on oral reading practices was developed and field-tested with graduate students in the summer, 1982. The questionnaire contained general categories of
frequency, assessment, purposes, and procedures. Some items allowed more than one choice and some to rank order choices. Questionnaires were distributed during Fall, 1982, to schools in north Alabama whose administrators agreed to allow their teachers to participate in the study. Twenty-seven schools participated in the study, seventeen of which were in city school systems and ten of which were in county school systems.

The voluntary questionnaire was completed by 325 teachers, although not every item was responded to by each of these teachers. Of the respondents, 170 taught in grades one through three and 155 taught in grades four through six. Results were analyzed by primary and intermediate grades because of the assumption that differential teaching procedures might be employed at the primary and intermediate levels.

Results

Regarding frequency of oral reading, 56.7% of the primary level teachers reported daily group oral reading in their classrooms. Other percentages were: three days, 18%; two days, 12%; four days, 11%. At the intermediate level, 42% of the teachers reported daily oral reading, 24% reported reading four times weekly; 18% three times weekly and 12% four times a week. The following percentages, in descending order, were reported for each child reading to a group during the week:

Primary Level - five times, 34%; four times, 33%; three times, 25%; two times, 14%; four times, 12%; three times, 12%; intermediate level one time, 32%; three times, 27.2%; two times, 13.9%; one time, 13.9%; 4 times, 8%. The item requesting the number of times a student read alone to the teacher was the item most often omitted by teachers. Only 117 teachers at the primary level and 114 at the intermediate level responded. At the primary level 53.8% of the teachers responded in a range of one to ten with two times (12.8%) being the most frequent response. Of the intermediate teachers, 54% gave a response in the range of one to ten; however, the most frequently reported response, 33%, for this group was zero.

The most frequent response for "typical assessment" during group oral reading was "Mental notes are made of the individual reader's difficulties" (Primary, 141; Intermediate, 126). The other responses and their respective numbers, by primary and intermediate teachers were: written notes of the individual reader's difficulties (92, 68), mental notes of the groups reading difficulties (84, 71), and written notes of the group's reading difficulties (56, 38).

The same three purposes for oral reading were most frequently selected by primary and intermediate teachers; these choices and respective numbers were: 1) to check word attack skills, 165, 117, 2) to check pronunciation of vocabulary words, 151, 108 and 3) to confirm answers to comprehension questions (131, 125). These purposes also had the greatest frequency of first, second, or third choices of the eight.

Teachers were asked to rank their responses from sixteen choices when students made oral reading errors. Telling the student to "sound it out" was the procedure given most often as a first choice and as either a first, second, or third choice by both groups. This procedure was most frequent in choice by primary teachers (147) and second most frequently chosen by intermediate teachers (97). The kind of cue becomes more pervasive when including the procedure "Tell the student to use other word attack skills such as _____" is included, the third most frequent response (73) for primary teachers and marked thirty-nine times, seventh in frequency, by intermediate teachers. Further, teachers described these word attack skills, but syllabication, rhymes, short vowels, root words, and context were mentioned.

Telling the student the word was the procedure marked most often (106) by intermediate teachers with this being the second most frequent response (100) for primary teachers. Third in frequency for intermediate teachers was "Draw attention to the meaning of the word" (53), similar to their fourth choice "Tell them to look it up in the glossary or dictionary" (50). These were selected only slightly less frequently than "Tell the student to read to the end of the sentence and then attempt," (49), which was ranked sixth for primary teachers (69). Fourth and fifth ranked responses for the primary level related to picture clues (72) and the word in another context (70).

"Ignore the mispronunciation" was the procedure selected least often by both primary (4) and intermediate teachers (8). There was a slightly higher frequency for "Ignore the mispronunciation if it does not affect meaning" (Primary, 34; Intermediate, 27) as compared to "Ignore the mispronunciation if it is close to the actual pronunciation" (17 and 22). "Silent reading usually precedes oral reading" was the procedure selected most often by primary (70) and intermediate teachers (79). The other procedures ranked, respectively were: "Silent reading always precedes oral reading," (59, 46), "Silent reading sometimes precedes oral reading," (45, 29), "Silent reading rarely precedes oral reading," (6, 11) and reading never precedes oral reading." (3, 2).

Both groups of teachers reported "Assuring each student has an opportunity to read" as a predominant choice (Primary 133, Intermediate, 113. "Randomly calling on students" was second ranked (101, 105). Other procedures were "Asking for volunteers" (31, 42) and "Taking turns around a circle or down a row" (48, 30). Both groups also agreed that no differentiation was made in oral reading for the high, average and low groups, and that no differentiation was made among the best, average, and poorest readers in a group.

Discussion and Conclusions:

According to these teachers, oral reading is a definite part of their on-going reading program, although to a greater extent in the primary grades. However, individual assessment is considerably less frequent, particularly in the intermediate grades. Many of these teachers reported no one-to-one reading. Overall findings suggest that individual assessment techniques such as teaching informal reading inventories are not frequently used in the classroom. It is possible that teachers do use these techniques with selected children since the response item stated "Each child reads to the teacher alone ___ times during the school year." An item requesting the number of times a teacher uses an individual oral reading technique may have yielded different results. Both groups' reliance on mental notes for assessment further suggests that classroom oral reading may not be an effective technique for determining specific individual strengths and weaknesses in reading.

Teachers' main procedures of "sounding" or "telling" for mispronunciations appear consistent with their frequently selected purposes of checking word attack skills and pronunciation of vocabulary words. Use of meaning was not a predominant cue, except for intermediate teachers' focus on the meaning of the individual word. That simply telling the word was not because of a concern with fluency in oral reading is suggested by these teachers' unwillingness to ignore mispronunciations. This practice is in variance with procedures suggested by psycholinguistic theory and those found in many reading methods texts. Teachers' reported practices of silent reading usually preceding oral reading does show general agreement with current theory and practice suggested in these texts.

Teachers' responses relative to differential treatment of oral reading for groups and individuals suggests an emphasis on equality of treatment. This emphasis may not, however, be in the best interests of students. Further investigation of teachers' rationale for such practices appears warranted. This study was limited to a specific geographical area and was further limited by reliance on a self-report technique. Further investigations with other groups should help to determine what the practitioners of reading instruction actually do. Classroom observations may be more insightful. Furthermore,
more investigation should be conducted to determine what classroom oral reading practices are of most benefit in the development of students' reading skills.

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facts and ideas acquired are all involved with and are expected
to enhance intellectual, social, and emotional development.

The complexity of the process and the outcomes expected in-
crease the areas in which dysfunctions, or anomalies might oc-
cur. These areas are conveniently, though not exclusively,
categorized under Barrett's taxonomy of affective and cognitive
factors involved in reading comprehension (Barrett, 1968), and
under the "4D's" diagnostic models suggested by Weiner and
Cromer (1967). Oddly, however, in the 10 plus years since the
publications of these works, assessment strategies have remained
primarily reading specific at the post-elementary levels, even
while terms such as psycholinguistics, and psychocognitive
have been popularized. In short, there is no broad spectrum
battery of tests and inventories available, in any form, of the
major and minor elements held to be involved in assessing and
promoting progress toward reading-language-thinking and
social-emotional maturity.

Reported here is a brief account of an effort to synthesize
such a battery. The battery called ALARM, for 'Assessment
of Language and Reading Maturity,' contains 15 subtests (Man-
zo & Casale, 1979). It is a skeletal, "homemade" and crude
set of instruments as compared with distantly analogous com-
cercial batteries and tests. The battery was fashioned initially
as operational instrumentation for an even more ambitious
research effort; namely, to refine and update the work of Gray
and Rogers (1956), and Early (1960), among others, in defin-
ing, assessing and promoting "reading maturity," or "Progress
Toward Reading Maturity." (PTRM), our call name for the cur-
rent effort (Manzo and Casale, 1981).

While the larger, and more protracted effort continues, now
into longitudinal studies, it seemed appropriate to provide an
intermediate report on the instrumentation which has been
employed (and continues to be refined and revised) for those
who might wish to employ these, or any portions or forma-
tions within them, in their own research or field project
activities.

The battery has been employed, now, in several studies, with
several hundreds of students. It also has served as an effective
vehicle to demonstrate the need for a more holistic approach
to reading assessment and instruction in teacher training.

This paper describes the instruments, provides brief comments
upon their rational and cognate factors, and includes an ac-
counting of some of the preliminary indications of central
tendency, reliability, and of factor analytic structure.

The battery, along with more elaborate and specific data ac-
counts, and machine and hand scoring protocols, is available
upon request from the authors, at no charge, to non-commercial
users.

The ALARM Battery

The battery has been administered and partially normed on
over 800 urban and suburban youngsters between grades 6 and
14. The tests were designed to permit group administration. The
full battery requires approximately two and a quarter hours.
Three subtests essentially are criterion referenced, one is a timed
test, the remainder are power tests. Administration typically re-
quires three 50 minute sessions.

Profiles are generated by converting raw scores into T-scores
with a mean of 50 and a standard deviation of 10. The T-score
formula, where \( x \) is a given student's raw score, and \( \bar{x} \) is the
mean of the group, and \( s \) is the group standard deviation, is as follows:

\[
T = x - \bar{x} \times 10 + 50
\]

An intangible, though primary consideration in the design
of the tests was that they should be interesting, if not compelling.
Inquiries of youngsters who had taken the tests, along with
unsolicited comments suggest that this objective has been achieved.
Inspection of scoring sheets and protocols lent further credibility
to this conclusion. There was very little indication of indifference
as might be reflected in blocks of unanswered questions or in
random patterns of responding. There also were few visible signs of test anxiety. In fact, youngsters seemed to have a sincere desire to just talk about the test and their reflections and experiences with it.

The Experimental Battery

Tests 1 - 3 attempt to establish if the student has achieved basic literacy. These are essentially "criterion referenced" tests. The tests correlate moderately (.40's) with the roughly comparable Iowa Tests of Basic Skills despite their brevity and the ceiling effects associated with their criterion-referenced nature.

Test 1: (Basic) Word Recognition: a word opposites test made up of words with regular and irregular elements (10 items).
Sample items:
A. black: 1. red 2. whole 3. blue 4. green 5. white
B. sweat: 1. dry 2. bitter 3. neat 4. nit 5. score

Test 2: (Basic) Vocabulary: a word similarities test of high frequency words which should be known by the junior high school level (10 items).
Sample items:
A. congress: 1. President 2. parliament 3. board
  4. color 5. Washington
B. nimble: 1. dumb 2. numb 3. agile
  4. gifted 5. negative

Test 3: (Basic) Analogies: a word reasoning test which requires selecting a word or phrase to complete an analogy. Vocabulary is controlled and estimated at 5th reader level (10 items).
Sample items:
A. Shelves are to books, as carsons are to______
   1. floors 2. ceilings 3. eggs 4. pickles 5. boxes
B. Eight is to ten as thirteen is to______
   1. eighteen 2. twelve 3. fifteen 4. zero 5. five

Subtests 4 through 6 also are relatively conventional measures of reading, though slightly more demanding. These correlate in a range between .48 and .63 with roughly comparable Iowa tests.

Test 4: Syntactic Complexity: students are required to translate a syntactically complex, though semantically simple, sentence into component parts (7 items).

Sentence:
About the palace the curious citizens watch, through the iron-grilled fence, the merchants with gold-covered purses walking in the courtyard with an air of their importance.
A. "about the palace" means:
   1. around the palace
   2. the merchants are talking about the palace
   3. there will be a bout, or flight, at the palace
   4. where the merchants are going
B. "Ernest has been her favorite" is the same as:
   1. Her favorite had been Ernest
   2. Ernest had been favorite
   3. Her Ernest had been favorite
   4. Favor had been her Ernest

Test 5: Modified Cloze: a further measure of language, though of even more subtle redundancy patterns found in prose. Deletions are on a non-fixed schedule ranging between 3 and 9 words, to reduce the negative emotional impact associated with fixed, arbitrary deletions (25 items).
Sample items:
were
There (56) are many tests in which the Indian boy

know
had to (57) show that he could bear pain.

Test 6: Reading Comprehension: students read two relatively brief, high interest passages, which are followed by an array of multiple choice questions of a main idea, detail, and inferential nature (15 items).

Test 7 - 8 require more complex mental operations and the integration of specialized areas of prior knowledge while reading.

Test 7: Speed and Accuracy in Content Area Material: a measure of rate of content area reading performance, students are required to rapidly process the best answer to questions designed to tap a diverse pool of commonly held information (33 items).
Sample items:
A. Each of these men was first a Vice-President, except:
   1. Lyndon Johnson
   2. Gerald Ford
   3. Richard Nixon
   4. John Kennedy
B. The "Golden Age" of Greece was about the year:
   1. 7000 B.C.
   2. 500 B.C.
   3. 1500 A.D.
   4. 1800 A.D.
C. Which number cannot be divided evenly by 3?
   1. 23
   2. 15
   3. 18
   4. 36

Test 8: Abstract Verbal Reasoning: students had to decide which of four statements best represented the general idea of a proverb. Reading level and idea load were controlled; emphasis was placed on the students' inclination to think along abstract versus concrete lines: two points were awarded for the most abstract answer, and one point for a correct, concrete answer. The concept base for this test was Gorham's (1956) Proverbs Test (10 items).
Sample items:
A. The squeaking wheel gets the grease.
   1. Silence is best.
   2. The loud child gets the love.
   3. Things attracting attention tend to be taken care of first.
   4. Greased wheels rotate more easily.
B. Clothes make the man.
   1. The way you present yourself is the way you likely will become.
   2. Don't judge a book by its cover.
   3. Clothes and such can make you feel good.
   4. A man is what he is no matter how he dresses.

Test 9 - 12 are attempts to measure even more subtle factors. In its current skeletal form only subtest 10, Social-Emotional Factors, is significantly correlated to Iowa scholastic measures (r = .28). A sub-group index of tests 9 through 12 also is significantly, though at a low level, correlated to the Iowa groupings called Total Language and Total Math. The literature on psychoeducational assessment shows consistently similar findings on such factors. This seems to suggest that the factors measured are present and pervasive, although quantitatively slight.
Test 9: Elaborative Thinking: a brief selection is presented; it is followed by five critiques at varying degrees of sophistication. The student is asked to order these from least to most preferred; points are awarded upon the supposition that preferences for the most sophisticated critiques is suggestive of an inclination to think more "elaboratively".

Examples illustrate three levels of critique of the same passage, which was taken from the book "Summerhill".

1. The child is motivated by his natural impulses such as his needs to eat or to gratify wishes. This child naturally comes into conflict with a system of prohibitions called moral instruction. The conflict created by instructing the child in morality is what causes delinquent "bad" children.

2. Children have natural needs. Moral instruction conflicts with natural needs. This contradiction causes delinquent behavior.

3.Neill is correct, moral instruction does conflict with "natural needs"; it is supposed to. Moral instruction is man's attempt to control his destiny. Clearly some "morallists" have over-stated the issue; however, the act of inhibiting certain reactions virtually is a definition of civilization. We don't need less moral instruction, we need more thoughtful instruction.

Test 10: Social-Emotional Factors: students express level of identification with or rejection of 33 animals on a 5-point scale. This group administered test is based upon an adaptation of the Bestiality Inventory (Manzo, 1975a). The SEF subscale has the potential to yield several possible indices of affective factors. The factors surveyed most frequently are general emotional stability and level of appetitive motivation.

This index is derived by taking the scaled responses of each student to 10 animals previously found to have the most positive attributes, summing these, multiplying the sum by 2, and then subtracting the simple sum of student identifications with the 10 animals found to have the most negative associations.

Justification for this procedure is derived from studies showing differential levels of empathy for certain animals to be related to academic, social, and emotional state (Manzo, 1975a; Manzo, Lorton, & Condon, 1975; Manzo, 1977; Robinson, 1977; Martin, 1978; Casale, 1981).

Examples:
High positive associations: lion, dove, horse
High negative associations: hog, snake, alligator

Test 11: Teaching/Learning Range: a measure of adaptability, ten methods are described; students express their general level of preference for each on a 5-point scale.

The simple premise of this adaptation of the Learning Preferences Inventory (Manzo, Lorton, & Condon, 1977) is the belief that the broader a student's range, the greater his maturity and adaptability. Several studies have revealed that academic and emotional factors interact with strongly expressed preferences. Thus the information acquired from this subtest can be used in much the same manner as most other cognitive or learning styles inventories as well as a representative measure of adaptability.

Sample Items:
Lecture Learning: The teacher does most of the talking. Questions are permitted, but there generally is little discussion.
1. How do you feel about the Lecture Learning method?

Tutoring: The teacher works with one student (or a small group) while the remainder of the class is engaged in another activity.

2. How do you feel about the Tutoring method?

Test 12: Cultural Compatibility; this is a "difference" inventory. It is something, too, of a sociological measure. On a 5-point scale, students express their introspective responses to a range of items selected to represent many of the most fundamental experiences, opportunities, attitudes and values which collectively tend to be assumed to be the composition of the "average" American student, and therefore, around which curriculum and instructional methods are selected and designed.

Theoretically, the ideal student would respond to each item with a 5, indicating that s/he had had, or was having such experiences, and shared such views and attitudes as were expressed. Thus, the higher the score, the higher the degree of "cultural compatibility," and conversely, the lower the score, the less likely that the student would be equal to the assumptions and expectations of school.

Experience with the scale has resulted in a re-evaluation of this assumption and a modification of scoring. A response of 4 is given higher credit than is one of 5. Responses at the 5 level tend to represent, in sum, exaggerations, or compensations.

There are several possible sub-item analyses which potentially can be made within the existing scale, and which likely would be more reliable if the scales are expanded.

Sample Items:
1. I like being the way I am.
2. I believe that I will become better at almost everything I do as I grow older.
3. When I become frustrated in school, I double my effort.
4. Some of my relatives have graduated from college.
5. Some members of my family have owned their own businesses.

Test 13 - 15 are intended to measure both comprehension, in the cosmic sense of apprehension of surrounding facts and experiences, and evaluative thinking, in a variety of situations. The formula for constructing and scoring each of these tests was the same. Fifteen mature readers, holding either masters' degrees or doctorates, were asked to make scaled judgments on a variety of items. They then discussed their responses and voted upon a "best" response to each item. There was considerable uniformity of response to over 80% of the items.

Scoring is based upon this formula: three points for "best" response, two points for a choice which is plus or minus one integer from the best choice, no points for judgments beyond that margin. Practically speaking, it would be difficult to get no points with only a possible spread of 5 points; but then this seemed appropriate where personal values were concerned.

Test 13: Critical Judgments - Useful Information: students are asked to judge the "value to society" of information contained in each of several sentences. They are to assume that the information is correct; which, to the best of our knowledge, it is. (18 items)

Examples of Statements:
1. Adolf Hitler once owned 8,960 acres of land in Colorado.
2. Two things cannot occupy the same place at the same time.

Test 14: Critical Judgments - Responsibility: students are asked to judge how "reasonable" they believe each of several sentences to be. (9 items)

Examples of Statements:
1. It is "ok" for parents to hit young children when it appears necessary.
2. Men appear to be more naturally aggressive than women.
Test 15: Critical Judgments—Comprehensive and Aesthetic: students are asked to make a range of judgments on several mate-
tes covered in two previously employed selections from the
reading comprehension subset.

Judgments included some of the type of evaluative thinking
required in tests 13 and 14, plus estimations of aesthetic balance—"Does this word or phrase seem balanced: not too
flat, nor emotional, nor biased?"; and Logic—"Does this seem
logical within the frame of the story?"

Preliminary Data Based Information on Experimental Battery

Preliminary data suggests that the battery, even in this crude
skeletal form, may be employed, albeit with reasonable
cautions. Reliability estimates for the non-criterion referenced tests
are fair to good (with the exception of 'CJ14' for which a new
estimate is being calculated based upon a more stable test-retest
design).

Table 1
Measures of Central Tendency and Error
on Tests 1 - 15 of ALARM
N = 579 (6th - 9th graders)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Maximum Value</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Reliability Estimate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Word Recognition</td>
<td>10</td>
<td>8.8</td>
<td>1.1</td>
<td>.50</td>
</tr>
<tr>
<td>2. Vocabulary</td>
<td>10</td>
<td>6.2</td>
<td>1.4</td>
<td>.29</td>
</tr>
<tr>
<td>3. Basic Reasoning</td>
<td>10</td>
<td>6.9</td>
<td>1.9</td>
<td>.58</td>
</tr>
<tr>
<td>4. Syntax Complexity</td>
<td>6</td>
<td>4.3</td>
<td>1.4</td>
<td>.49</td>
</tr>
<tr>
<td>5. Language Patterns</td>
<td>25</td>
<td>10.4</td>
<td>3.4</td>
<td>.75</td>
</tr>
<tr>
<td>6. Rdg. Comprehension</td>
<td>15</td>
<td>8.3</td>
<td>3.3</td>
<td>.75</td>
</tr>
<tr>
<td>7. Spd/Accuracy/Content</td>
<td>45</td>
<td>27.6</td>
<td>8.9</td>
<td>.98</td>
</tr>
<tr>
<td>8. Abstract Reasoning</td>
<td>30</td>
<td>18.3</td>
<td>7.6</td>
<td>.80</td>
</tr>
<tr>
<td>9. Elaborative Thinking</td>
<td>45</td>
<td>27.6</td>
<td>7.2</td>
<td>.98</td>
</tr>
<tr>
<td>10. Emotional Factors</td>
<td>70</td>
<td>36.8</td>
<td>12.5</td>
<td>.68</td>
</tr>
<tr>
<td>11. Tchg/Lrg Range</td>
<td>62</td>
<td>39.2</td>
<td>7.4</td>
<td>.75</td>
</tr>
<tr>
<td>12. Cultural Comput.</td>
<td>286</td>
<td>123.8</td>
<td>47.7</td>
<td>.99</td>
</tr>
<tr>
<td>13. CJ—Useful Info.</td>
<td>40</td>
<td>19.7</td>
<td>8.1</td>
<td>.67</td>
</tr>
<tr>
<td>14. CJ—Reasonability</td>
<td>23</td>
<td>9.8</td>
<td>4.8</td>
<td>.41</td>
</tr>
<tr>
<td>15. CJ—Comprehensive</td>
<td>41</td>
<td>20.7</td>
<td>9.8</td>
<td>.73</td>
</tr>
<tr>
<td>TOTAL (ALARM SCORE)</td>
<td>526</td>
<td>377.0</td>
<td>74.3</td>
<td></td>
</tr>
</tbody>
</table>

Note: *Reliability coefficients for Tests 1-7 derived using Kuder-Richardson formula 20;
for tests 8-15 derived using the coefficient alpha formula (Anastasi, 1976).

Factor Structure Battery

A preliminary factor analysis of the 15 subtests revealed essen-
tially four factors. These have tentatively been labeled as a
‘Developmental Reading’ factor, a ‘Major Bracing Elements’
factor, a ‘Complementary Elements’ factor, and a ‘Trace
Elements’ factor.

Table 2
Factor Structure Matrix
(Oblique Rotation)
For 15 ALARM Subtests

<table>
<thead>
<tr>
<th>Variable</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
<th>Factor 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNTC</td>
<td>.80</td>
<td>.19</td>
<td>-.23</td>
<td>.26</td>
</tr>
<tr>
<td>M/CLOZE</td>
<td>.76</td>
<td>.32</td>
<td>-.06</td>
<td>.14</td>
</tr>
<tr>
<td>CCOMP</td>
<td>-.78</td>
<td>-.02</td>
<td>-.05</td>
<td>.20</td>
</tr>
<tr>
<td>WR</td>
<td>.53</td>
<td>.21</td>
<td>-.42</td>
<td>.21</td>
</tr>
<tr>
<td>VOCAB</td>
<td>.65</td>
<td>.28</td>
<td>-.37</td>
<td>-.09</td>
</tr>
<tr>
<td>SPD/ACC</td>
<td>.22</td>
<td>.67</td>
<td>.11</td>
<td>.21</td>
</tr>
<tr>
<td>ANALOG</td>
<td>.73</td>
<td>.16</td>
<td>-.15</td>
<td>-.11</td>
</tr>
<tr>
<td>ABST/YR</td>
<td>.83</td>
<td>.18</td>
<td>-.01</td>
<td>.19</td>
</tr>
<tr>
<td>ELB/THKG</td>
<td>.10</td>
<td>.04</td>
<td>.76</td>
<td>-.15</td>
</tr>
<tr>
<td>SEF</td>
<td>.35</td>
<td>.61</td>
<td>-.38</td>
<td>-.01</td>
</tr>
<tr>
<td>TLR</td>
<td>.06</td>
<td>.00</td>
<td>-.06</td>
<td>.82</td>
</tr>
<tr>
<td>CULT/C</td>
<td>.25</td>
<td>-.64</td>
<td>.01</td>
<td>.27</td>
</tr>
<tr>
<td>CJ1</td>
<td>.79</td>
<td>-.02</td>
<td>.01</td>
<td>.20</td>
</tr>
<tr>
<td>CJ2</td>
<td>.33</td>
<td>.37</td>
<td>.24</td>
<td>.47</td>
</tr>
<tr>
<td>CJ3</td>
<td>.65</td>
<td>.23</td>
<td>.42</td>
<td>.47</td>
</tr>
</tbody>
</table>
Factor 1, or the 'Developmental Reading' factor is composed of the basic reading/language/thinking axis. The highest loadings were found on verbal abilities such as knowledge of language redundancy patterns in prose, reading comprehension, vocabulary, decoding skills, abstract verbal reasoning, and 'Critical Judgments 13', (the ability to recognize relevant from irrelevant information). Moderate loadings were found for the social-emotional factors measured (primarily, general stability and appetitive motivation), and for 'Critical Judgments 14', an estimate of apprehension which seems to be analogous to the social Comprehension subtest of the WISC IQ test), and, to a considerably lesser degree for 'cultural compatibility' and speed and accuracy in content area reading. The inclination to think 'elaborately' had a slight negative loading on this essentially typical developmental reading factor. A tentative explanation for this apparent oddity is found ahead in the Discussion section which references similar findings in a moderate term and longitudinal study by Casale and Heath respectively.

Factor 2, or the 'Major Bracing Elements' factor, had its highest loadings on general stability and positive motivation, next upon apprehension, or assessment of the reasonableness of certain common conventions, then upon speed and accuracy in content area reading. 'Cultural Compatibility' had a high negative loading. This would seem to suggest then Factor 2 is unrelated to cultural opportunity and life style, but probably more so is related to dominant characterological and intellectual traits. This factor, and the next, appear to be involved in the pragmatism-romanticism dichotomy which influences inclinations toward non-fiction/fiction preferences, and related reading-thinking behaviors.

Factor 3, or the 'Complementary Elements' factor clearly is a representation of more subtle intellectual, or cognitive style, factors, i.e., the inclination to think elaborately, reason intuitively, and to elements of aesthetics and appreciation. This factor seems to be relatively independent of intelligence, general academic achievement, emotional stability or cultural opportunity. While it appears to have relatively little predictive value of conventional measures of intellectual growth and development, logically, it seems as if it could be a significant predictor of long term intellectual growth, and as noted above, tastes in reading as well as other subtle characteristics of reading-thinking behaviors.

Factor 4, or the 'Trace Elements' factor, also appears to be a cognitive, or more particularly, a learning style factor. It loads most heavily upon adaptability, and elements of balanced judgment and aesthetics. It appears to be an indication of one's inclination to accommodate, or change to meet existing demands. It seems to be the converse of petulance and egocentricity. There are slight though pervasive loadings in two areas of critical judgments (involving apprehension and aesthetics), cultural compatibility, and to a lesser degree, most other measures of language, rate and knowledge. This factor, as with 'trace' (mineral) elements in diet, probably has crucial impact on certain very specific reading and analytical thinking functions, even while it may appear inconsequential in most school-like reading situations.

Discussion

The experimental battery appears to offer a paradigm, if not yet a fully satisfactory battery, for constructing profiles of reading-language-thinking and social-emotional development at the post-elementary levels.

Test 1-5 offer a quick group assessment roughly comparable to that provided by an Informal Reading Inventory or most standardized tests. The comprehension, language, thinking, and critical judgments subtests seem to parallel Barrett's taxonomy from the Recognition through the Appreciation levels. The remaining tests appear to provide the complement of information necessary to complete the standards for a Weiner-Cromer work-up, which requires assessment of aspects of possible Defects, Deficiencies, Disruptions, and Differences (Weiner-Cromer, 1967).

In covering such a spectrum the experimental battery offers a convenient and cohesive means for studying both normal developmental and anomalous reading-thinking behaviors. Difficulty in isolating anomalous profile states with reading specific tests has masked some potentially important realms of study and treatment.

Employing the battery, along with 54 other cross-verifying instruments and observations, Casale studied 26, 6th grade students for a year long period. In this way, she was able to identify two particularly elusive anomalous profiles. A simple discrepancy analysis between the "reading specific" and "reading-thinking" subtests isolated three students with very high levels of conventionally measured reading skills (subtests 1-6) and very low levels of critical-evaluative thinking skills (subtests 13-15). Francis Chase, among others, hypothesized the existence of such readers some time ago, calling them "Higher Illiterates" (Chase, 1956). Similarly, another group of three students were isolated with a converse pattern suggestive of the characteristics often attributed to "Classic Underachievers" (Casale, 1982).

A further case-study type analysis of each of these two sets of subjects revealed several heuristically pregnant similarities and differences between them. Both groups, for example, appeared to have developed their particular reading-thinking patterns as a reaction-formation to analogously unsettling factors in their personal lives. They both were emotionally dependent, and in that sense immature. In general they appeared, as reciprocals often do, as being more alike than different.

The literature is replete with studies comparing weak and strong readers, there is little attention, however, to weak readers with high critical thinking skills, nor to those with solid reading and academic achievement, but who otherwise have social-emotional and/or critical thinking dysfunctions.

A notable exception to the latter tendency is the finding of David Heath in a longitudinal study which followed students from their days as college freshmen at Harvard into their 30's. Heath found that "increasing academic aptitude and achievement were associated with increasing interpersonal immaturity..." (Heath, 1979, p. 30). Such findings would seem to suggest that it is necessary to assess and monitor the relationships and patterns of development of students on the broad spectrum explicitly called for in the Weiner-Cromer Diagnostic models, and implicitly suggested in Barrett's taxonomy. It seems especially important to begin to take regular account of these 'bracing', 'complementary', and 'trace' elements, as we have come to call these, in current research paradigms. In this way, an incidental body of information might be accumulated which either would verify or refute the credibility of these, and other possible, profile distinctions. Profile states surely exist which would be significant predictors of long term progress toward reading-language-thinking and social-emotional maturity. These tend to escape attention, however, with our current highly refined, though narrow, measures of educational progress.

It seems prudent to include the subtests described above (or analogs of these), initially as back-up instrumentation, in current treatment and process studies. This would reduce the risks undertaken by the researcher while accumulating a potentially rich body of qualitatively different information for the next generation of research and development efforts.

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We can offer some testimony in line with Hegel's—and, at least sometimes our own—rather gloomy assessment by sharing a few paragraphs from an optimistic—even exuberant—statement. For the moment we'll not say where or when the statement was made: Instead we invite you to put it into historical perspective for yourself. Of course we've had to change a few words to keep you guessing. Consistent with our own fantasies, we substituted American Reading Forum wherever the name of the enterprise being described was used; feel free to substitute whatever your fantasies direct.

"The educational public is entitled to know the reasons for establishing a new educational enterprise, the place it is designed to occupy, and the purpose it is intended to serve. It is true that no assumption of a "mission" however happily expressed will weigh beside the revealing substance of the enterprise itself. Like a plank in a political platform it will have merely the interest of suspense until practice squares with promise. To the hard-headed reader, it may even seem but an artifice to beguile him from his customary caution. Yet it is equally true that the possession of a clearly conceived plan may reasonably be required of those who thus presume to enter a field already so fully occupied.

"We feel that we have such a plan. The (substitute ARF or what you will) will be devoted to the uses which have been made and are capable of being made of the results and methods of investigation. It will emphasize applications rather than abstractions, and practice rather than theory. It will not avoid the theoretical altogether, and it will present some technical (papers). But such (papers) will be most welcome when they have obvious practical implications. Research for the sake of research we shall leave for others. What uses the teacher and supervisor have made or may make of the findings of the experimentalist, what methods are transferable from the laboratory to the classroom and office, what workable means of meeting common needs have been developed under actual school conditions—these will be our chief concern. We shall seek contributions not only from the leaders in research but also from their followers; the practical school people.

"And the school people are likely to contribute handsomely. Current periodicals reveal that the number of them who have the true research spirit and the ability to report their findings effectively is increasing. New types of teacher-training have exalted a fact basis for instructional and administrative procedure; and the introduction of better school records and new means of measurement have made such a fact basis possible. What the facts are and what comes of them—the methods that work and the devices that succeed—may be told so that others may derive friendly lessons for their guidance.

"Theory has outrun practice in our educational writings. Since scales and standardized tests began, ten years ago, to afford new instruments of precision, a new language has developed—a language whose vocabulary and idiom are strange. Statistics has come upon the scene, providing a powerful method of analysis, but at the same time assuming to a disquieting degree the possession on the part of the reader of knowledge and a type of thinking which he often lacks. Results are quite generally
abstract, and "tentative conclusions" are often merely speculative. Some of us wonder whether all this is necessary—whether a writer may not be scientific without being impractical or profound without being obscure—whether the time has not come when some of these results may be restated in usable form—whether we do not now possess the materials for studying some problems long enough and hard enough to reach conclusions which are fundamental and satisfactory.

"The attempt will, therefore, be to permit practice to catch up with theory. The (ARF) will endeavor to exemplify sound theory and it is hoped that its techniques will be adequate. But we believe its theory and technique will be best exemplified when they are employed in the reporting of practical investigations and in the formation of practical results.

"In its statistical presentations, the (ARF) will assay to set a standard for clear, simple treatment. Where unfamiliar terms or processes are used it will be our policy to define and explain them. As a part of this general plan a series of statistical articles will appear shortly which will attempt to deal in an understandable way with the terms and processes in current usage in educational writings..."

"From one point of view no time could be less auspicious than the present for launching this venture. The scarcity and high price of paper combine with labor shortage and unrest in the printing and binding trades to produce a condition bordering upon chaos. Many (enterprises) are suspending publications, and most others are limiting their output. Under these circumstances the (Board) cannot at present be as liberal as they would like to be."

The statement strikes some familiar chords, doesn't it? Certainly it's in line with many of the thoughts some of us had when we decided to cast our lot with the American Reading Forum. Others may have been reminded of books, journals, professional groups and other enterprises they have supported with high hopes for narrowing the gap between what is known and what is done in education.

Actually, the statement is from the first issue of the Journal of Educational Research, which was published for the bureau of Educational Research of the University of Illinois in January, 1920. It was signed by B. R. Buckingham, the editor-in-chief. In the sixty-odd years that have passed, the JER has migrated from Illinois to Wisconsin to Washington, D.C.; but Buckingham's statement is as timely today as it was the day he wrote it. The promise of better things is as bright and the economic times are as challenging now as they were in 1920. One must wonder, though, whether Buckingham would be pleased or depressed by the timeliness of his message.

A Look Forward

Perhaps the timeliness of the message is evidenced by the existence of an organization like the American Reading Forum. We have among its members "hard-core" researchers who, like the second author of this paper, have never been certified to teach. We also count in our numbers individuals who, by their training and experience are both researchers and teachers (practitioners). Additionally, ARF's membership list includes many who are totally involved and trained as teachers (practitioners). The distribution of talent, interest, and motivation within ARF is both varied and rich; and if any group represents the interests and composite abilities required to build a bridge between research/theory and practice, ARF is one such group.

What can the members of ARF do to accomplish what Buckingam envisioned in 1920? Let's look to what we see as the main reason for forming ARF in the first place.

First, we believe that the members of ARF took an important first step when we agreed to meet each year in a forum setting to discuss research/theory-to-practice issues. Second, we made a commitment to listen to ourselves as a group and to return to our respective institutions with a renewed interest in making education work. This, we hope, is the primary motive shared by researchers and practitioners alike. Finally, each of us accepted a responsibility to learn more about the other's methods. Researchers—particularly in reading—should learn more about the conduct of everyday classroom practices.

How can researchers better communicate theory and findings to practitioners than in a "schema for the classroom"? Researchers can better identify problems of importance to practitioners by learning more about the classroom environment. Certainly researchers should not feel bound by pragmatism in selecting research problems; but to the extent that researchers want their work to be applicable outside the laboratory, they must attend to the needs of practitioners.

On the other side of the coin, the practitioner can take steps to accelerate the laboratory-to-classroom transfer of research findings. One step, which could be taken in the immediate future, is to establish or maintain a symbiotic relationship between universities and public and private elementary and secondary schools. Researchers need access to people and facilities in order to conduct research; the schools can provide that access. Participation in such a symbiotic relationship would accomplish two things for the school. First, the school personnel would make contact with individuals in the business of theory-building, thereby putting themselves in touch with state-of-the-art developments. Second, the school personnel would have day-to-day opportunities to interact with researchers regarding current problems faced by school people. The second step which could be taken to facilitate the transfer of theory to practice is to see to the education of practitioners in "research consumerism". This could involve such things as (a) teaching teachers the language of research and basic statistical methods, and (b) helping teachers gain access to the research literature and efficient literature search systems. Training in "research consumerism" for teachers could be offered in inservice training sessions; but it certainly should also be a part of preservice training at teacher education institutions. The result would be that more of the responsibility for making the theory-to-practice transfer work would be accepted by the practitioner. (Here is an example of how researchers can help practitioners gain access to the research literature: The Educational Research and Development Center at the University of West Florida has developed a system whereby local schools can call in with a particular problem and members of the staff conduct a search of the literature via the electronic search systems such as ERIC or Lookheed. This has proved useful to several schools within the last few months and has increased the school-initiated contact with the university.)

Such a forum as the American Reading Forum can serve to foster communication and shared responsibility if we will only let it! We must continue to present our ideas, theories, methods, and data to our colleagues for critical analysis and discussion. Our motive must continue to be, as we said earlier, to make education work.
ISSUES IN THE USE OF COMPUTERS IN SCHOOL READING PROGRAMS

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Rapidly increasing numbers of schools are beginning to use computers in their reading programs. In so doing, the schools encounter a number of problems. The problems seem to consist of three major types. The first type of problem is a complex one involving the school building itself and the faculty members who teach in it. The second problem is the problem of readability and the third is the problem of finding, purchasing (or pirating), and using software.

Computers in Schools

One of the major problems in using computers for reading instruction is ecological. To teach and test students in computer cubicles in research institutions is very different than sending them into an empty storeroom down the hall where an Apple II sits on a dusty table amid the discarded textbooks of the past twenty years. The problem in teaching reading with computers in schools is that the computers in the schools, their locations, and the management of their use may be less than adequate or appropriate. Furthermore, school lighting often creates a glare on the screen which compounds the glare normally emitted by the cathode ray tube display screen. Glare is a long term problem with which all computers operators must deal and about which school personnel are often ignorant (Walsh, 1982).

Another problem with which schools must deal is the electric supply. Many of today's schools were built (and wired) long before the electric typewriter, the copy machine, the tape recorder, the video receiver, or any of the other electrical devices now common in schools. As a consequence, their inadequate wiring yields insufficient power for computer-assisted instruction. Power drains within school buildings lead to "shrinking screens" and strange printouts.

Using computers in schools often leads to attitude and management problems which researchers cannot anticipate. Many teachers seem to fear that computers may take their jobs. Or they fear having to learn new skills in order to keep their jobs. Stevens (1980) describes how educators perceive microcomputers, and Townsend and Hale (1981) suggest coping strategies including (a) fully informing the faculty about microcomputers, (b) providing the opportunity for "hands-on" experience, and (c) forming a committee to sponsor workshops and distribute copies of interesting journal articles. They also suggest ways of dealing with opposition from students and administrators.

Calkins (1982) lists reasons why faculty discontent is generated by the acceptance of microcomputers by school faculty members. Among those listed are (a) a math department takeover, (b) special privileges to faculty computer-users, (c) hoarding by computer professionals, and (d) dollar comparisons between teachers and schools jealous of the amount of instructional support made available.

The problem is convoluted indeed. On the one hand are teachers avoiding the use of computers for reading or any other kind of Instruction. On the other hand are those who are sold on the capabilities of the computer that they compete for it and judge each other's prestige by degree of access to the computers available. Math teachers typically consider computers as not only calculators, but also providers of highly motivated practice. Computer educators consider computers to be tools which they must teach pupils to program. Reading specialists see computers as the new books. And thus are concerned not only with their availability, but also with the content and the readability of the CAI programs.

Readability and re-writing

A use to which computers are now routinely addressed by educators is the assessment of readability. There are numerous readability programs on the market and others which may be typed into a microcomputer from printouts in journals. However, the user must be careful. Some of the computerized readability programs do not use the exact formulas which are named in their advertising brochures. Instead, they use approximations which may yield estimates two or more grade levels above or below that derived from a manual computation. Before basing judgments about materials on computerized readability programs, educators should determine exactly how the formula is calculated in the computer.

Britton and Lumpkin (1978) have applied readability formulas to various textbooks and basal readers and have published the results. Sundahl (1978) criticized their publications with caution which are still valid today.

Two organizations, the U.S. Navy and Bell Laboratories, have developed complex and sophisticated programs which not only estimate readability, but which also provide hints as to what needs to be done in order to make the passage more readable. Angier (1981) described the Bell program, called "The Writer's Workbench." The Navy's program is described by Brady and Kincaid (1981-1982). Both programs have been shown to improve the comprehension of the readers of the text manuals upon which they were tried out.

The danger in using such programs is that they may begin to govern the writing of technical and educational manuals. If writing style becomes fixed (by computerized re-writings), new and more effective styles may not be developed and tried out. What is now an advantage can become a disadvantage.

Software in the Schools

Since the computers in the schools are mostly microcomputers, the software which can be used in schools is limited to microcomputer software—the disks or tapes which will run on a machine with limited memory, no printer, and often with only capital letters displayed on the screen. The software itself is being developed slowly, but much of it is of little value and few criticisms are published (Lubar, 1981).

Because school budgets are severely limited, teachers are sorely tempted to make illegal copies of good software owned by another school or school district. The large amount of illegal copying that does go on has led some publishers to avoid the educational market entirely and others to consider publishing an educational program to be an act of charity.

Numerous solutions to the problem of software piracy have been proposed. Becker (1982) suggests that since the government considers programs to be part of the computer's machinery, the author should obtain a trademark rather than seeking copyright protection. Pournelle (1982) suggests that educational software piracy can be used to the advantage of the producer if the producer will market not the software, but the documentation that accompanies it. Brown (1982) argues that the documentation provided with many educational software programs is insufficient for the potential purchaser and user.

No solution to the software problem is in sight at this time. Teachers will continue to copy and programs of dubious value will continue to be sold. The obvious answer, in service education, is time-consuming and costly.
Summary

In applying computers to reading instruction in schools, a very cautious position must be assumed. The computers in the schools may not be able to deliver a version of a particular program which is as effective as that tested by researchers. The school's wiring and its available rooms may not be the best, and teachers certainly need in-service education in order to select good software and to manage computer-based reading instruction along with their usual classroom techniques. Yet the increase in computer usage in schools continues. Reading educators must find ways to implement the findings of research, or the use of computers in reading may detract from children's reading growth rather than add to it.

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service reading education methods courses; and to (2) survey in-service and preservice elementary grade teachers to determine their understandings of and procedures for interest evaluation in the teaching of reading.

Text Analysis

Selected textbooks currently used in introductory reading education methods courses at the undergraduate and graduate levels were analyzed to determine recommended procedures in interest assessment as well as citations supporting the text-recommended procedures.

The eight textbooks included in the study were selected on the basis of their recent copyright dates (1980-1982) or repeated adoptions (revisions, multiple editions) or varied use (broad program or grade level objectives).

The table of contents and the index of the texts as well as review of content were used to determine pages or portions of pages devoted to the discussion of "interests and reading." Seven of the eight texts specifically described interests as important in the teaching of reading. Authors of the selected textbooks were generally emphatic in their endorsement of the importance of "interests" in the teaching of reading. For example, Stoodt (1981) states, "Thus teachers are generally agreed that interest in reading is of paramount importance." Dallman and others (1982) evaluate interest and motivation. They exhort the reading teacher by saying, "The power of interest must not be overlooked or minimized."

However, the percentage of text devoted to the topic of interests is relatively meager.

Table 1
ANALYSIS OF SELECTED READING METHODOLOGY TEXTS

<table>
<thead>
<tr>
<th>Reading Education Text</th>
<th>Total No. of Pages</th>
<th>Pages Devoted to Interests No. Percentage</th>
<th>Citations Supporting Statements on &quot;Interests&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>458</td>
<td>2 .4</td>
<td>11</td>
</tr>
<tr>
<td>B</td>
<td>428</td>
<td>27 5.0</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>450</td>
<td>6 1.3</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>581</td>
<td>37 6.4</td>
<td>168</td>
</tr>
<tr>
<td>E</td>
<td>517</td>
<td>0 0</td>
<td>0</td>
</tr>
<tr>
<td>F</td>
<td>511</td>
<td>5 .9</td>
<td>0</td>
</tr>
<tr>
<td>G</td>
<td>572</td>
<td>5.5 1.5</td>
<td>2</td>
</tr>
<tr>
<td>H</td>
<td>519</td>
<td>5 .9</td>
<td>3</td>
</tr>
</tbody>
</table>

Much of the text material is opinion. Citations from research and practice are in some instances not included at all or restricted in number. The text committing the largest number of pages and percentage of pages to the topic of interests also includes by far the greatest number of citations (See Table 1.)

The analysis of texts also indicated a wide range of interpretations, uses, or definitions for the term "interests." Some authors used "interests" synonymously with motivation, others used it to mean attitude toward reading. Still other writers described both pupil "preferences for activities" and "preferences for literary topics" as interests in reading. The term was sometimes given multiple meanings by a single text. These findings are consistent with previous research (Carter, 1976). The recommended practices/measures reported in the selected texts included unobtrusive observations as well as traditional variations of the interview (oral or written questionnaire).
The limited textbook space devoted to the use and interpretation of interests in the teaching of reading precluded extensive (or in some instances, any) attention to examples of evaluation, techniques/procedures, or to discussion of the frequency of administrations.

**Teacher Survey**

In order to compare teacher preparation text content with practice, a survey of preservice and in-service teachers was conducted.

A questionnaire was designed and administered to 88 preservice teachers enrolled in undergraduate reading education methods courses in three state teacher preparation institutions in Georgia and Texas. A comparable questionnaire was administered to 38 in-service teachers representing ten public school systems in Georgia and Texas.

In-service teachers were asked to respond in terms of their use of interest evaluation procedures/measures. Preservice teachers were asked to respond in terms of their projected use of interest evaluation procedures/measures. The contrast in the responses of these two groups is reported in Table 2.

### Table 2

**A COMPARISON OF PRESERVICE AND INSERVICE TEACHERS’ EXPRESSED KNOWLEDGE AND USE OF INTEREST MEASURES**

<table>
<thead>
<tr>
<th>Interest Measures Administration</th>
<th>*Measures</th>
<th>Research Baseline Use Of Interest Measures</th>
<th>Frequency of Administration of Measures</th>
<th>Reasons Cited for Administration of Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondents</strong></td>
<td><strong>No.</strong></td>
<td><strong>Would Administer</strong></td>
<td><strong>Would Not Administer</strong></td>
<td><strong>Do Exist</strong></td>
</tr>
<tr>
<td>Preservice Teachers</td>
<td>88</td>
<td>98</td>
<td>2</td>
<td>43 67 77 35 51 22 81 19</td>
</tr>
<tr>
<td>Inservice Teachers</td>
<td>38</td>
<td>68</td>
<td>32</td>
<td>34 26 21 26 42 29 71 29</td>
</tr>
</tbody>
</table>

1 = Inventory
2 = Interview
3 = Questionnaires
4 = Sentence Completion
5 = Drawings
6 = Observations

*multiple responses account for totals over 100%

The preservice teacher responded with more apparent support or confidence in the use of interest measures than did the in-service teacher. It is likely that current reading education course enrollment and requirements may have influenced their responses.

During informal follow-up discussions, in-service teachers indicated that in fact their use of or confidence in interest measures was even less than the percentages in Table 2 would indicate. This also is consistent with previous studies (Carter, 1976; Carter and Aaron, 1981).

Both preservice and in-service teachers tended to ascribe stronger research bases for recommended interest evaluation procedures than text citations apparently merit.

Approximately the same number of respondents who said they would or did use interest measures also cited reasons or implications for the results of the measures. However, the skill of the teacher in interpreting pupil interest evaluations is a generally neglected aspect of interest research. The limited data which are available are rather consistently critical of the teachers' knowledge and technique in assessing and/or interpreting pupil interests (Carter, 1976).

As might be expected, preservice teachers responded more often in terms of text recommendations than did in-service teachers. One example is the subjects' choice of measures. The questionnaire (written form of the interview) is probably the most often mentioned interest assessment technique in text and research (Carter, 1976). It is the oldest procedure referenced as a measure to evaluate interests (Bullock, 1897). It is, however, the most demanding in terms of administration time and interpretation skill (Anderson, Ball, and Murphy, 1975).

The preservice teachers chose the interview (oral or written) most often as the measure they would use. In contrast, the in-service teachers chose the questionnaire least often. The practitioners' awareness of time and interpretation demands apparently override academic recommendation.

Professional teacher educators in reading education consistently state directly or imply that teachers should be able to recognize and evaluate the expressed or observed pupil interests. In addition, teachers are told that they should be able to match pupils, reading materials, and teaching/learning strategies on
the basis of assessed interests.
A few implications can be drawn from the current survey. This group of teachers may not perceive interest assessment as important as text authors and preservice teachers say they do. If text authors believe interests to be "crucial," "of paramount importance," "not to be minimized," then the proportion of text may need to be expanded. Examples of strategies and techniques may need to be included and explained and well referenced. Assistance may need to be provided in the specifics of procedures such as frequency of use and interpretation tasks.
If however, interest measurement and interpretation is less than "paramount" (as apparently many of the teachers in this survey believe) then reading education texts and teachers of reading may need to reexamine traditional recommendations and the research that does or does not support those recommendations.

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Planning and implementing CARP sessions, so they can gradually assume greater responsibility for conducting the program. We emphasize volunteer participation by teachers over a significant period of time, usually an academic year, and focus on changing teacher attitudes as well as knowledge levels. Implementing suggested reading techniques immediately in teachers' classrooms is another important feature, with most CARP sessions held in the sponsoring school. More information on the instructional techniques used in content area reading may be found in Dupuis and Askov (1982).

Because we have advocated long-term involvement as the most effective inservice education effort, we welcomed the opportunity to work with the Hollidaysburg (Pennsylvania) Area School District for a three-year period (1979-82) under Title IVc funding.

The first year of training involved 25 teachers, grades 4-10, who taught various content area subjects. Several reading specialists were included in the group. Each month two three-hour workshops were conducted. The first workshop (dubbed the "theory" workshop by the participants) was presented by one of the authors concerning two or more of the topics included in the CARP curriculum. The second workshop of the month provided work time for the teachers to apply the workshop content to their own classrooms. The reading supervisor conducted the "application" workshops with the help of the reading specialists. She also worked with the content teachers in their classrooms, helping them apply content area reading strategies. An optional summer workshop for teachers followed, conducted by the reading supervisor, to provide additional time for materials development. A dissemination book was prepared consisting of samples of the work created by the teachers involved in the first year of training.

During the second year we again delivered the CRP curriculum to different content area teachers in the same way as during the first year. However, the number of participants during the second year was drastically reduced due to cutbacks in funding. The content teachers and reading specialists who participated during the first year attended some of the "application" workshops to do further materials development and serve as resources to the second-year teachers. The reading supervisor again helped the content area teachers apply what they were learning in the workshops to their classrooms.

Due to further cutbacks in Title IVc funding, the design for the third year had to be modified. Science and social studies teachers in the secondary schools were required to participate, with both the "theory" and "application" workshops being conducted by the reading supervisor. The reading specialists assisted, serving as resource personnel to the content teachers. The CARP curriculum was still implemented, but university personnel had been phased out.

Project Evaluation

Initial comparisons involved the first-year workshop teachers and all other teachers in the school district, grades 4-10. All teachers were tested at the beginning and end of the 1979-80 school year with measures of attitude toward teaching reading in the content areas as well as a criterion-referenced test of knowledge of reading skills. These results are reported elsewhere (Askov and Dupuis, 1982). Data from the second year of the project were not analyzed due to the very small number of participants. Data from the third year were analyzed in the same manner as those gathered during the first year. The size of the comparison group, however, was reduced during this analysis since some of that original comparison group became participants during the third year of the project (i.e., third-year experimental group). The instruments, which are described in more detail elsewhere (Dupuis and Askov, 1977), are briefly summarized.

The first attitude instrument, the Statements Survey, is a
twenty-item Likert scale that yields a direct measure of teacher attitude toward incorporating reading instruction in the content areas and has an estimated reliability (coefficient alpha) of .85.

A second instrument, the Situations Survey, is a less direct measure of teacher attitude toward content area reading instruction. This instrument, which utilizes the semantic differential technique, consists of twelve items with five sets of bipolar adjectives (such as practical-impractical) to be rated for each item. Each item consists of a classroom situation that a content area teacher might face and a possible diagnostic-prescriptive plan the teacher might follow in the situation described. This instrument has an estimated reliability (coefficient alpha) of .74.

Two questions using the semantic differential format and included as part of the Situations Survey yield two additional scores used in assessing the effects of the in-service program. The first of these scores, the Feasibility score (estimated reliability, coefficient alpha, of .86), is obtained from teacher ratings of the bipolar adjectives feasible-not feasible after each of the twelve items on the Situations Survey. This score was considered a third dimension of attitude in analyzing results.

The other score obtained from this instrument is a self-report measure consisting of teacher ratings of the bipolar adjectives skilled-not skilled after each of the twelve items on the Situations Survey. This Perceived Skill score (estimated test-retest reliability of .93) was designed to measure a teacher's confidence in implementing the stated diagnostic-prescriptive plan.

To measure the cognitive aspects of the program, a knowledge-level criterion-referenced instrument was developed, based on the specified required written objectives each in-service participant was expected to complete. The thirty-four item Knowledge of Reading Skills Test has an estimated reliability (KR-20) of .76.

Results

In order to demonstrate the effectiveness of the CARP in-service efforts, regardless of means of delivery, the data from the two experimental groups were combined and compared to changes within the comparison group. Analyses of variance were performed on the gain scores of the comparison and combined experimental groups. The experimental groups when combined (N = 32) showed significantly greater change from fall to spring than the comparison group (N = 59) in knowledge of content area reading (t < .00, F = 19.75). They also showed significantly greater gains in attitude toward content area reading as measured by the Situations Survey (p < .005, F = 8.44) and the Perceived Skill score (p < .02, F = 6.16). The other attitude scores approached, but did not reach significance at the .05 level. Overall, the CARP in-service efforts appear to be effective in producing change in knowledge and attitude of in-service teachers.

Next, the experimental groups were considered separately to compare change in the third year group trained by school district personnel and the comparison group who had no CARP in-service training. The only significant difference between the two groups occurred in the amount of change in the third year experimental group on the knowledge test. The mean score of the third year experimental teachers (N = 15) was lower than the comparison group (N = 59) on the pretest (11.93 vs. 13.39), but higher on the posttest (13.53 vs. 13.27). Hence, the amount of change in the third year experimental group was significantly different (p < .002, F = 10.54) from that of the comparison group. The third year experimental group in fact scored lower than the comparison group on all pretests, but higher on the posttests.

The comparison between the first and third year experimental groups was of great interest since the same CARP training was delivered through different means. As reported elsewhere (Askov and Dupuis, 1982), the first experimental group changed significantly more than the comparison group from pretests to posttests on all measures. They were also higher than the comparison group on most of the pretests for all measures.

On the posttests the first and third year experimental groups were significantly different on all measures except the Feasibility and Perceived Skill subtests of the Situations Survey. In other words, the first group of volunteer CARP teachers (N = 18) initially knew more about content area reading (p < .01, F = 7.28) and expressed more positive attitudes toward content area reading (Statements: p < .02, F = 6.24; Reactions to Situations: p < .04, F = 4.78) than the third year experimental group. But they felt that implementation was no more feasible (p < .54, F = .38), nor did they feel more skilled (p < .14, F = 6.23) in implementing content area reading in their own classrooms than the third year group. However, on the posttests of all measures, including Feasibility and Perceived Skill, the first year experimental group scored significantly higher than the third year experimental group. The amount of change among the first year group was nevertheless not significantly different from that of the third year group on any measure.

Conclusions

When the data from the two experimental groups were combined and compared to the group with no CARP training, their gains were significantly greater on all measures except the Reaction to Situations scale, Feasibility, and Toting the chicken-egg differential. While the teachers who had in-service training apparently had adequate confidence in their ability to implement content area reading (Perceived Skill), they still seemed to question the feasibility of implementation (Feasibility). Nevertheless, they showed significant positive change in knowledge of content area reading and in the direct measurement of attitude by the Situations Survey (in addition to their Perceived Skill score). The CARP in-service training had produced positive effects when compared to teachers in the same school district with no CARP training.

Clearly the first group of volunteer teachers began at a higher level in knowledge and attitudes than the third year experimental or comparison teachers. This finding could be hypothesized, since one would expect the first group of volunteers to be positively inclined toward content area reading. It is gratifying that their knowledge of and attitudes toward content area reading showed significantly greater growth during the year than the comparison group. The reasons for these changes are discussed in an earlier paper (Askov and Dupuis, 1982).

The third year experimental teachers, joining the in-service program because of membership in a given department rather than as volunteers, like the first year group, actually scored below the comparison teachers on all measures initially. Other differences existed between the two experimental groups. The third year experimental group consisted of only junior and senior high school teachers (science and social studies); the first year experimental group, on the other hand, also included elementary teachers as well as secondary teachers of other content areas. While the CARP curriculum was followed by the district reading supervisor, the amount of time devoted to the "theory" presentations was limited to a total of six hours on four in-service days. The follow-up "application" workshops were voluntary, being held after school with extra compensation provided. Approximately half of the teachers, all at the junior high school level, elected to attend the voluntary workshops. In short, about half of the third year experimental group (primarily at the high school level) learned about content area reading only through the mandatory "theory" presentations. They did not try to apply what they had learned through creating materials for their own classrooms.

Therefore, it is not surprising that the significant gains over the comparison group appeared only on the knowledge measure. Apparently, their attitude toward content area reading did not
change significantly more than that of the comparison group. Although a gain in knowledge is certainly important, without the accompanying change in attitude one must question whether the increased knowledge will result in changes in classroom practices.

The results of this study reaffirm our earlier recommendations concerning inservice education in content area reading (Dupuis and Askov, 1982). The importance of letting teachers volunteer for the inservice training that requires change in basic teaching orientation and values is paramount. The results also reaffirm the necessity of long-term commitment to an inservice theme such as content area reading. Furthermore, teachers must have the opportunity to develop materials which apply what they have learned for use in their classrooms; these should be developed under supervision. During the "application" workshops with the first year experimental group the reading specialists provided assistance and thereby built linkages to provide future assistance to those content area teachers. The reading specialists had no means to assist those third year experimental teachers who chose not to attend the "application" workshops, nor did they have the rapport established through working together in the workshops.

We had thought initially that any differences in the two experimental groups might be due to the different means of delivery (university vs. school district). However, the school district reading supervisor had participated in all the CARP workshops during the first two years and had been the one to facilitate the application of theory in the classrooms. She was very well qualified to deliver the content during the third year. We attribute differences in the experimental groups primarily to whether or not the teachers participated as volunteers. The question remains how one can change teachers' behaviors when they do not choose to participate in inservice training. How does one produce change in a teacher who sees no merit in his/her change? We have not resolved that question.

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actually occurs from day to day in the educational environment of mainstreamed individuals, nor have they rendered a realistic description of how the process of mainstreaming affects those individuals involved in the teaching, learning, and application of reading skills.

A survey of related research indicates that investigators have frequently overlooked the social aspects of the educational environment and, consequently, have failed to provide a means of understanding the individual people involved in the culture of an educational environment—particularly in the absence of experimental constraints. According to Dreikurs, et al. (1972), the trend in research related to reading education and children with exceptional needs has been characterized by a concern for mental retardation, slow development in boys, right or left hemisphere cerebral dominance, concepts of dyslexia and cerebral dominance, concepts of dyslexia and cerebral dysfunction, cultural and perceptual deprivation, and minimal brain damage. Dreikurs contends that all of these considerations take into account certain "causes" for the child's deficiency—this "causalistic-deterministic" explanation of events being responsible for much scientific process but now recognized as an obstacle to understanding people (p.4).

The literature does reflect examinations of the status of the child with exceptional needs in relation to peers, teachers and environment (Rhodes & Spencer, 1971; Johnston, 1972; Rapier, et al. 1972; Bradford, et al., 1973; Schloss & Miller, 1982). Studies have also assessed the child with exceptional needs in terms of self-concept/achievement as a function of his/her perceived locus of control (Hallahan, et al., 1978; Chapman & Boersma, 1979; Perl, et al., 1980). However, these studies have attempted to explore the characteristics of individuals primarily by means of measurement—usually involving some form of treatment procedure under controlled conditions in which several other variables have often been manipulated. Such research does not account for or accumulate sufficient descriptive data to offer a perspective of the entire social context of the children and other individuals who become involved in the process of mainstreaming. The research has done little to reflect the idiosyncratic characteristics which might be indicative of the ethos of individuals involved in the implementation of mainstreaming.

In summing up the state of the art of research in reading, Guthrie advises that "researchers have succeeded in externalizing some important processes of comprehending, [but] the available analysis of content is superficial, and our knowledge of the social context is primitive" (1981, p. 327). Guthrie's criticism of our knowledge of the social context and the contention of Dreikurs, et al.—that the research has been mainly "causalistic-deterministic"—aptly point to that aspect of information which is lacking in our understanding of the process of mainstreaming within the domain of reading: information on human interaction. Two major categories of concern in relation to educating handicapped children are the content of reading instruction—a critical factor in pupil's overall performance, and the context of the social dynamics of the classroom—a critical factor in the mainstreaming of special education pupils. Guthrie has indicated that "it has been increasingly recognized that, although reading is a cognitive operation, learning to read is a social act" (p. ix). Therefore, an investigation of the process of mainstreaming, within the domain of teaching and learning reading, necessitates the examination of one social situation (reading) as it occurs within another social situation (the classroom dynamics between teacher, and children—with and without exceptional needs), and vice versa. To understand any social situation fully, we must have information on the human interaction which takes place within that situation.

The process of mainstreaming adds to the diversity among students of any given classroom—thereby adding to the diversity of human interaction. The usual concerns about diversity
are intensified when the child with exceptional needs is introduced into the regular classroom setting. In reference to reading research, Guthrie (1981) states that "since classrooms contain a large number of children who are often grouped into sections with different roles, responsibilities, expectations, activities, and relationships with the teacher, the social dimensions of classrooms is coming to be a topic for close observation" (p. 131). With the added dimension of the exceptional child in the regular classroom population, close observation becomes even more necessary in research investigations. Close observation of any social context cannot be effectively accomplished without long-term naturalistic observation.

In a discussion of the concept of education as cultural transmission, Singleton (1974) foreshadows Guthrie's emphasis on the social dimensions of the classroom with the following statement:

"...by applying the concept of education as cultural transmission in educational research, we become equally interested in all parties involved in the educational system and transactions, as well as in the social context within which learning is presumed to take place. This includes the intentions of the teacher, his/her manipulations of the learner, and the changes in the learner's behavior. We become concerned with the meanings that these participants attach to their participation in the educational act, with whom and to what extent those meanings are shared, and the degree to which idiosyncratic behavior is reflective of shared understandings (p. 28)."

Traditionally, researchers and educators have focused upon individuals or groups of individuals, primarily in terms of specific diagnostic labels, for purposes of treatment or fiscal appropriation. In so doing, they have overlooked Singleton's perspective (education as cultural transmission). The larger social milieu of the exceptional child, and his/her peers, and teachers has not been given as much importance as the diagnostic label which the child has been given. When we speak of mainstreaming a child with exceptional needs, we refer to a child with one or more of a variety of special needs which, unaccommodated, may hinder his/her ability to participate appropriately in the learning experiences of classroom activity with several other individuals of varied needs and abilities. It is necessary, therefore, that we obtain a comprehensive view of relationships, as well as the ideas of each individual involved in the teaching-learning exchange.

The need for a comprehensive view of classroom relationships is also supported by other criticisms of the adherence to diagnostic labels. Rosner (1971) cautions against the dangers of inexact application of reading diagnostic categories—to which general and special educators may be subject. Lewandowski (1977) states that after all the special diagnosis, the treatment for the specific learning disabled child with reading problems involves primarily what reading teachers do with remedial readers. These observations reflect the tendency of educators and researchers to direct their attention to the problems of the individual—to arrive at a specific diagnosis. In essence, the "causalistic-deterministic" approach to reading In general and special education has become overused. More attention must be given to the consideration of areas in which the teacher and children, with and without exceptional needs, require assistance: adapting to the environment of the classroom and to each other.

"Classroom teaching must be considered as a complex orchestra of social life" (Cazden, 1981, p. 135-136). Quantitative and/or causalistic-deterministic investigation alone is not sufficient to ascertain the degree to which viable mainstreaming conditions exist and are shared or the ways in which they develop. Qualitative investigation is necessary for developing a realistic depiction of the social context.

Description of the Study

The study will describe and examine the meanings which participants in the social context of mainstreaming attach to their participation in the teaching and learning of reading, with whom and to what extent these meanings are shared, and the degree to which personal behaviors support personally expressed beliefs or contradict them. More specifically, the intention of the study is to describe and examine the observable interaction between teachers and children with and without exceptional needs, the ways in which teachers accommodate children of exceptional or non-exceptional needs in terms of verbal exchange, written assignments, and the behavioral structure of group activities; the ways in which the children respond to the teacher's accommodations; and what the children and teachers say about perceptions (self-concepts) of themselves and of each other. The study will be initiated within the framework of three global questions that reflect the general intention of the investigation. In relation to the global questions, specific focus will be directed to those aspects of daily occurrences or phenomena which seem to indicate significant patterns of thought or behavior, as well as contradictions. Each of the general research questions will be directed toward three subcategories of concerns as follows:

1. What are the classroom teacher's verbalized and observed behaviors in relation to the content of reading instruction within the social context of mainstreaming?
   a. What is the teacher's verbalized perception of his/her role responsibilities to his/her self, to the children, and to support personnel with regard to reading instruction?
   b. What is the teacher's verbalized perception of the children, materials, and support personnel in relation to reading instruction?
   c. What behaviors, actions, or deeds (of the teacher) reflect or contradict his/her verbalized perceptions of reading instruction in the integrated classroom?

2. What are the children's verbalized perceptions of and observed behaviors in relation to the content of reading instruction within the social context of mainstreaming?
   a. What are the children's verbalized perceptions of their role responsibilities to themselves, to the teacher, and to support personnel during reading instruction?
   b. What are the children's verbalized perceptions of the teachers, peers, materials, and supportive personnel during reading instruction?
   c. What are the children's behaviors, actions, or deeds that reflect or contradict their verbalized perceptions of reading instruction in the integrated classroom?

3. What are the verbalized perceptions and behaviors of support personnel in relation to the content of reading instruction within the social context of mainstreaming?
   a. What are the verbalized perceptions of support personnel themselves, the children, and the regular classroom teacher in conjunction with reading instruction?
   b. What are these individuals' verbalized perceptions of the children, materials, and regular classroom teachers in relation to reading instruction?
   c. What are the behaviors, actions, or deeds of these individuals which reflect or contradict their verbalized perceptions of reading instruction within the social context of mainstreaming?

This inquiry is designed to render a comprehensive description of what actually happens within the context of reading instruction that includes children with and without exceptional needs.

Methodology

An informal interview will be conducted which will consist of a series of corresponding questions that will be asked of the
regular classroom teacher, the exceptional and non-exceptional pupils, and the support personnel. The questions have been derived from two sources: Flanders' (1960) theory of dominant/integrative classroom interaction, with regard to teacher influence, teacher flexibility, student dependence, and learning goals; and the critical areas of concern which relate to the subcategories of each of the three general research questions of the study, self-concept and perception of role responsibilities, interaction between teacher, pupils, peers, and support personnel, and teaching/learning styles. These areas will be examined in order to ascertain the degree to which understandings/perceptions are shared.

Observation of behaviors of the teacher, pupils, and support personnel will be conducted and recorded on an interval basis. The behavior protocol has been derived from the question categories of the informal interview. Interview responses and the recorded behaviors will be compared in order to determine the degree to which personal behaviors support personally expressed meanings (perceptions) or contradict them.

The appropriate (child/adult) Nowicki-Strickland Locus of Control Scale (1973) will be administered to the exceptional and non-exceptional children, the teachers, and support personnel involved. This scale will be used to determine each individual's orientation (internal-external) in relation to generalized expectations. The appropriate comparison will be made between interview responses, recorded behaviors, and orientation in order to determine the degree of correlation between locus-of-control and behavior characteristics of exceptional and non-exceptional children and adults involved in the process of mainstreaming during reading instruction.

Daily notes and audiotapes will be used to supplement and verify the findings of the informal interviews and observations of behavior. The notes and tapes will also provide much of the information included in a "thick description" of the social context in question. A sociogram will also be used to delineate relationships and perceptions within the social context. Information from each of the categories mentioned above will be used for comparing emic and etic perspectives (verbalized perceptions and observed behaviors) as a means of understanding the cultural characteristics of the classroom.

**Application of Findings**

The obtained data will be used to interpret the process of mainstreaming and provide information to assist educators in meeting the needs of exceptional and non-exceptional children within the social context of reading instruction. It is hoped that analysis of the data will produce indications of the grouping patterns of variables associated with the success and failure of exceptional students in the integrated classroom, indications of the effects that the integrated environment may have on the academic and social progress of non-exceptional children, and information that will be valuable in I.E.P. policy and procedure. The data may also serve to eliminate preconceived notions about the exceptional child's ability to cope with the demands of everyday life in the mainstream and/or support the notion that non-exceptional children are negatively affected by mainstreaming.

More specifically, analysis of the data will attempt to provide answers to some of the following questions:

1. How can the teacher facilitate the exceptional child's participation in group reading activities through (appropriate) verbal interaction?
2. How can the teacher help the exceptional child to develop more independent work/study habits in order to effectively individualize reading instruction for every child in the classroom?
3. How can the teacher conduct group activities so that the exceptional child may experience optimal participation, while keeping the dynamics of the activity as "normal" as possible for all of the children?
4. How can the teacher choose/adapt reading materials so that both exceptional and non-exceptional children may use them to their full capacities?
5. What behavioral characteristics may indicate to the teacher an external locus of control in a child?
6. What teaching techniques and/or management skills might the teacher use to alter a child's external locus of control?
7. How might teachers and support personnel realize means of effective articulation toward common goals for accommodating children in the integrated classroom?

Overall, examination of the social context of the mainstreamed child should reflect the nature of the interrelationships between the child and teacher within the regular classroom, between the child and support personnel who render remedial and/or counseling services to the exceptional child, and between the support personnel and the regular teacher. The potential for rapport between each of these individuals is crucial to the academic and social progress of the child. (We may consider the classroom teacher and support personnel to be a support base for the child, while, at the same time, they should all relate to each other.) We may assume a triadic relationship between the three constituents. Accordingly, the perceptions and behaviors of any one individual can be examined from the perspective of either of the other members of the triad. (The examination of other children (peers), materials, and the content of reading instruction is subsumed by attention to each of the three main constituents.)

Analysis of data collected within this framework should provide an indication of the degree to which an interrelationship between child, teacher, and support personnel exists, the degree to which they share the same or complementary perspectives, and the potential for shared understandings within the context of mainstreaming in reading instruction.

**REFERENCES**


QUALITATIVE RESEARCH AND THE IMPROVEMENT OF INSTRUCTIONAL PRACTICE IN READING

Gerald G. Duffy
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I have a friend in reading research who jokingly threatens to produce and sell t-shirts which say, "Real men don't do ethnography." Like all humor, his joke masks truth. In this case, the truth is two-fold: (1) that qualitative methodology has become a force to be reckoned with in educational research and (2) that quantitative researchers are often skeptical about the value of such "soft" methodology. However, in contrast to my friend, I look at our efforts to modify instructional practices in reading and am convinced that the t-shirts ought to read, "Real researchers Do do ethnography (and make no apologies for it)."

The Difficulty In Modifying Practice

Our lack of success in modifying instructional practice is dramatized for me when I compare my own early teaching of reading with what I see today. I started teaching in 1958. I had a self-contained fourth grade class. The old Scott-Foresman basal was used throughout the school, and I used it too. My instruction consisted of taking students through the stories and the associated workbook pages in accordance with the directions in the teacher's guide. My major objective was to "cover" all the material. Now, twenty-four years later, I am a researcher and teacher educator. I look in classrooms almost every day. What I see are teachers "covering" basal textbook stories and associated workbook exercises according to teacher's guide directives. Other researchers see the same thing (Anderson, in press; Duffy and McIntyre, 1982; Durkin, 1978-79).

The question is, "Why have we apparently failed to modify instructional practice?" I think the reason lies, at least in part, with our adherence to quantitative research methodology. Such methodology requires "clean" problems in which the variables are all controlled and one or another of the variables is manipulated according to an experimental design. In reading, this methodology has worked well for analyzing reading performance; as a result, we have accumulated many findings about how readers read. However, neither classrooms nor the dynamics of instruction lend themselves to the conventions of quantitative methodology; they are "messy," it is virtually impossible to isolate variables and appropriate controls cannot be imposed. Consequently, we have shied away from the study of the teaching of reading, and we have learned little about how teachers ought to teach. We have, in effect, allowed our methodology to dictate what we will get smarter about. Because we have become smarter about reading than about the teaching of reading, we have little of significance to say about instruction and have had little impact on practice.

Illustration With Instructional Effectiveness Research

Our limited understanding of instruction can be illustrated by examining the history of research on instructional effectiveness, a field which has been dominated by quantitative methodology.

Reading researchers seldom examined instructional effectiveness in the 1950's and 60's. However, when they did, they showed little concern for what actually went on in the classroom. A particularly simplistic example of this is the instructional research directed toward identifying the personality characteristics of teachers perceived to be effective (although no one actually ever checked to be sure that teachers possessing these characteristics were really creating more pupil achievement).

Ardey's (1969) epitaph for this type of research is particularly piercing:

"As a result, they have described for us a kind of invisible, ghost-like person who, in fact, may not exist. She has been found to be cooperative, sympathetic, poised. She is well-groomed, healthy, imaginative, and cooperative. She gets along with her co-workers and her principal and she gets her reports in on time. As one of my friends said, 'She has the same characteristics we expect from a good bar girl.'"

Another early research emphasis compared one instructional approach with another. Hence, we had frequent studies in the 1960's in which basal text approaches were compared with language experience approaches or individualized reading or programmed reading or ITA or something else. Typically, researchers collected pupil achievement data at the beginning of the study and at the end. Consistent with the conventions of quantitative research, they seldom observed during instruction to see what was actually happening. The largest of these studies, frequently referred to as the First Grade Studies (Bond and Dykstra, 1967), produced results typical of this genre of research—they found that teachers, not the methodological approach, made the difference. Unfortunately, they could offer few insights regarding what it is that teachers do to make a difference.

The work of Flanders (1970) provides another example. He started with the assumption that student initiated questions are better than teacher-initiated questions, and proceeded to test his hypothesis using quantitative methodology. While granting the historical importance of this work, particularly regarding the emphasis on the quality of interactions, it is nevertheless true that it did little to modify practice. This is primarily because the quantitative research conventions of the research design forced Flanders to focus on the number of interactions rather than the quality of the interactions.

In the 1970's, many more studies examined instructional effectiveness. Typically, these studies were characterized as "process-product" research because classroom processes were correlated with outcome measures. To conduct the research, trained observers visited large numbers of classrooms, noted teacher behaviors on a checklist and identified which teacher behaviors correlated with student achievement. These studies, in contrast to the studies of teacher characteristics and various approaches, did look in classrooms. However, observation was limited to what researchers had put on the checklist. Unanticipated variables went unrecorded. Doyle (1981) pointed out the difficulties as follows:

First, the observational and analytical tools of teaching effectiveness research tend to fragment
teaching processes into discrete and narrowly defined variables (praise, questions, qualities of teacher talk, etc.) and to freeze the actions of classrooms. The result is a list of characteristics or conditions associated with higher achievement or more positive attitudes. But it is difficult to ascertain from this information how these conditions associated with effectiveness are brought into being and sustained over long periods of time in classrooms...Second, the conceptual framework of teaching effectiveness research tends to be individualistic. As a result, evidence concerning specific process-product relationships often is interpreted as if the interaction occurred between a teacher and a single student. But classroom is a collective setting and teaching "treatments" are administered to groups of students. (p. 3).

All past studies of instructional effectiveness employed one or another form of quantitative research. This methodology, by its very nature, severely limited what could be discovered. It ignored the social context of classrooms and looked only at quantifiable aspects of teacher behavior. We were not studying reality but, rather, parts of reality. Our perception of instruction was constrained as a result. Clearly, we needed methodology which would allow us to examine the instructional whole in all its complexity.

The Nature of Qualitative Research

I include in the term "qualitative methods" those studies labeled as "ethnography," "field work," "micro-ethnography," "naturalistic," "descriptive" and "participant observation." Such research involves small samples of people and settings and large numbers of events and interactions. The focus becomes the naturally occurring events of classroom life and their relationships to one another, a holistic perspective which is inaccessible to quantitative approaches. The purpose is to create hypotheses and to capture the perspective of classroom participants by describing behavior in social settings. Detailed field notes, verbatim audio-taped transcripts and video tapes all provide extensive data which provide "thick descriptions." These rich sets of data are subjected to detailed, sequential analyses of a variety of types. Because the data are so rich and varied, unsuspected relationships are discovered, unanticipated variables are revealed, glimpses of important teaching processes become evident, insights into how instruction occurs are created, and new hypotheses are generated. In short, the results, conclusions and complexities of classroom life begin to come into focus.

In contrast to quantitative research methodology, qualitative approaches play an important role in studying complex phenomena which we know little about. Anthropology has long used it to study human cultures; educational researchers have now adapted it to the study of classrooms (sub-cultures which are proving to be every bit as complex as the cultures from which they spring). The issue here is not whether quantitative methodology is the more rigorous, since rigor is a function of the person who conducts the research and is not the exclusive domain of a particular methodology. Instead, the issue is what questions need to be answered and which methodology can best provide the answers. If the questions focus on complex and virtually unstudied phenomena such as classroom reading instruction, qualitative methodology is the best place to start.

Examples of the Insights Provided by Qualitative Research

Many examples from recent research could illustrate how qualitative studies enrich our understanding of classroom reading instruction. For our purposes here, I provide three examples from our work at Michigan State University.

The first example illustrates how qualitative methods surface the complexities of classroom instruction. The study (Duffy & Anderson, Note 1) was designed to characterize how teachers use models of reading to make instructional decisions in the classroom. Reading educators have long argued that such models ought to govern teachers' thinking (Kamil & Pearson, 1979) and that teachers use such conceptions to organize their thinking when doing their planning (Borko, Shavelson & Stern, 1981). However, when qualitative methods were used to study 23 teachers, it was found that their instructional behavior in reading was governed not by theoretical conceptions but by the basic textbooks, by the nature of the clientele being served (whether pupils are of high or low ability) and by the need to maintain activity flow. Although the teachers could articulate a theory in abstract settings, in practice the theory was mediated by conditions associated with the real classroom. Teachers perceived these conditions as demanding immediate attention, and consequently, they pushed theory into the background where it could not function as the primary cognitive structure for selecting certain instructional alternatives over others. This finding has strong implication for reading instruction. However the relationship between theoretical conceptions and classroom complexities might never have been discovered if only quantitative methods had been used.

The second example illustrates how qualitative methodology can create new hypotheses. In the late 70's, Rosenghine (1976; 1979) had concluded that direct instruction was essentially a matter of creating opportunity to learn by generating engagement on academic tasks. We, however, had taken the position that effective classroom teaching was more than opportunity to learn (Roehler & Duffy, 1982). Initially, we had no clear hypothesis of what else it was. Using qualitative methods, we studied two direct instruction teachers (Duffy, Roehler & Reinsmen, Note 2). The resulting descriptive data suggested a new hypothesis—that engagement is merely a prerequisite to effective instruction and that, beyond this foundational level, instructional effectiveness is associated with the explicitness of the teacher's verbal explanations to students.

The third example grew from the second and illustrates how qualitative methodology leads to refinement of hypotheses. We conducted a pilot study with four teachers to test the above hypothesis about explicit teacher explanation (Roehler & Duffy, in press). The quantifiable data tended to support our hypothesis: explicit teacher explanation does produce better student outcomes. However, we had assumed that explicit verbal explanations about how to do a task was the crucial element. Examination of supplementary qualitative data indicated otherwise. The most effective results were obtained by teachers who were explicit in explaining not only how to do it but why the task was being taught and when it would be used. Without the qualitative data on classroom interactions, we would not have discovered what we now believe to be the crucial variable in effective teacher explanation.

REFERENCE NOTES


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this intervention strategy was successful, it was very time-consuming. Such intervention, under everyday conditions, might be problematic: under normal circumstances, who has time to work with classroom teachers in this way? Not the school district personnel! Certainly, as the researchers indicated, school district personnel do not have the time to write lesson plans or to model teaching strategies for all their teachers. Alternatively, the researchers suggested that this model could be implemented with peer teachers as resource persons. The use of peer teachers might work temporarily. However, once the novelty of the project wore off and the teachers had to deal with everyday pressures and problems, I suspect the model would break down.

However, I see the findings of this study and the model presented as applicable to the directing teacher/student teacher relationship. Many colleges and universities do or could provide some type of training program for persons who will be the directing teachers of their student teachers. This training could include a graduate course or emphasis in reading instruction for the directing teachers. It could also include presentation of this model and these research findings with opportunity for directing teachers, under the guidance of the reading education professor, to develop model lesson plans for teaching a multitude of comprehension strategies. Copies of sampler lesson plans could be shared so that each directing teacher had a notebook of lesson plans for teaching comprehension. At this time, the reading education professor may present other desirable teaching strategies, such as grouping for instruction according to the individual student's needs and encouraging the use of independent level reading materials.

Thus, the model and study presented in "Improving Comprehension Instruction in Elementary Classrooms" would be an excellent basis for developing desirable teaching methodology. This study is especially pertinent for inservice training and for training preservice education students, student teachers, and directing teachers.

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Reaction: Improving Comprehension Instruction in Elementary Classrooms

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This paper describes a study that has positive implications for the preservice as well as inservice training of teachers. The researchers succeeded in increasing the time that teachers involved in this study spent in the direct teaching of reading comprehension. Also, the researchers developed a collegial and helpful relationship with these classroom teachers and gave them lesson plans and strategies for teaching comprehension.

However, as the researchers themselves pointed out, although
A QUANTITATIVE RESEARCHER'S APPRAISAL
OF QUALITATIVE RESEARCH
IN READING EDUCATION

DONALD J. RICHELS
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I am pleased to have the opportunity to bring a quantitative researcher's perspective to this panel's discussion of the role of qualitative research in the improvement of reading instruction. I see my position not as a combatant in the furious fray between "number crunchers" and "scholastic faddists", but as a reporter telling what sense I—as an outsider—have been able to make of the process of qualitative research.

Ethnography has been called an art, and I take the risk of sounding like the stereotypical Philistine who says, "I may not know much about art, but I do know what I like." I have, however, been able to find out enough about ethnography in education to be able to report what about it excites me; to form some opinions about what I, as an educational researcher, am willing to concede is its proper sphere; and to form some conclusions about where the best of both kinds of educational research—quantitative and qualitative—leave us in terms of our chances for modifying educational practice.

Two issues are immediately apparent to the outsider taking a first look at the world of qualitative research. The first is the debate among its practitioners about what, in fact, counts as qualitative research. The second is a diversity of opinion about what role it should play in education, in the training of teachers or the implementation and/or modification of educational pro-
There was no way Roger Harker by himself could see and change what he was doing. If it had not been for intervention that came quite unexpectedly from the outside to challenge the interlocking and self-sustaining system of perceptions, beliefs, and rewards of which he was a part, it is most unlikely he would have changed. (Spindler and Spindler, 1982, p. 30)

(Harker did change as a result of the consultation—called by Spindler "cultural therapy"—which followed Spindler's study.)

A tidal wave of qualitative research

Next to most of what is now called qualitative educational research (and, admittedly, some of it does not pretend to be anthropological), the Harker case is clearly anthropologically "pure". Most educators (and educational researchers) are not really interested in "understanding educational processes in depth." They are more interested in things closer to the surface—test scores and pre-identified, observable behaviors, the kind of facts that are quickly and easily quantified. Such quantification in the study of how reading and other subjects are taught has been an easy target of qualitative researchers who lead one to think that that is all there is to quantitative research. Others, like Eldridge in his presentation to this panel, are more specific in their illustrating the relationship between the superficiality of past teacher effectiveness research and the rising interest in educational ethnography.

Law teacher effectiveness research be seen as a dead horse, inviting easy whipping, see Kyriacou and Newson, 1982, for an example of self-examination and suggestions for improvements in teacher effectiveness research.

Spindler talks about a "meteoric rise" (Spindler, 1982, p. 1) in the use of ethnography and its "tidal wave of popularity" (Spindler, 1982, p. 17). No doubt this is partly "symptomatic of the uneasiness that many in the research community have felt with (past) methods" (Eisner, 1981, p. 9) or "the result of a significant disillusionment with quantitative methods... (and) the use of experimental design" (Fetterman, 1982, p. 19). But it may as well be part of a scholastic fadism (Fetterman, 1982). Either way, both the abuses of the new qualitative process (e.g., "an ethnographic study of..", for which observers were often at only one place for only five days) and the uninformative assimilations of it (e.g., random adoption of ethnographic methods without attention to the whole process), which Fetterman describes, are all around us.

Before the meteor crashes to earth or we are washed away in the tidal wave, we need to come back to the related questions of how pure an anthropology of education is pure enough and what purpose ought it to serve? Fetterman argues that "both ethnographic techniques and a cultural perspective are needed" (1982, p. 18) and he describes how such techniques and perspective were implemented in a contract evaluation of the Career Intern Program. Finnan describes a contract evaluation of Teacher Corps which strove to be true to Spindler's (1982) characterization of traditional ethnographic methodology (no a priori hypotheses, field-based instruments, on-site observations over time, concern with culture, holism) (Finnan, 1980). Both escape Spindler's criticism that "quick and dirty pseudo-ethnography" is likely to emerge when educators emphasize evaluation, especially quick evaluation "as in some contract research" (1982, p. 17). But the findings they report and the policy changes they suggest are a far cry from the deep understandings and the "cultural therapy" (and resulting basic changes) that came from Spindler's Harker study.

Hypothesis generation

Some, like Duffy in his presentation to this panel, suggest that one good hybridization of the two cultures results when
for the application of scientific method. I believe, too, that knowledge of how reading is learned can also change educational practice, though in a less direct, less obvious, and probably even slower manner than will discoveries about how reading is taught. But that is a subject for another panel discussion.

REFERENCES


Qualitative research is used to generate hypotheses for subsequent, more traditional quantitative educational research. Naturally occurring events of classroom life—many of which are usually excluded from consideration in studies using quantitative techniques—lead to insights that become hypotheses that are testable with qualitative methods.

This seems to me a rather contrived effort to make the two methods complement each other. Hypothesis generation is the creative, intelligent, thoughtful dimension of the scientific method. Any thinking scientist-quantitative researcher can generate hypotheses. That is not to say they come from thin air, but they can come from casual, less-than-purely-anthropological classroom observations. And the insights that do come from pure anthropology in the classroom—Spindler's conclusions about Harker, to use again an eminently reusable example—are hardly experimentally testable hypotheses (at least to subject them to such testing would seem ludicrous to me).

Insights like those from the Harker study are much more like the insights one gets about human nature from reading great literature. One can generalize from it as one does from works of art, rather than as one does from works of science, but generalization is possible (as Eisner points out in his discussion of scientific vs. artistic approaches to qualitative research, "is Shakespeare's portrayal of Lady MacBeth simply about a particular Scottish noblewoman who lived in the later part of the 11th century? Hardly," 1981, p. 7). And I think that is why Spindler can say that the teaching of the Roger Harker case has been more effective...than its publication...Nuances can be better communicated...I have never published the details of Roger Harker's autobiographical interview, for example, for fear that without my being there to correct misunderstandings or warped interpretations, he might seem other than he is (or was). (Spindler and Spindler, 1982, p. 27)

Conclusions

This discussion of various products of the diffusion between anthropology and education leads to what is perhaps an obvious, though maybe startling, conclusion. This outsider has come away as an anthropological purist. The purest form of qualitative research (as illustrated by the Harker case) is what excites me most. Revelations that could never have been made without intervention from outside are what we may need more than anything else if we are to change deep-seated educational practices which have resisted rational demonstrations of their shortcomings (e.g., overuse of basal readers).

Qualitative research ought not be made somehow to serve quantitative research (e.g., generating hypotheses for it), nor be made to serve purely educational goals (e.g., evaluation). It should do what it does best—discovering, by careful application of anthropological methods, truths that are unknown to the observed. By doing so, it can help us to change the process of education. Duffy, in his presentation to this panel, confessed that he oversaw the basal reader in his school when he began teaching in 1958 and he contended that one reason that research has failed to change such behavior is that it emphasizes how reading is *learned*, rather than how it is *taught*. It is the purest form of qualitative research that can best emphasize the latter, that can direct our attention to the part of education which is so influenced by teachers' and administrators' humanness.

Change can come from discovery of deep truths about our humanness, but it will be slow—and will more likely result from discussion in classrooms and seminars and inservice sessions than from what can be written in journals, just as the discussion of the Roger Harker case was more effective than its publication. That still leaves much for quantitative researchers like myself to explore. There is much that we still must learn about how reading is *learned* and that is a more suitable area...
THE ADVANTAGES OF QUALITATIVE RESEARCH FOR READING INSTRUCTION

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In keeping with the theme of the Otto and Duffy titles, this paper could be renamed "Doing Qualitative Research is Never Having to Say You're Sorry" and be representative of the point I would like to make about qualitative research and reading instruction. However, before I get to that point, I would like to say that it is refreshing to discuss research that is designed to reflect the realities of the classroom and the validity of the teacher's perceptions of these realities. Qualitative research is based on the assumption that better understanding and greater appreciation of the teacher's position are basic to the formulation of classroom-relevant research and curriculum development. The recognition that this concern for classroom relevance is gaining support in the educational research community is reflected by the theme of this session and the topics of the papers presented.

The realization that over the years our goals in reading research have not met with overwhelming success should provide for a wide acceptance of research methods that are appropriate to the questions that many feel must be addressed to help classroom teachers make informed decisions. However, there is still an unexamined reliance on the part of many researchers to identify a traditional experimental design as the only acceptable method for conducting research. The purpose of this paper is to briefly address this concern that some have for an emphasis on hypothesis testing, the operational definition of variables, and their assessment in forms appropriate for statistical analysis.

A selection of method should result from, or at least be con-
sistent with, the definition of the research problem. It is unfortunate when one type of research is generally preferred and researchers tend to relate every problem to that approach. At this point in reading research, the preference seems to be for statistical analysis of group data.

The end result of qualitative research is to formulate precise descriptions of the interaction that takes place as a teacher helps students learn to read. This, in itself, done with rigor and care, provides valuable information on which other studies might be based, perhaps studies requiring the use of more traditional methods of research. Describing classroom events accurately, alerting individuals to potential influences on behavior and their relative importance, and developing explanatory concepts is the goal of qualitative research; and this effort does not necessitate the exclusive use of, or the inclusion of, inferential statistics to give it credibility.

For example, the use of qualitative research may lead to the development of explanatory models that lead to new theories of how children learn to read. Smith (1970) has stated that “high-level” theories of learning are difficult to apply to the teaching/learning situation in the classroom. He suggests that they are too abstract and do not translate easily to the solution of specific teaching problems. In contrast, mid-range theory generated from the observation of specific teaching and learning behaviors as they occur in the classroom is more obvious. Although forming speculations or assumptions about how children learn to read at this level may seem too homespun or even simple-minded to some, well-founded propositions based on careful observation and interaction with the participants involved in a given situation may do more to improve the teaching of reading than complex-sounding theories. Of course, if high-level learning theories and mid-level theories are sound, they should be compatible.

By contrasting what has been discussed in the papers on qualitative research presented here today with the traditional statistical researcher's approach, one can easily see how qualitative research may generate new theory and insight particularly appropriate for reading instruction. For example, the drive of the statistical researcher is toward objectivity and the removal of the researcher's influence from his data and finding. There is strong concern that the researcher may even unintentionally influence the results of the study. As a result, therefore, the researcher attempts to separate himself from the object of his investigation, venturing into the classrooms and meeting teachers and students only incidentally. Most researchers are better acquainted on a first-hand basis with the library (for an intensive review of the literature) and the computer center (the caretaker of his data) than with the students, the social context of the classroom, or the teacher's daily struggle to teach 25 kids to learn to read. If systematic observations are used, the principal investigator rarely serves as an observer because his expectations might affect his observations. All important factors are reduced to scores on tests or frequencies in observation categories. It is evident that the traditional researcher's role and his expectations from his research methods are quite different than those of the qualitative researcher.

However, the intellectual demands of theory generation through qualitative research methods are challenging—and unnerving. Proposing or starting a study without being able to anticipate an end result can be a discerning experience, even for the experienced researcher. When using a traditional experimental design in a study, there is the assurance that data will be obtained and analyzed with statistical findings reported. On the other hand, the qualitative researcher must face the possibility of spending months in data-gathering without being able, at the conclusion of the study, to develop important concepts or theories. Although the traditional researcher can offset disappointing results by pointing out that he followed a widely approved, rigorous research design, it would be less than rewarding to the qualitative researcher to indicate that he had diligently observed the classroom setting and taken careful and comprehensive notes of his observations but could conclude little from them.

It is to be expected that some researchers will not want to face this possibility. They will attempt to “hedge their bets” by providing for a statistical analysis of data at some point in their study. However, it is my opinion and the point of this paper that more harm than good may come from this practice. Not to be true to a research method is little better than to try to fit all research problems to a particular research approach. No one need apologize or defend the selection of a qualitative research method; they need only to make an informed decision whether this research approach is the most appropriate one for the research problem under consideration. It should be clear that different methods of research attend to different aspects of the teaching/learning situation. It should also be apparent that each method, employed with rigor, discipline, and care by the conscientious researcher, is a credible and valid method.

If we are going to bridge the gap between reading research and reading practice, we must become more self-conscious about our enterprise, more searching, and more doubting about our traditional orientations and procedural modes.

REFERENCE

MAMMAS, DO LET YOUR BABIES GROW UP TO BE ETHNOGRAPHERS

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Willie sings it, "Mammas, don't let your babies grow up to be cowboys." Cowboys, he says, waste their lives driving around in old pickup trucks; they never stay home; and they're always alone, even with someone they love! Better they should be doctors and lawyers and such. The advice seems sound, but I'd like to add ethnographers to the acceptable list.

Why, you may ask, ethnographers? Let me tell you.

Eating the Ethnographer

Last spring I was writing a chapter for a book on the corrective teaching of reading. My purpose in the chapter was to give teachers-in-training an overview of how corrective teaching should fit into a comprehensive reading program and, then, to make some practical suggestions for how to get on with it in the classroom. So I said what I thought needed saying about how corrective teaching is most effective in the context of a well-balanced, all-school reading program. Next I began to explain that in the classroom each teacher must decide how much corrective teaching can be done and with whom. I observed that each student learns to read in a very personal, often idiosyncratic way, and that what amounts to a minor setback for one may be a major hurdle for another. Then I suggested that not only must reading problems be viewed with perspective but also the time and effort given to corrective teaching in the classroom must be kept in perspective.

But perspective is more easily suggested than not. I wondered how to bring perspective to the task.

And then I remembered Roger Eldridge's dissertation study, an ethnography. The study offers a very close look at a single
classroom of fourth and fifth graders. Simply put, the intent of the study was to discover and understand teachers' and students' (a) knowledge and beliefs about reading, and (b) teaching and learning behaviors in the classroom. Now clearly one key point of observations is that even when one thinks of sweeping generalizations about the teaching and learning of reading. But a well conceived and competently executed ethnography can be the source of considerable perspective for approaching specific teaching tasks.

The underlying point in all this apparent disarray, then, is that a good ethnographer may gain insights that elude both traditional (that is, quantifying hypothesis-testing) researchers and common-sense practitioners. My specific point is that insights from ethnographies can be brought to bear in tackling classroom problems. The Elderidge study demonstrates the point.

Ethnography, Center Stage

Elderidge (1983) identified and described three basic "types" of readers in the classroom he observed: applicants, tacit-applicants and non-applicants. The categories are worth a closer look because they describe a range of reading behaviors that is found in many classrooms. They also provide a general basis for identifying students who would be likely to profit from corrective teaching.

Applicants are characterized as individuals who can identify reading skills, define and/or describe the skills, use the skills in completing their assignments, and apply the skills independently when they read for pleasure or personal profit. Six of the children in the classroom observed were designated applicants. Applicants are successful readers. They are able to read for whatever purposes they have and they also know how to tackle a reading task and why they succeed. There may be a variety of reasons for each individual's success, but all of the applicants seemed to be responding well to developmental instruction.

Tacti applicants shared three characteristics: (1) when asked, they could not name a reading skill, but when skills were named they indicated that they had "heard of them"; (2) they could not define or describe the content of reading skills that were named for them; but (3) they seemed to be able to use the skills of reading because they consistently completed their reading assignments and participated in group discussions. Seventeen of the children in the classroom observed were designated tacit applicants.

The tacit applicants present a dilemma. They appear to "know how to read" in a global sense; but they do not seem to know how to "go about reading." Some reading educators suggest that if the end result (the product) is satisfactory it would be foolish to belabor the teaching of specific skills (the process). Others argue that merely getting the right results is not sufficient, that it is equally important to know how to get them and to know it once they have been gotten. I find myself somewhere between the two positions. It would be foolish indeed to teach certain specific skills to students who are able to deal with their day-to-day reading tasks. Yet there is evidence that competent, fully mature readers were able to attain their independence and versatility as readers because they had a reasonably clear understanding of how to go about the task of reading. So it would seem irresponsible not to help students reach some level of understanding of the reading process.

In general, then, tacit applicants seem to be prime candidates for corrective teaching. While they do not manifest typical "difficulties" in their day-to-day reading, they appear to lack understanding of the process of reading. With well planned direct teaching they could develop insight that would assure their continued growth and development as readers.

Non-applicants were characterized as individuals who were (a) unable to name a specific reading skill, (2) incapable of describing or defining the content of reading skills, and (c) inept at applying reading skills to complete assignments. Three of the children in the classroom observed were designated non-applicants.

Given their consistently poor performance, it is quite clear that the non-applicants need some special attention. They give little evidence of having profited from previous reading instruction and they seem unable to participate fully in reading-related activities. Without additional information, however, one cannot say what type of instruction would be most appropriate for a given individual. Adapted instruction would be necessary for the non-applicant who is simply unable to participate in or to benefit from regular developmental instruction. Remedial instruction might be in order for a student who has potential for improved performance but appears unable to profit from the instruction that is available in the classroom. Corrective instruction would be on target for a non-applicant whose major problem seems to be general confusion about the reading process. A reasonable amount of well-focused, direct teaching could do a lot to put things in order!

The suggestion that the tacit-applicants are prime candidates for corrective teaching is mine, not Elderidge's. His task as observer-ethnographer was to see and describe, not to judge or prescribe. The point here is that I, in the role of textbook author, was able to benefit from an ethnographer's insights and to use them to help teachers-in-training develop a perspective for approaching a classroom reality. Elderidge's categories describe a range of reading behaviors that is present in most classrooms. The categories are useful when one thinks about instruction that would be appropriate for different groups and, to a lesser extent, for individuals.

Of course sensible decisions about how to help individuals learn what they need to know about reading can only be made with some understanding of how those individuals view the reading process and how they are able to perform. Again Elderidge's close look at individuals provides insights that are useful in demonstrating the importance of considering individuals' knowledge and beliefs about reading when planning instruction. Gini is a case in point:

On one hand, Gini is a serious and sincere student. She looks for the good motives behind her assignments, she seeks parallels between what she learns in her reading group and what she must do in her other classes, and she takes her workbook exercises seriously. She also seems to have an inclination to " lug" while she reads. On the other hand, Gini has no good idea of why she does her workbook exercises, she has only a distorted notion of the main purpose for reading, and she thinks that promptness is the sole basis for report card grades. While her imaging could become a positive factor in understanding what she reads, the existing evidence suggests that her efforts might not be very useful.

With such a characterization of Gini, based on the ethnographer's observations, one might suggest a general teaching strategy:

Gini would probably benefit from help in developing a better understanding of reading at two levels. First, she ought to have a clearer notion of multiple purposes for reading (e.g., for facts, for concepts, for the gist of a story or article). Second, she ought to see the relationship between the skills she studies in her exercise book and the tasks she must deal with when she reads to complete assigned work. This could be accomplished through direct teaching in the classroom—by helping her to see (or to see) different purposes for reading, by pointing out opportunities to apply previously learned skills, and by helping her develop strategies for monitoring her own efforts, including imaging, to understand content-area materials.
Again, the suggestions are mine; but, again, the ethnographer's observations are the basis for a textbook discussion...and, more important, clearer understanding of what and why in the classroom.

To the Future

I'm convinced that ethnographers have a lot to offer to education and to educators. We ought to accept them, and the methodologies they employ, for their positive contributions. Like Willie's cowboys,"...The're not wrong, they're just different."

Until Willie does a song about ethnographers, I suppose we'll have to settle for encouraging mammas to let their babies be doctors and lawyers and ethnographers. Remember, though, that cowboys like smoky old poolrooms, clear mountain mornings, little warm puppies and children, and girls of the night. They can't be all bad.

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had spent considerable time in real classrooms studying students and teachers. Each of them observed classroom behavior with an eye to understanding what was really happening; that can be difficult when everything is controlled and contrived. By becoming well acquainted with their subjects, these researchers were better able to see "the world" as their subjects see it. This was the dimension that seemed to me to be lacking in most of the empirical studies I had read.

I was soon convinced that qualitative methodology was for me. I could just picture myself...developing and using sophisticated questionnaires and check lists, interviewing subjects, and reviewing documents. I would quietly slip into my observer's corner each day and spend hours recording classroom behaviors in my log. Then, I would spend every evening carefully transcribing and interpreting my field notes. Maybe I would even make a series of videotapes which I would later use to regal my friends and colleagues as I toured the lecture circuit, disseminating my findings. In my vision, I saw myself as Margaret Mead incarnate!

Not long afterwards I met with my major professor, Wayne Otto. I told him that I was interested in studying the reading skill deficiencies of adult vocational students. I went on to explain how and why qualitative research methodology would enable me to collect and analyze information, draw conclusions, and form generalizations that would have important implications for vocational reading educators.

Wayne said, "Well...okay."

He leaned a couple of new books that he had on review from publishers and sent me happily on my way to proposal development...if I only knew then what I knew now...

It seemed like years passed from that afternoon in Wayne's office until the questions that would be investigated were formulated. In reality, it was only eight weeks, but it was eight weeks of meeting with Wayne, thinking and rethinking, focusing and re-focusing, discussing and discussing again, and writing and rewriting. Eventually, the focus of the study was defined by five specific questions. Guided by these questions, I proposed to find out what really happens in a reading classroom in a vocational college and to compare my findings with what educators merely assumed happens in these classrooms. Formulating these questions had been a difficult hurdle, but I had a sneaky suspicion that the next hurdle—methodology—would be even more difficult...It was.

The time had come to think about the actual techniques that would be used to collect and analyze data. After outlining a few ideas, I decided I was ready for some feedback from Ken Dulin, another committee member. I admit that I was more than a little apprehensive about discussing methodology with Ken. You see, ordinarily, Ken is a strong advocate of traditional empirical methodology, especially in doctoral dissertation research, which he considers to be an important training experience for the doctoral candidate. Despite my apprehensions, I decided to jump in with both feet. After all, I had been hinting to Ken for weeks that my study was leaning a little toward the naturalistic side. (Just to stay on the safe side, I never used the word "qualitative" around Ken.) I set off for my initial meeting with Ken, armed with a long list of euphemisms for "qualitative" so I could avoid using the dread term itself.

The session was...interesting, to say the least. In my presentation I very carefully, very neatly outlined what I had in mind for the study: extensive classroom observation, interviews, and the completion of a questionnaire. I was proud of myself. I had only used the word "qualitative" four times! I know it was only a few minutes, but it seemed like hours before Ken responded. In fact, I was beginning to wonder if I had actually "won him over," converted him to my way of thinking.

"And then what?" he finally asked.

"And then what...what?" I thought I had finished.

"And then what will you do with all this qu-s-a-i-l-t-a-t-i-v-e..."
data you will so nicely gather i-n-s-i-t-u?"

He had thrown me so off-guard I could hardly think straight. This wasn't the way I thought it would happen! Nervously, I explained again that as the data were collected, I would identify and describe emerging patterns, issues and themes. These would ultimately provide the basis from which I could draw conclusions and form generalizations.

The words were barely out of my mouth when I realized that the exclusive use of qualitative techniques would not provide definitive answers to the research questions I had formulated. To make a long story short, what had begun in my mind several weeks earlier as a purely descriptive investigation had evolved into a study utilizing the strengths of both quantitative and qualitative approaches to research. In other words, I would need to draw upon traditional research methodology wherever and whenever appropriate but, at the same time, try to maintain the openness of attitude and spirit which characterizes qualitative research methodology.

Table 1 briefly summarizes how I proposed to employ both quantitative and qualitative research techniques in this study. The table shows the five research questions and the techniques that will be employed in the investigation of each of these questions. Data will be collected and analyzed related to the three specific questions. The answers to these questions will permit the remaining general questions to be answered (questions 4 and 5).

Table 1

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<th>Specific Questions</th>
<th>Techniques</th>
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<td>What is the teacher's assessment of each student's</td>
<td>Teacher interviews</td>
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<td>reading skill deficiencies?</td>
<td>questionnaire</td>
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<tr>
<td>What is each student's assessment of his/her reading skill</td>
<td>Student interviews</td>
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<td>deficiencies?</td>
<td>questionnaire</td>
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<td>What is the focus of instruction in reading improvement</td>
<td>Classroom observations</td>
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<td>courses offered in a vocational college?</td>
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<tr>
<th>General Questions</th>
<th>Techniques</th>
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<td>What are the differences, if any, between the teacher's</td>
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<td>and each student's assessment of reading skill deficiencies?</td>
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<tr>
<td>To what extent does the instruction address the student's</td>
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<td>and the teacher's assessment of reading skill deficiencies?</td>
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I believe the results of this study will have important implications for vocational reading educators. I sincerely hope that the blending of two contrasting approaches to educational research will provide much more useful results than if I had chosen to be a purist in either line.

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DISCOVERY OF REMEDIAL READING TEACHERS' CULTURAL KNOWLEDGE OF READING INSTRUCTION

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What constitutes a teacher's knowledge of a content area? More precisely, what constitutes a reading teacher's knowledge of reading? Many of the studies that attempt to discover the teacher's knowledge of reading appear to be simplistic endeavors into what is a highly complex territory. The realities associated with measuring knowledge are immense, therefore, verifying an individual's knowledge is not a simple task. Studies designed to measure a teacher's knowledge of reading by means of student reading achievement tests or studies which assess a teacher's ability to correctly answer a series of test questions about reading instruction fail to provide sufficient description of the knowledge the teacher possesses. Both types of studies attempt to quantify knowledge by means of a score, but knowledge is more than a score.

The knowledge a teacher possesses as regards reading instruction consists of his/her understanding and usage of the content, principles, and practices considered important in teaching children to read (Rude, 1981). Knowledge is not a passive entity, but a process of constructing meaning from interaction with both the physical and social environment. "Knowledge is not an object which one can receive as you would receive a gift" (Heino, 1982, p. 22). Knowing requires an individual to be active, to organize his/her experiences, to construct meaning based on his/her experiences. Acquiring knowledge is a building process. Bronowski (1971) defines knowledge as a rearrangement of experiences which seem to belong together and discarding those experiences which seem irrelevant. As can be seen from this definition, knowledge is bound to society. Knowledge has roots in culture. Spradley and McCurdy (1972) define knowledge as cultural and describe cultural knowledge as "the knowledge people use to generate and interpret...behavior" (p. 8). Knowledge does not exist apart from a society or setting; it is socially constructed within a specific setting (Berger and Luckman, 1966).

This paper is presented to show that the use of qualitative research methodologies are necessary to ascertain and to understand a teacher's knowledge of reading instruction. Three steps are taken to accomplish this purpose. First, a brief statement of why studies which attempt to quantify knowledge are not sufficient to explain one's knowledge is presented. Second, a study designed to discover teachers' knowledge of reading instruction using qualitative techniques is presented. Third, a sample of some findings from the study as regards the teachers' knowledge of reading is presented.

QUANTIFICATION OF KNOWLEDGE

Attempts to discover teachers' knowledge of reading have taken two routes. First, researchers have attempted to identify the characteristics of an effective teacher of reading (Rosenshine and Furst, 1971). In these studies, knowledge is equated with the concept of effectiveness. The foundation of teacher-effectiveness studies has been the scores students attain on reading achievement tests at the conclusion of instruction. Simplicistically stated, a teacher is judged to be effective and to effectively use his/her knowledge of reading instruction if the
class average on the reading achievement test is at or above grade level of the students tested. When a teacher’s students attain a class average below grade level, the teacher is judged to use practices and techniques and therefore knowledge which leads to ineffective reading instruction. Although researchers studying teacher effectiveness never mention the measuring of teacher knowledge in the studies that, in fact, is exactly what they do measure. Researchers who identify elements of teacher effectiveness claim that teachers whose students score at or above grade level on an achievement test use their understanding of the content, principles, and practices to the utmost when teaching and reap success from the understanding.

Teacher effectiveness studies fail to account for many of the realities that exist in a culture and are not quantifiable. Some examples of the contextual factors which exist in a cultural setting are the backgrounds of both the teacher and the students, the beliefs and values of the subculture in which the teacher and students live and work, the socio-economic conditions of the teacher and students, and the mores which govern the operation of the school. Teacher effectiveness studies fail to account adequately for the contextual factors which exist in the environments where the studies take place.

A second route to the discovery of teachers’ knowledge of reading instruction is by means of reading content tests. Historically, tests of reading are given only in college and university courses when teachers enroll for training. Seldom is knowledge of reading instruction assessed once an undergraduate or graduate degree is conferred upon a student and he/she is employed in a school. One significant reason why knowledge tests of reading are not used once an individual completes his/her undergraduate or graduate training is because the instruments to measure knowledge of reading have not undergone adequate test development (Rude, 1981).

Again, investigators use paper and pencil tests to measure an individual’s knowledge of reading instruction. Tests of this nature measure only one aspect of an individual’s knowledge. For example, the tests may measure an individual’s knowledge of the content of reading, but the tests fail to measure an individual’s knowledge of the principles of reading and fail to account for the actual practices a teacher may apply within a classroom setting. Knowledge is more than content. As previously stated, knowledge consists of a set of actions and reactions that an individual performs in a specified context. A teacher must use his/her knowledge of reading when attempting to guide children toward the discovery of new insights and information to be added to their repertoires. Therefore, knowledge of reading consists of understanding content, identifying principles, and employing specific practices to teach children to read. Paper and pencil content tests of reading fail to account appropriately for a teacher’s knowledge of reading instruction.

What is proposed up to this point is that to view knowledge only as a set of achievement test scores, or as the percent score on a reading content test is not a sufficient measure of a teacher’s knowledge and an understanding of the principles and practices the teacher employs when teaching reading in a particular cultural setting is necessary.

QUALITATIVE DESIGN

As an alternative to the teacher effectiveness studies and the knowledge test of reading studies, investigators interested in ascertaining teachers’ knowledge of reading must move their research into classroom sites and collect data rich in description of people, places, and conditions. Qualitative research collected from on-site observations, interviews with the inhabitants, and self-reports from the participants are not easily handled by statistical procedures because the data are not easily quantified. Qualitative studies are not framed by operationalizing variables, rather they are formulated to investigate the variables in all their complexity, in context.

In addition, investigators conducting qualitative studies do not approach their research with specific questions to answer or hypotheses to test. Instead, individuals employing qualitative methodology and techniques to conduct research develop a focus as they collect data. Based on observations, the investigator using qualitative techniques develops questions to guide his/her investigations. The concern in this type of research is to understand behavior from the subject’s own frame of reference.

A study with the purpose of discovering teachers’ knowledge of reading was designed. Classroom teachers with teaching experience ranging from one year to fifteen years, who had returned to graduate school, were observed while teaching elementary grade children in a summer school remedial reading program. For most teachers, the practicum was the third or fourth grade reading course they had taken. The teachers were enrolled in the graduate practicum for the purpose of completing certification requirements as reading specialists or satisfying requirements for a Master’s Degree in reading.

Data collection procedures took several forms. On the first day of the practicum, each teacher was administered A Knowledge Test of Reading for Elementary School Teaching (Rude, 1981). Rude describes this test as being capable of assessing elementary school teachers’ knowledge of reading. A percent score was obtained for each teacher. During the practicum, each teacher while working with four to six students was observed by the investigator three times over a six week period. Each observation lasted between twenty and forty minutes. After each observation, the investigator and the teacher met to discuss the teacher’s classroom activities. Each teacher was also assigned to a supervisor. The supervisor, a Ph.D. candidate at the university, met daily with the teacher to discuss lesson plans, the use of instructional materials, and the progress made by individual children in the teacher’s classroom. The four supervisors kept a log describing the daily meetings they had with the teachers under their guidance. Each teacher, also, kept a personal log chronicling his/her daily activities. Activities included in the log were exchanges with students and supervisors, self-evaluations of lessons and instruction, evaluation of materials and activities used with the students, and descriptions of frustrations the teachers encountered while working with disabled readers. The teachers were instructed to provide in-depth descriptions of their feelings, the behaviors of the students—both social and academic—and descriptions of their own behaviors while teaching.

Each of the tools used to collect data provided information which increased the investigator’s overall understanding of how each teacher practiced the teaching of reading. Knowledge of teaching is multidimensional and from the design of the study multidimensional elements of a teacher’s performance during reading instruction were obtained. The individual teacher logs, however, appear to reveal the most descriptive information about the thinking process, the practices, and the methods each teacher employed while working with the disabled readers. The log served as an insightful recollection and examination of a teacher’s teaching after each day of the practicum. The log allowed a teacher the opportunity to commit to writing his/her own thoughts about what was accomplished each day. Most teachers were forthright with their comments often criticizing not only the professor or supervisor for not providing enough direction, but they also criticized their own actions in the classroom. The log provided an account of the knowledge a teacher possessed about reading instruction and how the teacher thought he/she used his/her knowledge to provide instruction to individual disabled readers.

KNOWLEDGE DISCOVERED

The analysis of the data from the study has not been completed as yet. But, from the data that has been analyzed some interesting discoveries about teachers’ knowledge and their use
of knowledge is evident. For example, with one exception, the four teachers who achieved the highest scores on the knowledge test of reading allotted little space in their logs to the discussion of reading needs of the individual children they taught. These teachers focused their discussions on the selection and use of materials in the classroom. These teachers were preoccupied with the materials and not with focusing on the specific reading needs of the children. In addition, these teachers spent much of their instructional time providing whole group instruction during the remedial sessions even though they were instructed to teach to the individual needs of the children.

On the other hand, three of the teachers with the lowest scores on Knowledge Test provided extensive and thorough descriptions of the specific reading deficiencies of each child under their guidance. Also, the reading strengths as regards the children's skill abilities were presented. In addition, the three teachers worked with the children on an individual basis spending little time in whole group instructional activities.

Further analysis of the data from this study needs to be completed. Several questions on the Knowledge Test focused on individual procedures for teaching children experiencing reading problems. Analysis of specific items teachers missed may provide more information as regards the teachers' understanding of instructional approaches. Some of the findings do indicate, however, that to rely on a score from a content test as the primary method of ascertaining one's knowledge is inappropriate. Multiple sources of data are essential to consider when investigating factors embedded in the culture.

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struction. Qualitative methods have a reflective character. They allow teachers to see an accurate reflection of the total remedial and classroom reading programs, while at the same time giving teachers a clear, undistorted picture of their own role in those programs.

Some remedial teachers will argue that they already observe in classrooms and talk to teachers informally. But these informal glimpses of classrooms or snippets of conversations can result in misleading assumptions and the development of fragmented reading instruction. Only by approaching observation and interviewing in a more formal and systematic way can the remedial teacher integrate the remedial and classroom instruction into a coherent program.

DEVELOPING A COHERENT READING PROGRAM

To link remedial instruction to classroom instruction, the remedial teacher must seek answers to four questions. First, what type of reading instruction is taking place in the classroom, and conversely what type of instruction is not taking place? The observation studies of Durkin (1978) and Duffy (1982) demonstrate that classroom observation is a sound way to describe (and later to prescribe) reading instruction, because a student's reading progress is influenced by a particular classroom culture. Detailed and specific knowledge of classroom instruction is necessary in order to reveal the milieu in which the remedial student must learn, practice, and apply the skill of reading.

Starting with the emphasis on classroom instruction, the remedial teacher next asks: What instructional approaches complement daily classroom instruction? Observation and formal interviews with the classroom teacher provide a more accurate way to plan for complementary instruction than briefly discussing with the classroom teacher the concepts that will be presented in class the coming week. Equipped with important information from interviews, the remedial teacher can build on strengths and weaknesses of the student's individual needs. In this way the remedial teacher can give the student opportunities to practice what is being learned in the regular classroom. Likewise, a classroom teacher with a knowledge of the remedial instruction can reinforce and extend that instruction with relevant activities. Observations, coupled with teacher and student interviews, can help to show whether the student is actually making the necessary connections between instruction in the two settings.

The remedial teacher's third question is: How does the classroom teacher perceive the student's reading needs? An interview with the classroom teacher, who is likely to have an opinion about the student's strengths and weaknesses, may partly answer the question. However, classroom observations are also necessary for determining whether the classroom teacher's perceptions are well founded and for establishing how the teacher is addressing the student's needs. Since remedial and classroom teachers work with the poor reader in different circumstances, it is not uncommon for each teacher to have a different perception of the same child. By mutually examining behavioral descriptions from observational data, both teachers can begin to picture the "whole child" and work toward integrating their efforts.

The final question is: How does the classroom teacher prepare students to read assignments in the content area? In other words, does the student have opportunities to apply techniques learned in the remedial class, and are they used by the student? Rather than taking for granted what happens in content area instruction the remedial teacher needs to see the full picture, the "full classroom" (Duffy, 1981). Observational data from the remedial and classroom teachers this full picture and provide a check on their behavior and perceptions. Using this information, the remedial teacher can design lessons in which students specifically apply the remedial instruction to the content area assignments, and can provide the classroom teachers...
with helpful ways to integrate remedial techniques into those assignments.

Additional benefits can be realized from observations and interviews. First, by observing all the remedial students in their classrooms, the remedial teacher can begin to sort out any patterns which may suggest specific weaknesses in the overall remedial program; an overemphasis on decoding, an underemphasis on sight words, comprehension strategies being utilized improperly, and so forth. Second, the remedial teacher can point out weaknesses in the total school reading program; inaccurate assumptions made by teacher about reading instruction at various grade levels, inappropriate use of materials, illogical sequences of instruction, and the like. Observational data can sometimes point to underlying themes or myths about reading instruction which have significant impact on the total school program. For instance, the observations can point to an existing folklore about "how kids in this school learn to read" which in fact may be erroneous.

The emphasis on gathering information from observations and questioning is, of course, not intended to ignore information obtained from other sources. Informal inventories, collection of student work and interviews with the students also provide valuable information for planning instruction.

USING QUALITATIVE TECHNIQUES

Observation and interviews from the heart of naturalistic research. By using these techniques in a structured manner, the remedial teacher can begin to categorize the needs and strengths of the remedial students within the context of the total reading program. To describe a student's reading program accurately, the remedial teacher needs knowledge of the reading curriculum, and the dynamics of the classroom. This full or "thick description" (Geertz, 1973) provides what Yoder (1981) calls the descriptive or "what is" aspect of the reading curriculum. By describing what is happening in the classroom the remedial teacher can plan what ought to be provided and to describe the supplementary reading instruction.

Although many naturalistic observers (Spradley, Spindler, would suggest observing a classroom first without defining a focus, the remedial teacher already has a specific focus— the poor reader—and needs to make sense of the classroom reading instruction from that student's perspective. Because remedial teachers have time constraints, interviewing the student's teacher might be the more appropriate and efficient starting point than the observation itself.

The Teacher Interview. Spradley's book, Participant Observation (1980) can serve as a model for the remedial teacher. Spradley gives the beginning student of naturalistic research a step-by-step process for "participant observation", which shows how to closely observe and accurately mirror a classroom setting. Spradley's process has practical benefit for the remedial teacher who is a novice to naturalistic research and must deal with specific situations.

Spradley's model distinguishes three levels of questioning that move from the general to the specific. First descriptive questions require the classroom teacher to give a "grand tour" of the classroom. For instance, the remedial teacher might begin, "Tell me about your reading program," or "Tell me about Chris, a student in the remedial program." At the second level, the questions are more focused and more structured. These "focus" questions follow up the descriptive question by identifying the predictable or repeatable factors that give structure to the classroom instruction. For example, the remedial teacher could ask, "What are the components of your classroom reading program?" or "Is there a particular sequence to the reading instruction?" At the third level, selective questions elicit contrasts. Questions might be "What is the difference between your reading lessons and your social studies lessons?" or "Which is more alike: your reading lesson, your science lesson, or your social studies lesson?"

The teacher interview provides the remedial teacher with the first information about the classroom teacher's reading program and perception of the student. After the interview, the remedial teacher needs to sift through the information to identify how the classroom teacher has categorized the student's strengths and weaknesses and to develop a focus for observing the teacher and the student working together in the classroom. Observations then point out whether the classroom teacher's categorizations accurately reflect the student's actual behaviors. Thus, the observations verify the accuracy of the teacher's perceptions.

If time permits, a follow-up interview with the student's previous classroom teacher may be illuminating. Similarities and differences in previous teachers' perceptions of the student are extremely helpful in exposing the culture of the school and the role other teachers play in influencing a student's progress in the school.

Observations. Analysis of the teacher interview provides a focus for classroom observations. Again, Spradley's work helps structure the observations. The beginning observation provides the "grand tour" of the classroom reading instruction; further observations focus on the everyday, predictable activities that structure the student's reading lessons; additional observation reveals the contrasts within the between reading groups and the interactions of the classroom teacher with the different reading groups. Throughout the observations the remedial teacher is also noting the student's behavior.

Using the observational and interview data, information from informal inventories, and samples of student work, the remedial teacher categorizes the student's strengths and weaknesses. These categories form a composite picture of the student from which the remedial teacher can begin to formulate instructional goals.

Once remedial instruction begins, the remedial teacher continues to observe in the classroom in order to compare the lessons in the content areas with the reading lessons. Additional observations focus on new questions that arise from work within the remedial setting.

Student Questions and Observations. Sitton (1980) points out that cultural knowledge has a way of being "strategic". Certainly, poor readers have a particular understanding of the culture of their classrooms. This understanding is strategic in the sense that it contributes to the student's ability to operate in the "literate" classroom.

The remedial teacher needs to tap the students' strategic reservoir through systematic interviews designed to answer a fundamental question: What does the student think reading is? Spradley's three level questioning is helpful in this respect. With young students it can be difficult to start with a grand tour question such as, "What is reading?" This apparently simple question is not so simple; a statement such as "Tell me about your reading class" is more appropriate. A more focused question would then have the student describe what takes place in the reading group. Finally, a selective question lets the remedial teacher know how well the student understands reading assignments in content area subjects. Examples of this type of question might be, "Is your reading class like social studies class?" or "Is your reading group like other reading groups?" Of course, the students' written classroom assignments can reveal strategic knowledge. By asking students to explain how they went about choosing the answers to an assignment, and why they thought some incorrect answers were correct, the remedial teacher can begin to collect information about how the students use their strategic knowledge.

PLANNING FOR INSTRUCTION

One might reasonably ask, how does the information from observation and interviews change instruction? To integrate remedial and classroom instruction, the teacher must base instructional objectives on classroom observation, observation of the student's work in the remedial setting, knowledge of the
reading curriculum, and familiarity with the student's work. There is one major difference between such a "clinical" approach and others: the way in which the instructional objectives are formulated. In some remedial settings objectives are written independently of the specific student's classroom "culture." These objectives are based on various tests or scattered observations. This approach tends to fragment reading instruction and may be unrelated to reading instruction in the classroom. The student does not see connections between the two situations and does not benefit fully. By using the qualitative approach described here, the remedial teacher can develop a program which takes into account not only "what is" but "what ought to be."

Teachers might reasonably ask how they can find the time for the necessary interviews and observations. The answer is simply: Make time. Teachers interested in bringing remedial and classroom instruction cannot hope to do so without spending time in both settings.

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checkers. Hodges (1980) questioned both Durkin's definition of comprehension and the way in which the operationalized it in her scheme for categorizing teaching behavior. However, in a follow-up study, Kurth and Greenlaw (1981) found evidence of many of the same instructional patterns reported by Durkin, and their results substantiated the major findings of Durkin's study. Specifically, Kurth and Greenlaw found that: 1. teachers spend most of their reading instruction time in teaching phonics and word recognition skills; 2. when comprehension was taught, it was generally taught on a one-to-one basis rather than as part of directed instruction; 3. an average of 19 per cent of the instructional time was spent in non-instructional activities; and 4. although teachers grouped for reading instruction, these groupings were not used to individualize instruction to meet pupil's needs.

However, simply reporting these existing practices appears to be little more than "cursing the darkness' if no attempts are made to modify teachers' instructional practices. Thus, the general purpose of this study was to develop model procedures for working with in-service elementary teachers to modify instructional practices during reading instruction. A model of intervention developed by Boyan and Copeland (1968) was adapted for use in this study. After reviewing data from the previous studies which had examined teaching practices during formal reading instruction, the researchers decided that the specific goals of this study would be to encourage teachers 1. to incorporate more direct teaching of comprehension during formal reading instruction; 2. to maintain a more equitable balance between the instructional time devoted to word recognition instruction and time devoted to comprehension instruction; 3. to promote independent level reading during formal reading instruction; and 4. to minimize the amount of instructional time used for non-instructional or transitional activities.

The subjects for this study were nine, certified elementary classroom teachers, three each from second, third, and fourth grade classrooms in a suburban elementary school in North Texas with a student population of 650 pupils. The researchers were invited by the principal of the school to conduct the study in his building. The nine primary teachers all volunteered to become part of the study; however, the principal's interest in the study was undoubtedly a factor in the teachers' decisions to volunteer.

At the onset of the study, observers monitored the formal reading instruction in each of the nine classrooms during the fourth, fifth and sixth weeks of the fall semester. The times for the formal reading instruction were altered in order that three observers could observe all nine classrooms. The observers were three graduate students in reading who had been part of the 1981 comprehension project and were trained in the observation procedures used in that study. These observers monitored and recorded the following: 1. the type of comprehension instruction done by each teacher; 2. the amount of comprehension instruction of each type done by each teacher; 3. the amount of time spent in word recognition activities; 4. the amount of time spent in non-instructional or transitional activities; and 6. the number of students reading on their independent level during formal reading instruction. An identical summary observation was done during the 33rd, 34th, and 35th weeks of the school year by the same observers.

The intervention team was composed of three graduate students in reading and a college professor of reading education. The major goals of the project were developed by the researchers and presented to the nine teacher subjects. The researchers met with the teachers and discussed the research which led to the formulation of specific project objectives. These beginning sessions with individuals and with groups of teachers were used to stress the idea that the intervention team was there to assist teachers rather than act in an evaluative role. The intervention team spent three mornings each week for
two semesters working with the nine volunteer teachers participating in the study. The mornings were spent either in observing reading instruction done by the subjects or in giving demonstration lessons. Three times each week, either after the school day or during individual teachers' planning sessions, the researchers met with individual teachers to discuss various teaching strategies. Most of this time was used to develop lesson plans for comprehension.

One of the findings of the previous study (Kurth and Greenlaw 1991) was that a distinct difference could be seen in the approach used by teachers when teaching comprehension skills as compared to the approach used by teachers when teaching word recognition skills. In most instances when a teacher was focusing on comprehension skills, a period of direct instruction was used during which time the teacher discussed strategies for using the skill being taught. Then an assignment was given, and the children proceeded to apply the skill just taught. However, during comprehension instruction, teachers rarely used direct instruction. Instead, they simply gave a comprehension assignment and then assisted individual children if they had difficulty answering certain comprehension questions. Thus, most of the instruction in comprehension was done on a teacher to individual student basis in contrast to word recognition instruction which was done on a group basis. This finding that teachers use very little direct instruction in comprehension teaching is substantially the same finding as Durkin reported and classified as "mentioning". When faced with teaching comprehension tasks, teachers simply "mentioned" the task with a cursory overview and then asked children to do the task. This same pattern was found in the teaching of the nine subjects in the present study. The initial observations showed that the average amount of formal reading instruction time devoted to direct teaching of comprehension skills was 2 per cent for second grade teachers, 12 per cent for third grade teachers and 9 per cent for fourth grade teachers. Therefore, the project team encouraged teachers to increase the amount of time they spent in the direct teaching of comprehension skills.

In order to encourage this type of teaching, it became necessary for project researchers to write lesson plans based on specific comprehension skills and then to present them as demonstration lessons in the various classrooms. The criteria for these lessons included the following: 1. a measurable comprehension objective; 2. a period of at least four minutes of direct instruction in comprehension strategies; and 3. the application and assessment of the comprehension skill being taught.

While working with the teachers on lesson planning, project researchers found that teachers had difficulty formulating specific objectives for teaching comprehension. They often stated their objectives in vague generalities such as "read to understand the story" or "read to answer the questions in Rainbows". This was in direct contrast to their objectives for word recognition lessons which were very specific. This seemed to substantiate what Lanier and Flden (1978) reported when they claimed "teachers need help in having knowledge translated into articulate sets of curricula." Once the objective for teaching was clarified, teachers were able to begin developing excellent plans. Another area of emphasis in the lesson planning sessions was the encouragement given to teachers to develop longer periods of direct instruction in comprehension. As teachers became more adept in developing plans, the length of the periods of direct instruction became longer. The materials for these comprehension lessons were taken from the basal reading materials and supplementary materials which were available in the school building. Over a period of several weeks, the teachers and researchers developed and shared a collection of plans for teaching specific comprehension skills. However, as they became more proficient in lesson planning, the project teachers no longer relied as heavily on the plan library; rather they seemed to gain confidence in their ability to write plans which met the needs of their own classrooms. Thus, the process of learning to write plans for comprehension teaching rather than the product (the plan itself) became the most valuable part of the project experience.

The post intervention observation results showed that the average amount of formal reading instruction time devoted to the direct teaching of comprehension was 36 per cent for the second grade teachers, 39 per cent for the third grade teachers and 44 per cent for the fourth grade teachers. The results of the pre intervention and the post intervention observations of direct instruction are compared in Table 1 below.

<table>
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<tr>
<th>GRADE</th>
<th>PRE-INTERVENTION</th>
<th>POST-INTERVENTION</th>
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<td>2nd</td>
<td>2</td>
<td>36</td>
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<tr>
<td>3rd</td>
<td>12</td>
<td>39</td>
</tr>
<tr>
<td>4th</td>
<td>9</td>
<td>44</td>
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</table>

Another objective for the study was to help teachers achieve a more equitable balance between instructional time devoted to word recognition instruction and instructional time devoted to comprehension instruction. The pre intervention observers found that the second grade teachers spent an average of 38 per cent of the formal reading instruction time teaching word recognition skills and 26 per cent of the formal reading instruction time teaching comprehension skills. The third grade teachers spent an average of 31 per cent of the formal reading time teaching word recognition skills and 24 per cent of the time teaching comprehension skills. The fourth grade teachers spent 34 per cent of the formal reading instruction time teaching word recognition skills and 29 per cent of the formal reading instruction time teaching comprehension skills. It is also important to note that the comprehension skill teaching was generally done on a teacher to individual child basis whereas the word recognition instruction was generally done on a group basis. This would tend to inflate the comprehension teaching time.

Because the faculty of this particular elementary school felt very strongly that instruction in word recognition skills, especially phonics instruction, was a very important element in the teaching of reading, the intervention team never suggested that the percentage of time devoted to word recognition instruction be decreased. Rather, the researchers continued to stress the idea that comprehension instruction is central to an excellent reading program. As the intervention team continued to focus on comprehension and as teachers gained more confidence in their ability to teach comprehension tasks, they began to devote more time to teaching comprehension skills. They also expressed feelings of satisfaction with their ability to teach comprehension. The post intervention observation results showed that the second grade teachers spent an average of 31 per cent of the formal reading instruction time teaching word recognition skills and 36 per cent of the formal reading instruction time teaching comprehension skills. The third grade teachers spent an average of 24 per cent of the formal reading instruction time teaching word recognition skills and 38 per cent of the formal reading time teaching comprehension skills. The fourth grade teachers spent 18 per cent of the formal reading instruction time teaching word recognition skills and 52 per cent of the formal reading instruction time teaching comprehension skills. The pre intervention and post intervention observation results are compared in Table 2 below.
TABLE 2

PER CENT OF READING INSTRUCTION TIME DEVOTED TO WORD RECOGNITION AND COMPREHENSION

<table>
<thead>
<tr>
<th>Grade</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
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<tr>
<td></td>
<td>Word Rec.</td>
<td>Comprehension</td>
</tr>
<tr>
<td>2nd</td>
<td>38</td>
<td>26</td>
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<tr>
<td>3rd</td>
<td>31</td>
<td>24</td>
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<td>4th</td>
<td>34</td>
<td>29</td>
</tr>
</tbody>
</table>

The post intervention results show that teachers did spend more time teaching comprehension skills than word recognition skills. A possible reason for this change in teacher behavior was stated by Duffy (1982): "Time on task is affected by what teachers feel they can teach successfully and that teachers will spend more time on tasks that they feel comfortable and successful in teaching.

A third objective of the study was to increase the amount of independent reading done by children in the reading classes. Data from the previous study (Kurth and Greenlaw, 1981) had shown that even though all teachers observed had used three groups for teaching reading, little or no modification of instruction either in content or methodology was done for any of the groups. Because teachers often used exactly the same materials for students in each group, students were often attempting to read material that was either too difficult or too easy for them. The pre intervention observation results showed that, on average, only 35 per cent of the second grade students were reading on their independent level each day, an average of 46 per cent of the third grade students read on their independent level each day, and an average of 50 per cent of the fourth grade students read on their independent level each day.

By encouraging teachers to have children read on their independent levels each day, it was hoped that teachers would learn to modify the formal reading instruction so that it would meet the needs of individual children. The researchers helped teachers ascertain reading levels for individual students by using abbreviated informal reading inventories and by providing examples of short, carefully graded materials on many levels. These materials were taken from the basal readers, supplementary basal readers, and from trade books available in the school. At first, the teachers felt very overwhelmed by this project task, but with encouragement from the project staff, they realized that providing independent level reading passages was not as difficult or time consuming as they had first imagined it would be. The teachers also enlisted the students’ help in monitoring their reading success, and students became adept at judging materials which were suitable for them. The post intervention observation results showed that an average of 82 per cent of the second grade students, 96 per cent of the third grade students, and 84 per cent of the fourth grade students read on their independent level each day during formal reading instruction. The pre intervention and post intervention observation results are compared in Table 3 below.

TABLE 3

PER CENT OF STUDENTS READING ON THEIR INDEPENDENT LEVEL

<table>
<thead>
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<th>Grade</th>
<th>Pre-Intervention</th>
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<tr>
<td>2nd</td>
<td>35 per cent</td>
<td>82 per cent</td>
</tr>
<tr>
<td>3rd</td>
<td>46 per cent</td>
<td>96 per cent</td>
</tr>
<tr>
<td>4th</td>
<td>30 per cent</td>
<td>84 per cent</td>
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The final objective of the study, to encourage teachers to minimize the amount of instructional time used for non-instructional or transitional activities, resulted from the previous finding (Kurth and Greenlaw, 1981) that approximately 20 per cent of the total formal reading instruction time was spent on transitional or non-instructional activities. The pre intervention observation results showed that the average per cent of formal reading instructional time devoted to transitional or non-instructional activities was 19 per cent for second grade, 21 per cent for third grade, and 15 per cent for fourth grade. In this observation category, unlike any of the other categories, there was a great deal of variance from teacher to teacher. For example, one second grade teacher devoted a total of 38 per cent of the reading instruction time to transitional or non-instructional activities, while the other two second grade teachers spent 6 per cent and 13 per cent of the instructional time in non-instructional activities. Because of the wide variance from teacher to teacher, the researchers emphasized management skills only in those classrooms where management of reading instruction appeared to be a serious problem. Again demonstration lessons were given by the project researchers, and specific management skills were discussed with teachers during the planning periods. The results of the post intervention observation showed almost as great a variance from teacher to teacher in this category as the pre intervention observation results had shown. However, improvement was dramatic for the two teachers who had had the highest per cent of reading instruction time devoted to non-instructional activities on the pre intervention observation. The post intervention observation results showed that the average per cent of formal reading instruction time devoted to non-instructional activities in second grade, fourth grade, and 12 per cent for fourth grade. The pre intervention and post intervention observation results are compared in Table 4 below.

In keeping with the theme of the forum, the final section of this paper will deal specifically with the strategies used in this study’s efforts to move research findings into classroom practice. The basis for the intervention strategies, the Boyan and Copeland (1968) supervision model, gives guidelines for bringing about change using clinical supervision techniques. The model, which has been used as a basis for training supervisors to work with secondary teachers in content area reading instruction (Lane, 1982), is founded on the belief that the supervision process must be based on a collegial supervisor-teacher relationship. The researchers in this study acted as supervisors in the sense that they observed teachers, gave feedback about performance, and worked to help teachers move toward self-improvement. The eight central premises of the model, the ways the premises were applied in this study, and instances where the premises were violated will be presented. The value of a staff
TABLE 4
PER CENT OF READING INSTRUCTION TIME DEVOTED TO NON-INSTRUCTIONAL AND TRANSITIONAL ACTIVITIES

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<tr>
<th>GRADE</th>
<th>PRE-INTERVENTION</th>
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<tr>
<td>2nd</td>
<td>19 per cent</td>
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<td>21 per cent</td>
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<td>15 per cent</td>
<td>12 per cent</td>
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development model predicated on the idea of colleagueship will be discussed as well as some of the difficulties facing those who propose such a model in the real school situation. Also experiences in this study will be used to make some generalizations and suggestions about positive future directions in techniques to change teacher behavior.

The first premise of the supervision model assumes that many of the problems teachers encounter in the classroom can be resolved if the teacher can change his or her behavior in positive ways. Students' abilities, home environments, and attitudes, as well as factors such as school climate and administrative decisions, have a great influence on the classroom situation and are beyond the control of the teacher. Because of these factors, teachers often do not recognize the importance of their own behaviors on student achievement. This model assumes that many difficulties in teaching reading can be overcome by a change in teaching behavior.

The second premise of the model was the only one voiced in this study. Boyan and Copeland (1968), as well as other well-known theorists in the fields of supervision and staff development (Erickson, 1977, 1982 and Harris, 1975), note that changes in behavior must come from within; that is, an exploration of the perceived needs of the participants must be a beginning step in any staff development effort. Alfonso and Goldsberry (1982) point out that too often schools adopt a participative approach in the pursuit of predetermined objectives regardless of the appropriateness or importance of these targets as perceived by the teachers. This research effort was characterized by an initial lack of attention to teachers' perceived needs. Objectives related to increased time in comprehension instruction, grouping practices, and instructional time were devised by the researchers based on their observations, independent of any suggestions by the teachers. However, the teachers who participated in the program did so voluntarily, and the researchers met with them to discuss the research which had led to the formulation of specific project objectives. The teachers seemed to accept the observations presented as valid information and, during their involvement in the project, became very enthusiastic about the new skills they were learning. The failure to include teachers in the initial determining of objectives may have been necessary because of the research situation but is a flaw in efforts to implement research findings in classrooms. Perhaps researchers are missing a great pool of ideas concerning directions for research. There may be many significant questions being ignored because those who conceptualize them do not have the training or inclination to do research.

The third premise is that teachers are often unaware of many teaching and learning behaviors that occur in their classrooms. The reasons for this lack of awareness are many, including the following: too much happens too rapidly in the classroom, teachers are seldom equipped with the specific skills necessary for labeling classroom behavior, and systematic observation is difficult to observe while teaching. Teachers in this study were often unaware of the time spent on different aspects of instruction. They stated that the amounts of time spent on word recognition and comprehension instruction were approximately the same. The initial observations in this study revealed that the difference in amounts of time spent on these two types of instruction was very great. The teacher who was having great difficulty with classroom management knew she had problems in this area but was not able to articulate the reasons for the difficulties. She seemed unaware that time spent on nonproductive, non-instructional tasks was contributing to the problems in the classroom.

Boyan and Copeland (1968) propose that increased awareness of teaching and learning behaviors in the classroom can help teachers recognize needed changes. Much inappropriate teaching occurs because teachers are unaware of their behavior. When given specific information, teachers use that information to change their behaviors and improve instruction. In this study, some of the changes were implemented simply because of the teacher's increased awareness. For instance, the researchers spent little time with most of the teachers in working on strategies to minimize the amount of non-productive time in the classroom. Efforts were directed toward the teacher with the most difficulty with management. However, all teachers, except the one who was already very proficient in her use of time, improved somewhat in this aspect.

The fifth premise of the model is that existing teaching and learning behaviors can be revealed to the teacher through systematic observation. To alter teaching behavior, the teacher must be able to see what is taking place in the classroom. Observation does not automatically improve instruction. In fact, as has been noted elsewhere, some of the aspects of teacher improvement required almost overwhelming effort on the part of researchers and teachers; however, the observations by the researchers and their feedback proved to be an acceptable method for increasing the teachers' awareness and for changing behaviors. Garman (1982) notes that any supervision or staff development program can be helped by classroom observation when the observation is specific and revolves around behavior that is of interest to the teacher. Efforts were made in this study to structure all classroom observations around specific objectives and to answer questions posed by teachers about their own behaviors.

The sixth premise of the model provides that, since it is difficult for the teacher to apply systematic observation techniques while teaching, a trained observer is needed. The researchers in this study acted as supervisors in a clinical supervision situation. The researchers were trained in their observations of teachers' use of time, grouping strategies, and techniques for teaching comprehension: No effort was made to include the teachers as observers of each other. Some type of peer supervision would perhaps have been helpful and offers a promising direction in changing teacher behaviors.

In the seventh premise of the model, it is proposed that the observer must present the observation results to the teacher in a way that will allow the teacher to accept them as valid, to internalize them, and to use them to identify needed instructional changes. The usual purpose for observation is an evaluative one. Teachers have difficulty, because of the threatening aspects of such observations, in accepting and internalizing the results. Efforts were made in this study to develop a collegial relationship between the researchers and the teachers. The benefits of colleagueship have been well established in the literature on supervision (Alfonso & Goldsberry, 1982; Cogan, 1972; McNeil, 1982). Researchers made every effort to act in a collegial role.

The eighth premise states that the teacher will accept and internalize observation results best when there is a "no threat" relationship between the teacher and the supervisor. The researchers in this study noted the difficulty of achieving such a relationship even though they stressed from the beginning that they were not in any way in an evaluative role. The researchers had to work closely with the teachers in the classrooms and experience their problems to be accepted by the teachers in a true give-and-take manner. There is a critical difference between the evaluative, administrative role and the supervising, collegial role in improving instruction. Even in the non-threatening at-
mosphere of the research situation, teachers were, at first, fearful. Differentiating supervision to improve instruction from evaluation presents a great challenge to those who wish to move research findings into practice. The principal who is an effective instructional leader might be a source of study. How do these successful principals manage to separate helping and evaluation functions? A study of the supervisory behaviors of effective principals might be beneficial in finding ways to move research findings into practice.

In summary, the researchers in this study were able to increase positive practices in several important areas: comprehension instruction, instructional time, and differentiated instruction for different groups of students. However, these changes were made only with an extreme outlay of time and energy on the part of both teachers and researchers. The program described in this paper involved many after-school sessions, and researchers worked diligently in locating materials and writing detailed lesson plans. The researchers gained insights into teachers’ real problems associated with the lack of time to do the tasks considered sound educational practice and good reading comprehension instruction. The development of the collegial relationship was time-consuming. The researchers did not, at first, meet a completely open, willing group even though participation in the program was voluntary and the project had the active support of the principal. Researchers had to work to prove themselves as true colleagues of the teachers before work in actually changing behaviors could begin. Continuous monitoring of teaching behaviors on a day-to-day basis was necessary for continued improvement. In short, the task of improving comprehension instruction can be done, but it calls for continuous, almost Herculean efforts.

One of the real issues in the research to practice issue concerns who will provide the efforts necessary to implement changes in instructional practice. Reading specialists or supervisors often are most responsible for implementing instructional change in reading. Some of the difficulties associated with this work are apparent from this study. However, in this study, the ratio of researchers to teachers was four to nine. In real school systems, the ratio may be one to three hundred or more. The benefits of clinical supervision: preobservation conferences, observations, postobservation conferences, and follow-up are limited to a few teachers. Another difficulty is indicated in a recent study of supervisory personnel by Sullivan (1982), in which he notes that the time supervisors actually spend in classrooms and with teachers is very limited. Sullivan found that most supervisory personnel are actually engaged in information brokering tasks and seem to function more as nerve centers holding the bureaucracy of the system together. They seem to function to keep the system going as it is rather than in working toward instructional improvement. Sullivan found that only 14% of the contacts made by supervisors were with the teachers, and only 7% of the supervision time was spent in staff development and classroom observation. She suggests that these most supervisors spend their time in managerial tasks rather than in the improvement of instruction, titles and job descriptions should be changed and that concepts and descriptions of supervision tasks such as those by well-known authorities such as Harris (1975) are totally unrealistic in light of what really takes place in schools.

McNeill (1982) points out that peer supervision or review might offer help with this lack of time for instructional guidance. He notes that peer review would be helpful for the following reasons: the human resources of the schools would be more fully used; the idea that classroom teachers have much to contribute to instructional improvement would be recognized; and successful innovations would be more likely. He also points out that teachers trained in observations of others would be perhaps more systematic in their own application of instructional principles. He notes the supervisor’s role in facilitating this process. Peer review procedures, like those of clinical supervision, would suffer from lack of time for teachers and supervisors in that someone must lead and facilitate such a process and teachers must use already scarce time to participate. However, the collegial relationships developed in this study were probably most responsible for the changes made in teachers’ behaviors. The peer review system would seem to be a helpful application of collegialship and would perhaps help schools to truly use the human resources available to them.

A follow-up study is being planned in order to measure whether the changes in teacher behavior will continue after the project ends. Because of the high level of teacher enthusiasm and involvement at the end of the project, the researchers feel that the changes in teaching behavior will be self-sustaining; however, no empirical evidence to substantiate this feeling is available at this time.

The underlying assumption of this study is that improving instructional practices in reading will improve pupils’ reading ability. No empirical data was gathered in this study which would substantiate this assumption. The follow-up study will be designed to include control groups in order to show that changes in instructional practices do indeed improve children’s reading ability.

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RESEARCH APPLICATION OF SCHEMA THEORY IN A TWELFTH GRADE CLASSROOM

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Schema theory has been the subject of much attention over the past several years. As Durkin (1981) pointed out, much additional study in this area is needed before a sufficient data base is available for sound analysis. A part of such research should include more evaluation of schema theory in terms of direct classroom application. Further, classroom application of schema theory should be examined not just for improvement in the reading process, but also for enhancement of content learning or classroom responding. For, as Vacca (1981) stated in reference to schema, "Readers must search for and find relationships among pieces of information...and concepts" (p. 15). Schema theory, then, may be material specific and should be evaluated immediately on a short term, immediate knowledge basis as in content testing or short term memory.

A part of the difficulties in classroom application of schema-based concepts lies in the "distance" between the researcher and the classroom teacher. That is, after initial teaching and study, what successes and what problems might there be if the teacher-trained/researcher maintained a minimum of contact with the classroom teacher as that teacher implements schema-based concepts into classroom practice? These questions of practical application as reflected through test success, recall, and sight reading tasks, as well as problems encountered in data collection, are the concerns of this study. The schema-theory components included in the study and translated into classroom practice by a classroom teacher were the creating and using a structured overview (Herber, 1978) and a modified brainstorming activity (Witrock, 1977; Vacca, 1981). Specifically, research questions were asked in two areas: results of implementation and of application. First, in learning or recall of information do the cognitive organizers differentially affect (a) the number of concept terms recalled; (b) scores obtained on an objective, teacher-constructed end-of-unit test; and (c) in word tasks, are word lists presented in a categorized format read more successfully than are words presented in a randomly-arranged format? Secondly, in implementing the schema concepts into a classroom structure, what success or problems are noted by the classroom teacher?

Procedures

For this study data were obtained from two twelfth-grade classes (control = 22, experimental = 15). The subjects attended high school in a small, western Kansas town of approximately 16,000 population. SRA reading achievement scores, drawn from school records, indicated that the students were performing near grade-level expectation according to a sample mean grade equivalent of 11.7 across the two classes. Reading achievement scores, drawn from school records, indicated that the students were performing near grade level expectation on the SRA reading achievement test with a sample mean grade equivalent of 11.7 across the two classes. On an individually administered intellectal assessment, Form A of the Peabody Picture Vocabulary Test, the two classes in the sample achieved a mean of 100.

For comparison for the effects of schema theory on classroom learning, two classes were used; one designated experimental; the other, control. The experimental class's mean reading equivalent was 11.7, with a mean PPVT score of 102. The control class obtained a reading mean of 11.65 and a PPVT mean of 99. There were no differences (p < .05) between the groups on these two measures.

The twelfth-grade teacher involved in this study taught a two-week unit entitled "Search and Seizure: Fourth Amendment" to both classes. The teacher created a structured overview for this unit. The overview was generally consistent with the pattern suggested by Herber (1978) and Tierney, Readence, and Distaso (1980). Using overhead transparencies the teacher each day introduced sections of the structured overview to the experimental class as teacher and class worked through segments of the two-week unit.

An organized brainstorming activity was conducted midway through the unit. In this activity, the students in the experimental group were given five minutes to write down all the terms they could recall. The students then shared lists such that one "grand list" was compiled. The students then constructed an overview using these terms. For this purpose the teacher passed out partially completed practice sheets. Blanks or "empty" lines were provided for the terms, and lines were drawn showing relationships among these terms. The students were to fill in the blanks. As a follow up to this activity, the teacher used the chalkboard to provide feedback to the students and to ensure student accuracy with the completed task.

The experimental group received instruction via the structured overview and brainstorming activity described above. In addition, this class also was taught with more traditional lecture, discussion, and assigned reading. The control group received only the assigned reading, lecture, and discussion. The teacher attempted to hold constant for both classes the time spent on task, the amount of written work, the use of any supplementary materials and the amount of classroom instruction.

The learning and retention effects of the use of the structured overview and the brainstorming activity on class content mastery were evaluated by making group comparisons on two tasks. First, immediate retention of information was assessed by creating and administering an objective, criterion-specific unit test at the conclusion of the experiment. Secondly, a free-recall task in which students generated and listed as many of the labels as they could was also used to evaluate retention of concepts and specific labels. Within the combined samples, a third task was performed, sight reading of the words from the overview. This word-reading task was performed under two conditions. Words encountered in the unit were categorized into sets of five terms listed under their generic heading, or the words were randomly assigned to sets of six terms with no generic heading. Analyses of these data would allow for discussion of the immediate effects of schema on a word-reading task. Cognitive organization would be provided by the generic labels, while the random list would serve as the uncontrolled task.

Results

End-of-unit test mean scores were compared for the experimental group (X = 22.00) and the control group (X = 20.63). Analyses (Table 1) indicated no significant difference between the two classes on this measure, though the experimental group did perform better.

There were significant differences (p < .05) between the experimental and control groups on the measure of concept retention expressed by the number of key words recalled from the material. The experimental group recalled a mean 15.92 words while the control group recalled a mean of 12.00 words. It appears that the overview and the brainstorming activity did create greater recall of key vocabulary when compared to a traditional lesson format (See Table 2).

To determine the effects of direct cognitive organization upon a word reading task, students read either a categorized or random arrangement of the words from the overview. Both time
in seconds, as measured by a stop watch, and the number of errors in pronunciation were recorded for analysis. Analyses (Tables 3 and 4) indicated no significant errors on either variable—time or pronunciation errors—between students reading a randomly-arranged word list and those reading a categorized list.

At the conclusion of the study, the classroom teacher and the supervisor of secondary teachers in the district provided personal views in four areas:

Preparation for the project
a. It was difficult to choose an instructional unit for use in the study.
b. The time required to develop the overview took approximately eleven hours, though it was thought that making such preparations on a regular basis would reduce the time requirements.
c. The development of the overview was made more difficult since the textbook organization was dissimilar.

Student reaction
a. Students appeared to like the graphic appeal of the overview; however, they were confused at first. As they became acclimated to the overview, they liked it better.
b. After the project a few students were strongly in favor of the approach; a few were very vocal in opposing it. The remainder were generally in favor of using the structured overview.
c. The teacher wondered if the uniqueness or novelty of the approach might “wear off.” The supervisor did not share this concern.

Term and Concept Acquisition
a. Terms were learned better via structured overview.
b. Teaching of concepts remained difficult; the students did not learn as well as had been anticipated.
c. It seemed that cognitive levels were enhanced, but not systematic and analysis.

Benefits from Schema
a. The use of the concept guide helped to keep the class on task and on track by providing a concrete, visual basis to return to instances where discussion tended to wander.
b. It also helped to 1) show relationships between and among terms, and 2) demonstrate the relativity of the legal cases from which the terms originated.
c. The overview helped with organization much like an outline and could be used in part or in whole on any given day.
d. It appears that schema or concept guides might be especially useful in classes where time is limited by large number of terms that have to be taught.
e. Other than the time required in preparation, the only negative feelings are those generated from having to withhold the concept from the control group.

Discussion
It does not appear from these data that advanced organization through a structured overview and planned brainstorming activity influenced retention of class information differentially from a typical classroom presentation. However, the teacher spent much time deciding upon the concepts, the terms and the design of the structured overview. Since he taught both classes, such preparation may have altered the “usual” instructional approach, thus bringing the two classes closer together in the material learned. In addition, the two classes were taught in successive hours. Having the two classes so close together could also have tended to eliminate differences.

It is interesting to note that there were no significant differences in the word pronunciation tasks for time no for the number of errors. It does not appear that a direct cognitive organizer, that is, categorization, is an asset to word reading. Pronunciation speed and accuracy may be a task independent of schema impact when efficient students are reading familiar words at their instructional levels.

The anecdotes provided by the teacher and supervisor are generally supportive. Note that the teacher had anticipated more positive benefits for the experimental group. It may be that we are “over selling” structured overviews. As Durkin (1981) pointed out, we need more classroom research to make informed decisions concerning schema theory and implementation techniques.

REFERENCES

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<td>Within</td>
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<td>Within</td>
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<p>| Scheffe' Comparison (.10) |</p>
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<td>X1 = 15.92; X2 = 12.00</td>
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Table 3

Two-way analysis of Covariance Between Experimental and Control Groups By Random or Categorized Word List Error Rate

<table>
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<td>3.14</td>
<td>NS</td>
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Table 4

Two-way Analysis of Covariance Between Experimental and Control Groups by Random and Categorized Word List y Time to Reading Seconds

<table>
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