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Reading Research in 1984: Comprehension, Computers, Communication

Table of Contents

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INVITED ADDRESS

A RATIONALE FOR TEACHING CHILDREN WITH LIMITED ENGLISH PROFICIENCY

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Last spring on National TV, a teenage boy who was a recent immigrant from the Far East and had come to the United States only four years before knowing no English, delivered the valedictory address, in excellent English, for his large high school graduating class. His notable success had been brought to President Reagan's attention. How could he have achieved both the mastery of the language and the mastery of the academic work in four short years? While I have no further information about this individual, I can assure that his success is *not* typical. My purpose this morning is to discuss the problems that millions of boys and girls share in our public schools trying to master both the language and the ability to study in that language.

The 1980 census shows that 4,500,000 school age children, almost all with varying degrees of limited English proficiency, came to the United States in the decade of the 70's. Four and one-half million children represent ten per cent of all the school age children in the country.[1]

And all of us imbued with a Judeo-Christian conscience like the words of Emma Lazarus inscribed on the Statue of Liberty:

> Give me your tired, your poor,
> Your huddled masses yearning to breathe free,
> The wretched refuse of your teeming shore,
> Send these, the homeless, tempest-tossed, to me:
> I lift my lamp beside the golden door. (Emma Lazarus, 1849-1887).

My German ancestors came to Philadelphia about 1750 and so many other Germans came with them they almost became a *majority* in the state of Pennsylvania. And they spoke only German for a long, long time.

So many Puerto Rican children came to New York City in the early 1950's that the Fund for the Advancement of Education gave the New York City Schools a grant-in-aid in the amount of half a million dollars in 1953. Special ESL teachers were hired, many culturally relevant materials were developed, and many teachers were given fellowships to spend summers in Puerto Rico so they could see where these children "were coming from."[2]

By 1963, huge numbers of Cuban children were enrolling in Dade County, Florida schools. Completely bilingual programs, in grades one, two, and three were set up in 1963 in the Coral Way School in Miami. Approximately half of the instruction was given in Spanish by competent Cuban teachers and half in English by local teachers. The program succeeded and expanded. Richardson reported in 1968 that many completely biliterate children were finishing the sixth grade.[3]

By the mid 1960's, the specialization of teachers of English as a second language was developing to respond to the needs of myriads of both children and adults who needed to learn English. The practice was already in place for bi-national centers in Capitol cities across the world to hire ESL teachers so that citizens in those countries could study English for nominal fees.

The Pattern Practice Methodology of the 1960's

The methodology for ESL teachers was heavily slanted in favor of adult students. Pattern practice, the mim-mem, audiolingual methodology was not so bad for adults. But we soon learned that it could be excruciatingly deadly for little children. The few hundred commonest English language patterns were soon found in a variety of drill books and they gave teachers a systematic approach to presenting the language of English. The Army War College in Monterrey was able to put military personnel through twelve weeks of "total immersion" so they could move into a target country and converse in that language.

Of course language is not really learned apart from meaningful communication and young children generally did not master English by merely drilling its patterns. It soon became clear that the mimicry-memorization, audio-lingual method was not enough to develop effective language users in young children. Some who advocated rigid pattern practice argued that pattern practice might by boring for the teacher but that the children loved it.[4] On the contrary, however, what the teacher finds boring, he/she makes boring for those he/she teaches.

Creative teachers were alert to failure of specific methods and were quick to try something else. Generally, they added such activities as folk songs with lots of repetition in lots of verses, rhymes, jingles, singing games, and headphones for listening to cassettes to hear the suprasegmentals (pitch, intonation and stress) of the language. Herbert, A Native American graduate student, told me not long ago that he really finished learning English when he was overseas in the army. When almost everyone else was asleep, he learned that he could listen, out on a remote Pacific Island, to the singing of a great variety of popular songs. He said he listened and sang along hour after hour. He told me his enunciation of English was really not very good before he did that.

Caroly Graham with *Jazz Chants for Children*[5] and Pamela Beall and Susan Nipp with *Wee Sing and Play*[6] have provided for classroom teachers the cassette tapes to encourage listening to the pitch, intonation and rhythm of the language.

The Natural Approach

In the past decade, one method widely accepted by the ESL specialists for teaching English as a second language is called the Natural Approach to Language Learning. The Natural Approach encompasses three major facets:

1) a point of view about how language is acquired;
2) a provision of maximum input of learning stimuli to the learner which is *always comprehensible* to him;
3) a low-anxiety environment in which the child's *affect* is always positive and he feels that he will be successful at whatever he attempts.

Krashen and Terrell emphasize that the comprehensible input and low anxiety resulting from the teacher's skillful af-

fective filter are the two most significant factors in language learning.[7]

> About the first point, language acquisition, Terrell writes: Language acquisition refers to the unconscious absorption of general principles of grammar through real experiences of communication using L2. It is the basis for most first language ability and in terms of L2 is commonly known as "picking up the language."[8]

Dulay and Burt differentiate between meaningful messages for the boys and girls and what may be in the teacher's lesson plan:

> Perhaps the most important characteristic of a natural communication situation that is most overlooked in language classrooms is that the attention of the speaker and hearer is on the *message* or the content of the verbal exchange rather than on its form. Yet, most language teaching materials focus on the structures to be taught, often with the result that the message of the sentences taught, if there is one, is meaningless for both teachers and children.[9]

Natural language learning requires that the children take an active role in communication and that they are willing to take calculated risks in interacting with others. Further, they need to be able to *negotiate* with others about the language to be presented. Sociolinguistically speaking, this means that useful language must respond to the question: Who says what, to whom, and for what purpose? Negotiation means that the children have choices about the time, the manner, and the extent to which they will initiate language responses or conversation in their interactions with others.

Brian Gray helps teachers develop and expand *concentrated* encounters with children. The encounter is any meaningful situation in which language context is developed, expanded and shared by the teacher and children. Probing and modeling strategies enable teachers to maximize language development. Gray gives "Saddling a Horse" and "Making Toast" as two examples of context in the real life experiences of the boys and girls with whom he works.[10]

Working with aborigine children in Northern Territory, Australia, Gray asks teachers to move *from* the inflexible textbook content planned by experts from far away *to* children's learning-contexts worked out by the children with the help of their teacher. The ESL program of twenty years ago that failed to produce the desired results was designed by someone who decided what to teach and when to teach it, was used by teachers who were asked to follow a guide book, and often was *not mastered* by the children who were not invited to express an opinion about its content. Gray suggests that we start with the children and find out what content is important, interesting, or necessary to them and encourage them to talk about it. Children will talk when or because they want to talk. In this way, children negotiate their own language development. Then the only methodology the teacher needs is that of facilitating effective interaction to get language out of children that can be used for talking, writing, and reading. Concentrated encounters become significant when the teacher finds out what language, in the child's current circumstances, is important to him and serves a need. Once the teacher finds this out, he can then negotiate to pics of conversation of intrinsic interest to the boys and girls.

DEVELOPING LISTENING FLUENCY

Asher has contributed two very significant notions to the teaching of English as a second language.[11] First, he has found learners of new languages need *time* to hear the language before trying to respond by using it. So he recommends that language lessons can continue for weeks with the teacher using the language and the learners demonstrating understanding of it without speaking it. The idea is that the mind needs to hear the rhythm, the supra-segmentals, the intonation of the language for some time before the learner needs or is ready to try to imitate it. Asher emphasizes his point about listening in this paragraph:

> For at least one semester in college or six months to a year in high school, the goal of foreign language learning should be *listening fluency* o9nly. The listening fluency should be so keen that when the (Spanish) student visits Mexico, he can understand almost anything he hears on the street, on television, or on the radio. When this level of comprehension is achieved, the student may be ready for a graceful transition to speaking Spanish.[12]

THE TOTAL PHYSICAL RESPONSE

The second contribution of Asher has been termed the Total Physical Response. Total physical response is a point of view that in the beginning all the new language should be the learning to understand spoken commands and to exercise these commands — but does not require speaking any language. For example, the teacher says, "Stand up." Those who are directed to do so, stand up. The teacher says "Turn around twice" and everyone in the group turns around twice. The learner executes the command but he need not say anything.[13]

These two concepts — that we should give the learner ample time to get ready to speak the language before demanding oral responses, and that the first learning in the new language should be language to which he can respond through physical activity to show understanding — are very important concepts in the natural approach to language learning.

Tefft[14] in a doctoral study at the University of New Mexico, devised a guide for teaching physical education to Navajo children in the primary grades that would provide a great deal of language "acting out" in meaningful situations. Following are patterns practiced in a first grade class in the fifth week of the semester:

Lesson content		*Language*
Activity: Ball handling	Question	— answer
bounce and change hands	Teacher:	Who can bounce the ball and change hands?
	Class:	I can. He (She) can, too.
bounce and catch	Teacher:	Who can bounce and catch the ball?
	Class:	I can. He (She) can, too.

walk a chalk line	Teacher:	Can you walk the chalk line?
	Class:	Yes, I can walk the chalk line.
	Haske:	Yes, I can walk the chalk line.
jump the chalk line	Teacher:	Can you jump the chalk line?
	Class:	Yes, I can jump the chalk line.
	Anita:	Yes, I can jump the chalk line.

THE INTERDEPENDENCE OF LITERACY IN TWO LANGUAGES

Jim Cummins, at the Ontario Institute for Studies in Education, has made some significant contributions to understanding how the school student learns a second language. He believes that the use of either of two languages, under positive conditions, promotes the development of proficiency in both languages. He has differentiated two levels at which boys and girls use the language and the significance of this difference. And he has concluded, with support from other researchers, that boys and girls need five or more years in school undergirded by the use of their first language to give them enough time to master the second language sufficiently to use it for regular academic work. I'd like to talk about these three things briefly.

There are two diametrically different conceptions about the learning of two languages. One notion is that learning a second language is sure to detract from greater mastery of the first language; the other notion is that the two languages, in long term memory in the brain, complement each other. The first point of view is that if one learns two languages they constitute two separate linguistic systems in the brain. Thus, one has a separate underlying proficiency for each language. This implies that the more one is stimulated to develop one language, the more the other language will be diminished. So, if the second language learners continue to have insturction in language one, they will be less efficient in the learning of language two. While this common assumption is widely believed, *it is just not true.* During the last two decades of bilingual instruction in the public schools, there has been *no* evidence to support this model.[13] I feel that this point of view has been working against adequate education of Spanish-American children in New Mexico ever since New Mexico became a state.

Gummins supports a model of bilingualism which he calls Common Underlying Proficiency. The cognitive/academic proficiency gained in language one is equally useful in language two if the learner knows the labels in both languages. This means that the literacy skills in the two languages are interdependent. This model tells us that the use of either language in meaningful contexts promotes the development of proficiency in both languages if there is adequate exposure to the second language to apply all the concepts learned in the first language.

THE ACRONYMS BICS AND CALP

The elementary classroom teacher must help the new language learner develop enough sophistication to succeed in the regular classroom and achieve on a par with his agemates. Cummins has explained that there are two aspects to the language program. First, there are the basic interpersonal communicative skills (BICS) which include all the language needed for the interpersonal communication during the day. Greetings, talk about the weather, personal questions teachers must ask to complete their records; following directions and responding to general commands constitute basic interpersonal communicative skills. These some three-hundred commonest expressions (What's you name?; How old are you?; Come up and see me some time) were the primary content of the ESL drill books twenty years ago.

But another corpus of language needed to insure success in academic subjects is cognitive/academic language proficiency (CALP). Cognitive/academic language proficiency is the dimension of language related to achievement in school. Understanding concepts of time, measurement and distance in mathematics; understanding metaphor, simile and idiom in literature; and knowing the meanings for concepts of latitude, altitude, the equator and the life zones of the earth are all examples of this cognitive/academic language.[16]

I would like to share a personal example of one person who possessed BICS fluency (interpersonal communication) in Spanish but was not prepared, without some hard work, to use Spanish to convey subject matter. A colleague of mine, Dr. Frank Angle, entered school in San Miquel Co. in New Mexico as a Spanish speaker. All of his school life, of course, he was taught in English only. Then, when he became a college professor and was invited to teach Educational Sociology in Tegucigalpa, Honduras, he needed to give himself a "cram" course in all the Spanish terminology equivalent for the English vocabulary of sociology. Being a fluent speaker of the BICS level of Spanish did not mean that he was prepared to teach content which Cummins has labeled CALP.

HOW LONG DOES IT TAKE?

If one accepts the distinction presented in the terms CALP and BICS, then one must think seriously about the levels at which boys and girls are to be *admitted to* and *terminated from* bilingual programs in the schools. In the transitional programs, the directors tend to move children back to the mainstreamed classes, without additional help, as early as possible. It should be clear now that transferring boys and girls out of the bilingual programs must not be based only on measuring their basic interpersonal ability to converse. Such "natural communication" is not sufficient to determine the student's ability to compete with peers in achievement in mathematics and social studies. However, Cummins feels that most bilingual programs are apt to focus on the differences in BICS in language one and BICS in language two and not pay nearly enough attention to CALP in language one and CALP in language two.[17]

Chamot, writing for the National Clearing House for Bilingual Education, says:

> Recent Canadian research shows that whereas the LEP child requires only about *two* years to reach native speaker proficiency in BICS, it takes *five* to *seven* years to reach a CALP level comparable to the native speaker.[18] Harris, in Australia, has also emphasized the need for long periods of instruction to master this language as it is used in textbooks.[19]

METHODOLOGY

Our unresolved problem may be that we talk about ESL teachers as if this were a valid excuse for all the rest of us *not to know*. Classroom teachers are generally totally unprepared. Probably we need to utilize ESL specialists to help regular teachers in much the same way we use reading specialists.

From the learning point of view there are dangers inherent in the concept of drill books that prescribe what to do each day. The items identified in the footnotes for this paper suggest that there is a wealth of good information for those who will pursue the topic. My review of Gray's sound approach suggests that teachers must know something about language acquisition; how to create rich, learning environments in classrooms; and how to give boys and girls freedom to learn what they want and need to learn.

Suggestions which teachers can adapt to their own needs will be found in current literature. I will suggest a few:

1) Phillip Gonzales in a recent issue of *Language Arts* gives specific suggestions for teaching English to young non-English speaking children.[20]
2) Eustolia Perez, in the *Reading Teacher*, reports a small study that improved the oral language competence of Mexican American third graders.[21]
3) Mavis Martin and I have a short article in the *New Mexico Journal of Reading* in which we've tried to illustrate how the teacher can use the schema concept through webbing to show language learners the multiple meanings and the interrelationships which many common words have. We used the word *blue* to point out multiple meanings in color (navy, turquoise, robin's egg), as idiom (blue sky, blue collar, blue blood), as foods (blueberries, bleu cheese), and as parts of animal names (blue jay, blue bird, the blue whale). Our hope was to alert teachers to start with one meaning and build on that until there are dozens.[22]
4) Harris, in talks to teachers of aborigine children, discusses informal methods that have been working: the lap method of reading, the shared book experience as elaborated by Don Holdaway[23], the use of stories with many repetitive lines, listening posts with cassettes, and the impress method in which adult and child read together.[24]
5) Elley and Mangubhai experimented with a reading program for teaching English as a second language to Fiji Island children. They hypothesized that repeated exposure to high-interest illustrated story books in the target language mould produce rapid L2 learning.[25] They delineated factors in language learning that cause learning of L2 to be increased: (1) strong motivation; (2) emphasis on meaning; (3) increased exposure to the language; (4) attention to the redundancy in the language and the awareness of the suprasegmentals that add meaning; and (5) the quality of good models (pp. 54-55).

First Elley and Mangubhai tell us briefly their view of the second language program in the South Pacific Region. The *Oral* English Syllabus (Tate, 1971) provides for oral drill practice. This practice does not represent genuine communication, the repetitions are contrived and often monotonous; the exposure is minimal and carefully controlled, and many of the teachers themselves are teaching in their *second* language.

These authors selected a sample of 380 boys and girls in classes 4 and 5 in eight Fijian rural schools and provided in each classroom 250 high-interest, low vocabulary story books in English. Generally these classrooms had very few books for pupil selection for reading. The sixteen participating teachers used either a usual SSR program or a Shared Book Experience Approach. A control group of 234 boys and girls were taught by the traditional Tate *Oral English Syllabus*. That (the control) method put little emphasis on reading.

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Post-tests after eight months showed that pupils exposed to many stories progressed in reading and listening comprehension at twice the normal rate. At the end of the following year, the gains had increased further and spread to related language skills.

> . . . the critical factors which brought about the substantial improvements were related to greater and repeated exposure to print in high-interest contexts, in conditions where pupils were striving for meaning, and receiving sufficient support to achieve it regularly. These features were common in the experimental groups and absent in the controls (p.66).

This study strongly supports the provision of a wide range of suitable, well-illustrated, high-interest story books for children with limited English proficiency and then plan for scheduled time to insure that students read them.

A rationale for teaching any children anything in 1984 may well consider some of the ideas of Leslie Hart in his writing about the brain and what teachers should know about accessing learning for children. Hart writes:

> While the teacher may be working hard to "teach" a class of 25 youngsters, he/she needs to be aware that he/she is really not teaching *the whole group* at all. Rather, 25 individual brains, each of which will *tend to* what *it* chooses, will process the teacher's input in *its own individual* way, relating it only to previous *individual* experience. Teaching — as good guidance — can only facilitate the constructive processes of the learner. Learning goes on incessantly, in *each individual*, in a purely individual way, and each learner builds his own Prosters (program structures) to meet his personal need.**

**Leslie Hart, *Human Brain and Human Learning*, (Longman, 1983), pp. 77-78.

SUMMARY

With young children, we know that an informal approach in a carefully-planned, rich learning environment with a low anxiety level is a good way to extend and enrich language. This is just as true for children learning English as a new language, or learning a greater depth of English as a second language, as it is for native speakers of English.

Some of the key ideas I have cited for ESL specialists are these:

1) children need a rich, comprehensible input of meaningful language (Krashen, 1982);
2) children work and learn best under states of low anxiety (Dulay, Burt and Krashen, 1982)[25]
3) children need to be taught in rich, well-arranged learning environments;
4) improving oral language competence may improve reading ability (Perez, 1981);
5) children profit most from the content of language that focuses on the needs and interests of the group (Gray, 1983).

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PRELIMINARY DEVELOPMENT OF A SCREENING INSTRUMENT FOR LEARNING DISABILITIES IN FOREIGN LANGUAGE CLASSES

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An increasing number of college students are requesting special services because of diagnosed learning disabilities. Institutions are attempting to adjust to the needs of the handicapped. The department of Classical and Modern Foreign Languages at Furman University has recognized the need for documentation regarding the identification of learning disabled students.

The Classical and Modern Foreign Language Department refers students to the Special Service Program for further screening. Students are referred who have high SAT verbal scores, no attendance problems, and no apparent emotional, social, intellectual, or obvious experiential reasons for failing to achieve. The Office of Special Services generally gives tests for intelligence, visual acuity, auditory acuity, silent reading, oral reading, reading words out of context, spelling, and various perceptual tests. If a student is classified as learning disabled, she/he files a formal appeal to take an alternate sequence of courses focusing on the culture of another country, as opposed to the three required courses in language involving listening, speaking, reading, and writing proficiency in that language.

The faculty Appeals Committee requested that a perceptual instrument be developed with norms based on the perceptual achievement of other Furman students. This committee also requested data as to the number of students learning disabled at the institution. This request led to the work reported in this paper.

Barrett (1965), Vernon (1973), and Durrell (1963) have well documented the need for accurate perception of letters and words in reading achievement. Karlin (1980) concluded that the ability to discriminate among letter and word forms has a greater influence on recognizing words than the ability to discriminate among nonverbal forms.

Dykstra (1966), Durrell and Murphy (1953), and Morency (1968) have also demonstrated the high correlation between auditory discrimination abilities and reading achievement. Durrell and Murphy (1953) have maintained that hearing sounds in spoken words is crucial to reading achievement. The question remains, however, about the role of perception in a college foreign language class. Pimsleur (1966) demonstrated that the ability to use letter-sound association was significantly related to foreign language achievement.

The purpose of this study was to determine whether or not the visual and auditory perceptual skills as measured by a short screening instrument were significantly related to foreign language achievement at the college level. Since Section 504 of the Vocation Rehabilitation Act protects those students in higher education with perceptual problems, this research seemed long overdue.

METHOD AND SUBJECTS

The short screening test had two subtests, visual and auditory. The visual test of twenty items had students study nonsense words of increasing length for three seconds, and then write from memory what they had seen. The nonsense words were similar to English words, and contained some of the syllable sequences that seem to be troublesome for learning disabled students. The nonsense words were shown on standard typing paper, 8½ x 11 inches. The tallest letters were two inches high.

The auditory subtest of twenty items required students to pronounce phonetically and silently a nonsense word, and to underline an English word with the same vowel sound. Most distractors were phonetically irregular to measure the students' use of auditory discrimination. The student could not determine the vowel sounds, and successfully match them, using the visual patterns alone. Students were given three and one-half minutes to finish the auditory subtest. The two subtests were combined to give a total score.

Eighteen classes of Classical and Modern Foreign Languages at Furman University participated in the study. One class of 26 Spanish students at a nearby college also participated. At Furman, 110 students participated in Latin, 115 in Spanish, 75 in German, and 103 in French. Fourteen different professors participated. Each professor administered the short screening test during the first week of class in the Fall term. At the conclusion of the Fall term, each professor provided numerical grades to serve as the dependent variable. A standard interval-ratio grading system was used by the professors.

Several other independent variables were correlated to the criterion and compared with the short screening test for strength of correlation. These included SAT verbal, math, and total scores, predicted grade-point average, foreign language placement scores, and length of time students had studied a foreign language before coming to college.

RESULTS

In Latin, the Pearson correlation between the two screening test and grades was significant, $r\ (108) = .27$, $p = .002$. The only other independent variable correlating significantly with grades was predicted grade-point average, $r\ (108) = .19$, $p. < .01$. Table 1 gives the means, standard deviations for the screening test, and correlations between the independent variables and grades in Latin classes.

TABLE 1

CORRELATION BETWEEN SELECTED VARIABLES AND LATIN GRADES N = 110

Independent variables	Mean	Standard deviation	Pearson product-moment correlation	
Cloer test - visual	15.87	4.9	.27	p = .002
Cloer test - auditory	12.13	5.36	.25	p = .004
Cloer test - total	27.79	9.6	.27	p = .002
SAT verbal	376.36			*
SAT math	411.0			*
PGPA	1.64		.19	p = .01

*No significant correlation

In Spanish, the correlation between the total screening test and grades was significant, r (113) = .31, p < .001. None of the other independent variables correlated as highly. Years studying a foreign language prior to college yielded the next highest correlation, r (113) = .21, p .01. Table 2 gives the means, standard deviations for the screening test, and correlations between the independent variables and grades in Spanish classes.

TABLE 2

CORRELATION BETWEEN SELECTED VARIABLES AND SPANISH GRADES N = 115

Independent variables	Mean	Standard deviation	Pearson product-moment correlation	
Cloer test - visual	15.61	5.2	.25	p = .004
Cloer test - auditory	14.09	5.5	.34	p = .001
Cloer test - total	26.69	10.27	.31	p = .001
SAT verbal	439.82			*
SAT math	468.95		.20	p = .01
SAT total	908.7		.16	p = .04
PGPA	2.07		.16	p = .01
Placement test	16.30		.20	p = .01
Years studying (prior to Furman)	7 months		.21	p = .01

*No significant correlation

In German classes, the correlation between the auditory subtest and grades was significant, r (73), = .36, p < .001. None of the other independent variables correlated significantly with grades. The correlation between the visual subtest of the screening instrument and grades was not significant. Table 3 gives the means, standard deviations for the screening test, and correlations between the independent variables and grades in German classes.

TABLE 3

CORRELATION BETWEEN SELECTED VARIABLES AND GERMAN GRADES N = 75

Independent variables	Mean	Standard deviation	Pearson product-moment correlation	
Cloer test - visual	16.60	4.99		*
Cloer test - auditory	13.53	5.80	.36	p = .001
Cloer test - total	30.13	10.08	.22	p = .02
SAT verbal	473.73			*
SAT math	514.80			*
SAT total	988.53			*
PGPA	2.216			*
Placement test	16.72			*
Years studying (prior to Furman)	7 months			*

*No significant correlation

In French classes, the correlation between the visual subtest and grades was significant, r (101) = .22, p < .01. The auditory subtest did not correlate significantly with grades. The SAT Total correlated significantly with grades, but only slightly higher than the visual subtest, r (101) = .26, p = .004. Table 4 gives the means, standard deviations for the screening test, and correlations between the independent variables and grades in French classes.

TABLE 4

CORRELATION BETWEEN SELECTED VARIABLES AND FRENCH GRADES N = 103

Independent variables	Mean	Standard deviation	Pearson product-moment correlation	
Cloer test - visual	17.23	4.33	.22	p = .01
Cloer test - auditory	13.69	6.04		*
Cloer test - total	29.95	11.14		*
SAT verbal	433.30		.24	p = .006
SAT math	458.34		.26	p = .004
SAT total	891.35		.26	p = .004
PGPA	2.11		.25	p = .005
Placement test	17.99			*
Years studying (prior to Furman)	9 mos.			*

*No significant correlation

In the Spanish class at another college, the correlation between the total score on the screening test and grades was significant, r (24) = .54, p = .002. Table 5 gives the means, standard deviations, and correlations between the screening tests and grades in Spanish at another college.

TABLE 5

CORRELATION BETWEEN CLOER TEST AND SPANISH ACHIEVEMENT AT ANOTHER COLLEGE N = 26

Independent variables	Mean	Standard deviation	Pearson product-moment correlation	
Cloer test - visual	16.69	2.77	.63	p = .001
Cloer test - auditory	12.50	4.15	.36	p = .04
Cloer test - total	29.19	5.75	.54	p = .002

Spearman-Brown reliability coefficients for the visual subtest, auditory subtest, and total test were .81, .84, and .87 respectively.

DISCUSSION

With the results summarized according to the different languages, the results indicate that with a slight exception in French, the screening instrument correlated more highly with

grades in language achievement than any of the other independent variables. The first question addressed by this study was whether or not this screening instrument was related to language achievement. The answer seems to be affirmative.

Another question that this study attempted to answer concerned the number of students at the institution who might be classified as learning disabled. If one looks at two standard deviations below average as the criterion, or a point at which the bottom two percent of the Furman population might score, four students qualified. Of the four students scoring two standard deviations below average, three received low D's; the fourth student failed.

Thirteen students scored one standard deviation below average on the visual subtest. The most frequent grade received by this group was "D." Thirty subjects scored one standard deviation below average on the auditory subtest. The majority of these students dropped, failed, or received a grade of "D." Thirteen subjects scored one standard deviation below average on the total test. Eight of these received grades of "D" and "F."

It is no surprise that only a small percentage of the variance in language achievement is accounted for by a very brief screening of perception. There are so many experiential, social, emotional, physical, intellectual, and motivational variables that contribute to the variance in a college foreign language class. What is significant is that the measurement of perception accounts for some of that variance. The short screening instrument shows promise of identifying cases that might have severe perceptual problems. A word of caution is needed concerning this instrument or any other test designed to predict a certain criterion. Probably no test in isolation identifies a learning disability. This instrument does show some potential as one piece of evidence to consider. This writer certainly hopes that colleagues in the Forum will do further research with the instrument at their institutions.

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REACTION: PRELIMINARY DEVELOPMENT OF A SCREENING INSTRUMENT FOR LEARNING DISABILITIES IN FOREIGN LANGUAGE CLASSES

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Since very little research has been completed in diagnosing college-level students with learning disabilities, this study appears to be one with potential. Although today many more students with learning disabilities are diagnosed at the elementary level, there are students entering college classes, including foreign language classes, with undiagnosed learning problems.

Cloer's title, "The Development of a Screening Instrument . . ." does not exactly match the purpose given within the paper, i.e. "to determine whether or not the visual and auditory skills as measured by a short screening instrument were significantly related to foreign language achievement at the college level." Using grades as a dependent variable seems to allow for considerable variation in the results. The foreign languages to be learned may vary in difficulty. Likewise, professors grading students may utilize varying criteria in determining their grades.

In the review of literature, Cloer cited references related only to auditory and visual discrimination at the pre-reading or readiness stage as they related to reading achievement. Questions might be raised such as the following: are auditory and visual discrimination at the reading readiness stage related to achievement in a foreign language at the college level? Are there any studies available comparing reading skills achievement.?

The screening device appears to be valid, however, no information was reported on the validity. The reliability coefficients were included, however, little background was given as to the establishment of the reliability scores.

There appears to be a high correlation between the auditory discrimination and achievement in some of the languages, but not in all. Perhaps this is due to the nature of the foreign language being studied. The assumption is made that learning to read English and learning to read a new language involves the same types of skills. In a foreign language, however, there is no prior listening base upon which students can build their understanding. More information is needed regarding the relationship between auditory and visual discrimination and language achievement.

Although these brief auditory and visual discrimination tests represent a good beginning in devising screening instruments, there is a concern regarding the correct responses to items in the auditory test. For example, in item 1, the correct answer for the short "i" sound in "flif" is to be *mirror*. According to Durkin (1981) and Wilson and Hall (1979) the "i" in mirror represents an r-controlled vowel. Also, in item 7, the "a" sound is not best represented by arrow. This too is r-controlled. The instrument would need to be varied in word choices depending upon the regional dialect.

As Cloer states "Only a small percentage of the variance in language achievement is accounted for by a very brief screening of perception. There are so many other variables . . ." These screening instruments, if refined, show potential

as one means for predicting those students with possible learning problems in a foreign language. Perhaps a different dependent variable, besides grades, might be used. In future studies, one might try to establish groups of students with similar backgrounds before evaluating the results of the tests. In replication studies, it might also be helpful to concentrate on studying three or four specific variables which are believed to have accounted for large amounts of variance. The diagnosing of students with learning disabilities at the college level is one of importance and perhaps this study is the beginning of a series of much needed studies.

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USING WORD PROCESSING IN COMPOSITION INSTRUCTION

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Interviews with professional writers (Crowley, 1958) and studies of writing strategies (Beach, 1976; Faigley and Witte, 1981; Monahan, 1984; Sommers, 1978; Stallard, 1974) have supported the hypothesis that the ability to revise successfully is a characteristic of good writers. Yet, revision is perhaps the "least researched, least examined, least understood, and—usually—least taught" (Murray, 1978, p. 85) aspect of the writing process. Studies of student writers have shown that they do very little voluntary revising (Emig, 1971; Mischel, 1974; Wall and Petrosky, 1980). When students do revise, especially if they are not very skilled in writing, they tend to revise superficially, concentrating their revision efforts at surface and word levels (Bridwell, 1980; Monahan, 1982; Perl, 1979). The title of an article about revision by Odell and Cohick (1975), "You mean, write it over in ink?" reflects the attitudes many students seem to have toward revising.

Recently, a number of writers and researchers have praised the editing and text moving capabilities of word processing programs and have proposed that these programs can be useful in helping students revise more readily and skillfully (Bean, 1983; Coburn, Kelman, Roberts, Synder, Watt, and Neiner, 1982; Daiute, 1982, 1983; Hennings, 1981, 1983; Monahan, 1982; Moran, 1983; Piper, 1983; H. Schwartz, 1984; M. Schwartz, 1982; Whithey, 1983). These authors have cited the computer's value in helping students revise by reducing the frustrations of recopying, by facilitating the reading of text during the various stages of the writing process, by producing neat, publishable copies from the computer's printer, and by making possible the reproduction of drafts of compositions for easy sharing with teachers and peers as the writing process unfolds. Womble (1984) observed that when using word processing to write, students stayed with a piece of writing—adding, deleting, moving text—longer than they did with paper and pencil and seemed to develop a better sense of audience. When word processing programs were used with young students for language experience stories, the students made more revisions in their stories using the computer than when the experience stories were done on paper (Barber, 1982; Bradley, 1982).

Some authors have proposed that using a word processor goes beyond simply making revising easier and actually gives the writer a whole new way of composing. The fluency that comes with the liberation from fear of errors may help writing to become the discovery process it should be (McKenzie, 1984; Olds, 1981).

Some computer programs have gone beyond being "the electronic pencil" and actually prompt the students to edit various features in their papers. Computer programs like *Writer's Workbench* (Macdonald, Frase, Gringrich, and Keenan, 1982) search student texts for certain errors in usage or various stylistic features. Preliminary studies have suggested that students do not resent the error-hunting aspect of such processing of their texts (Sommers, 1982) and that they carry over what they have learned about style and apply it to texts that are not run through a program (Kiefer and Smith, 1983). Spelling checkers can help students compose more freely in the first stages of their composing since they can concentrate on issues besides spelling as they compose. Spelling checkers will not find errors with homonyms, but the search and replace function of the word processor helps a writer who can identify his characteristic misspellings. The student can concentrate on one error at a time (H. Schwartz, 1984). Programs for young writers like *Quill, Wandah, The Writer's Helper, The Writer's Workshop,* and *The Writer's Assistant* provide guidance in prewriting, have a word processor, and present editing and rewriting aids (Marcus, 1984). In addition, teachers of writing have developed their own strategies and programs to help students use the power of the computer to write and revise more successfully (Newman, 1984; H. Schwartz, 1982; 1984).

Observations of students and attitude questionnaires have confirmed the motivational value of using word processing (Bean, 1983; Bradley, 1982; Daiute, 1982, 1983; Stromberg and Kurth, 1984; Woodruff, Bereiter, and Scardamalia, 1981-82). L. Meyers and T. Rosegrant used their *Talking Screen Textwriting Program* to help severely language disabled students gain access to written and oral language through the use of a computer (Trachtman, 1984). Learning disabled students who had experienced great failure in learning to write responded positively to the use of word processing (Kramer, 1984). Papert (1980) cited children in his MIT computer center who went from "total rejection of writing to an intense involvement (accompanied by rapid improvement in quality) within a few weeks of beginning to write with the computer" (p. 30).

Although there is great interest and hope directed toward the use of word processing programs to help students develop interest and skill in revising, research in the area has just begun. Collier (1983) found that the use of a text editor increased the number and complexity of revision operations and encourag-

ed greater manipulation of material at the word and phrase/clause level, but little whole text revision was accomplished by the students he observed. The quality of the student essays was not affected by the revision efforts of the students. However, Collier noted that the word processing system his students used was so difficult to master that much of their energy and time was devoted to learning to manipulate the word processing system itself. Sixth graders, in a study by Woodruff, Bereiter, and Scardamalia (1981-1982), perceived that the computer made writing easier, better, and more enjoyable. However, the use of word processing did not improve the quality of the written compositions.

The purpose of this study was to determine if the use of word processing programs during composition instruction for basic writers would result in a larger quantity of writing and more global revision while writing.

PROCEDURE

Subjects

The Subjects were 18 students in either fifth, sixth, or seventh grade who had been referred for remedial reading and writing instruction. Twelve students were male, six students were female. All of the students achieved a grade equivalent reading comprehension score of at least 3.6 on the *Metropolitan Achievement Test*. The highest score was 6.2, and the median score was 4.7. As indicated by their achievement test scores these students were below grade level in reading achievement, but they all had some facility with reading and writing and were higher achievers than a normal clinical population.

The 18 students were randomly assigned to two groups for the composition instruction. Nine students were assigned to the composition class in which word processors were used and nine students were assigned to a composition instruction class with no access to word processors. However, after two sessions, one male student was transferred to the word processing group, and a female student with high computer anxiety was moved to the non word processing group. Unfortunately because of this, randomization was lost. After the change, the word processing group had nine students, 7 males and 2 females, and the second group had nine students, 5 males and 4 females.

Treatment

The classes met from 3:00 to 4:30 pm. two days per week. The word processing composition class met on Mondays and Wednesdays and the other composition class met on Tuesdays and Thursdays. The classes met for 12 weeks, so each student received 36 hours of instruction.

The same instructor taught both classes. She was a graduate student in reading education with a major research interest in the composing processes. She was also an experienced English teacher who had participated in many composition training projects. The major focus of the class instruction was composition strategies. The same lesson objectives were used for both groups. Objectives for the lessons included writing for various purposes and various audiences. The sessions stressed both narrative and expository writing; however more lessons involved expository writing. The five types of paragraph organization were also taught.

Students in both classes were taught prewriting skills, draft writing, revising and editing skills and were encouraged to use them. In teaching revising strategies, the emphasis was placed on global revisions rather than surface or word level revisions. Revising and editing groups were formed in both classes and students were required to consult with their revising and editing group at least once before they could consider a draft to be final.

All of the instructional objectives were identical for the two composition groups. However, in the word processing group, each student had access to an Apple IIE or IBM computer and the Bank Street Writer word processing software. A spelling checking program was also available for the students' use in the word processing group.

All students were encouraged to do their writing during the 90 minute class period. However, they were allowed to take compositions home to work on them if they desired. For the first three class sessions, the word processing students were given a keyboarding practice program in order to develop some facility with keyboarding. Because of this, the word processing group received less actual composition instruction than their counterparts in the other group. Two observers, both writing master's theses in reading, were present during many of the instructional sessions to observe some of the revision groups as they worked. The rough drafts and completed papers from 12 of the 16 writing assignments were collected for analysis.

RESULTS AND DISCUSSION

Because students were assigned a certain number of specific compositions that needed to be completed, there was little variation in the number of compositions written by the two classes. Except for three compositions that were not written because of illness, each of the students in both groups completed all of the assigned writing tasks. In both groups, a few students wrote extra unassigned compositions.

Analysis of variance showed that there was a significant difference between the two groups for length of compositions. The mean number of words per composition for the word processing class was 96 and the mean number of words per composition for the non word processing class was 84. However, there was great variability within each group on length of compositions. One female student in the word processing group wrote consistently longer compositions than any other subject in either group. Without a covariate which measured entry level writing composition length, the significant difference between the two groups was probably due to this one subject. Holistic analysis of the compositions from both groups indicates that the length of compositions, with the exception of the one female subject, were approximately the same for both groups. Even though students in the word processing group had to take time for the keyboarding training, they managed to write as many compositions of equal length during the class as did the non word processing group. The necessity of learning a word processing program did not appear to inhibit the amount of writing done by students.

The rough drafts and final copies of six of the assigned compositions were analyzed for level and type of revision. Because strong encouragement to revise was given in both classes, students did substantial revision under both conditions. The

students had been told to turn in all the rough drafts which they did, thus the number of rough drafts done depended upon the students' choices. More rough drafts were turned in by the word processing group than by the non word processing group. This might have been due to the ease of producing printed copies.

There were significant differences beween the two groups when the papers were analyzed for level and type of revision. The non word processing class made 58 percent of their revisions at surface and word levels, (spelling, punctuation, and word substitution changes); 28 percent of their revisions at phrase and clause levels and 14 percent of their revisions at sentence and paragraph levels. The word processing class made 51 percent of their revisions at surface and word levels, 25 percent of their revisions at phrase and clause levels and 24 percent of their revisions at sentence and paragraph levels. Both of these groups did more revising than other studies have reported. This is probably due to the fact that one of the purposes of the class was to teach revision strategies and encourage students to use them.

An analysis of the quality of revisions showed that in most cases the revisions were improvements in the quality of the composition. Many surface and word level changes were spelling corrections. There were fewer misspelled words in the word processing group than in the non word processing group. In three cases a rough draft was redone with no changes except that it was rewritten in ink. This type of revision occurred also in the word processing group where two times a document was reprinted so that it would be double spaced.

Many of the phrase level changes in both groups were done in order to use a more precise word for the original word. Sentence and paragraph level changes were often centered around organizational changes for both groups, and these changes generally occurred more often in the early rough drafts rather than in the final revision stages. The use of more sentence and paragraph level revision by the word processing students might indicate that the ability to move sentences and paragraphs easily did help stimulate more global revisions.

Anecdotal notes from the observers in the two classes seemed to indicate that the presence of the computer screens appeared to facilitate more discussion and group editing and revising because the screen provided easier access to the print. Even though both classes were required to use editing groups, the editing groups met more formally but for shorter periods of time in the non word processing groups and more informally but for longer periods of time in the computer room. The observers noted that whenever the word processing group came to class, they placed their disks in the computer and immediately started to write or show others what they had written at the last session. The appearance of the work on the screen seemed to help focus student attention on the writing task at hand. This did not happen in the non word processing class. The students talked with each other, but because they did not immediately focus on their work appearing on the screen, they discussed other things. The effectiveness of the computer in helping students focus on the task at hand has been noted by other researchers such as Marcus (1984) and Newman (1984).

As noted by Woodruff, Bereiter, and Scardamalia (1982); Collier (1983); and Bradley (1982), the importance of word processing as a motivational tool was apparent. This was as true for the girls in the word processing class as it was for the boys. One of the computers was connected to a large screen monitor. Students in the word processing group were especially anxious to use this computer and have their work shown very conspicuously. The ability to produce many quality copies of their work for sharing with others also appeared to be motivational for students in the word processing group. Observers noted that students were much more willing to read the stories of others when they were printed rather than when they were handwritten. The printer used in the study was a high speed letter quality printer. Even though the compositions in the non word processing class were xeroxed for easy access for revising groups, the quality of some of the student handwriting made editing and revising more difficult.

The use of editing and revising groups seemed to be most effective when students were discussing audience. Observations of students working in editing groups showed that more discussion about revision occurred when they were discussing revising for various audiences than during any other global types of revisions. When trying to teach revision skills it might be helpful to begin with teaching about composing for various audiences.

CONCLUSIONS

Word processing programs can be used to enhance the teaching of written composition. The results of this study show that students can learn basic word processing skills quickly with only limited practice, and that the use of word processing does have motivational value. However, the use of word processing can only enhance the teaching of written composition. The most important ingredient in any composition program is a teacher who is knowledgeable about the composing processes. Instruction in pre writing activities, organizational methods, draft writing, revision skills, and provision for publishing student work are necessary parts of any composition instruction with or without word processing. The use of word processing cannot substitute for good instruction in the entire writing process, however, helping students learn to compose and revise using computer word processing programs appears to have significant potential and needs to be investigated further.

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EQUAL EDUCATIONAL OPPORTUNITIES FOR ALL: BEYOND COMPENSATORY EDUCATION

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The spate of books on schools and schooling in the past year or so carries at least one clear message. Andrew Hacker (1984) sums it up like this in an omnibus review called "The Schools Flunk Out" for the *New York Review of Books:* "While the reports stress that education must be improved if we are to catch up with our competitors, they also profess a broader goal: excellence for everyone. *Educating Americans* specifically states that 'academic or educational excellence . . . does not mean the provision of high quality education to only a small group of highly talented youth' " (p. 35). Hacker goes on to say that such is, of course, the American way of discourse. Panels called to address a general audience could hardly do other than to conclude that, whatever the problems and whatever the needs, all must benefit equally from renewed and emboldened efforts. Where the schools are concerned the quest must be not merely for life, liberty and happiness, but also for *excellence for everyone.*

Indeed, who among us would eschew such a goal?

Yet to his credit, Hacker sounds a discord: "The panelists omit saying that what they are proposing is both unprecedented and radical. Equal opportunities for everyone may be our accepted rhetoric. However, as a practical matter, we have never sought to close the gaps between different classes of schools . . . the fact (is) that high quality schooling, as defined by educators themselves, at best reaches about a third of young Americans" (p. 35).

Again, who among us could deny that efforts to provide equal educational opportunities for all have been, at best, halfhearted or, worse, thwarted by self-interest groups with turf and/or privileges to protect. Or, perhaps the very worst of all insofar as the sensibility and credibility of professional educators is concerned, the efforts may have been subverted by misdirection. Without claiming any personal lack of bias or ideological purity, I would like to argue that compensatory education is a case in point of the latter and then look beyond the platitudes to the future.

Compensatory Education

I think that a paper published in 1979 provides a particularly lucid analysis of the compensatory education movement and the issues that surround it. Professor Edmund Gordon (1979) prepared the paper to draw implications for compensatory teaching from a collection of state-of-the-art reviews of theory and practice related to the initial learning of reading; but he also made important points about compensatory education that are as well taken today as they were in 1979.

One of Professor Gordon's basic points is that the main approaches to compensatory education have grown out of a "deficits" concept. "Circumvention of insufficient environment, reparations for neglect, special education to compensate for malfunction—all these approaches involve the underlying assumption of a deficiency" (p. 302). In other words, the inclination has been to compare poor and minority children to so-called "mainstream" children in order to find ways in which the former differ from the latter, to consider any differences to be deficits, and then to devise programs designed to compensate for the deprivation that underlies the deficits.

Without denying that certain differences do in fact exist—at least when groups of disadvantaged and advantaged children are compared—Professor Gordon argues that the traditional deficit approaches are inadequate. The inadequacy is not so much a matter of content as of scope and implementation. The problem is that efforts to achieve equality of educational opportunity too often ignore the fact that there are differences in children's capacity to benefit from schooling. The real need is to provide a system of educational programs that are designed to provide all youngsters with an adequate education, regardless of the level at which they enter school.

The critical question, then, is how to make schooling effective, regardless of social circumstances—how to achieve equality of educational opportunity. The search for an answer must go beyond a deficit conception of compensatory education to a conception of quality education that provides ". . . quality of achievement at the survival level and opportunity to exceed that level" (p. 304). And the answer would apply " . . . not only to poor or minority group children but to all youngsters in the school" (p. 304). What Professor Gordon finally offers is less an answer to his own question than direction for continuing to seek an answer: " . . . even the elimination of . . . adversive social, economic, and political conditions is not likely to eliminate learning dysfunctions as long as schooling is not adaptive to the wide variations in the learning behavior of our pupils" (p. 319).

Focus on Individuals

An audience of classroom teachers might be a bit skeptical about Gordon's challenge. Isn't he, after all, sounding still another call to individualized instruction?

Of course he is! But in this case it isn't just another slogan. Compensatory education has always been beset by too much inclination to generalize and dichotomize and too little inclincation to individualize. By assuming that all poor and minority children share common deficits, educators have justified sending them off to special programs. Thus, they spare themselves the trouble of trying to understand individual differences and the expense of trying to do something with (not *about*) those differences. Repetitious and tiresome as still another call to heed individual differences may seem, it has the certain sound of common sense.

Gordon's message is more than just another professor's exhortation. It is, at the same time an invitation (a) to re-think the purpose and plan of compensatory education, and (b) to devise better ways to enhance the teaching and learning of individual students.

Goodlad (1984) extends some similar invitations in his book, *A Place Called School.* He says, for example, that grouping students in the traditional ways is just a convenient way for schools to show concern while they do nothing about individual differences:

> Grouping children by ability or achievement reflects what many people believe to be desirable or necessary, appears to provide for present individual differences, and helps teachers accom-

> modate to a difficult pedagogical problem. Also it is a procedure experienced by teachers when they were students that is passed along from teacher to teacher with little or no questioning. This form of classroom organization can be justified, many teachers believe, as a way to satisfy the popular plea to individualize instruction and learning. In practice, however, teachers tend to believe . . . that the grouping practice itself has largely taken care of pupil variability. Consequently, providing further for individual differences through instructional modifications is not necessary. Ironically, then, a device practiced in the name of individual differences actually may contribute to thwarting attention to students' individual learning problems" (p. 165).

Goodlad goes on to observe that "tracking" at the junior and senior high school levels compounds the problem. He laments the fact that the very practices devised to provide for individuality result instead in giving up on many individuals. And finally he suggests some ways to cope more effectively with individual differences. While they are not directed expressly to compensatory education, the suggestions are entirely relevant to the topic.

Beyond the Platitudes

Unfortunately, some of Goodlad's words sound like platitudes that teachers must by now expect when the topic is the teaching and learning of individuals. Statements like the following may be more likely to cause a chill of apprehension than a burning desire to move ahead:

> School principals can do much to set the expectation that it is teachers' responsibility to have each child succeed (p. 165).
>
> The good teacher is not the one who fails a third of the class but the one who brings an overwhelming percentage of children to mastery of the material (p. 166).

The ball, it would seem, always winds up in the same court when nobody else is ready or able to take a shot: the teachers'.

But platitudinous or not, there is no escaping the fact that it is indeed teachers who must be responsible for the teaching and learning of individual students. Not school boards, or superintendents, or curriculum directors, or school psychologists, or principals, or learning specialists. And, in school at least, not even parents. The others can help; but the teachers must see to the teaching and learning.

Fortunately, Goodlad offers lots of good advice on how others can help and how teachers can help themselves move toward schooling that is much more sensitive to human diversity and to individuals' attributes and aspirations. I do not mean to say that Goodlad's suggestions do not need more discussion and development. They do. Nor do I intend to sum up the ideas that fill a book. Look and judge for yourself. But I do want to underscore just two of Goodlad's ideas. I think that with serious thought and informed amplification they can be a basis for moving toward the elusive goal of individualized teaching and learning in the nation's schools.

First: "There will continue to be, . . . even under highly favorable teaching conditions for all, substantial differences in intellectual orientation, knowledge and work habits among high school graduates. In part this will be because school is not the only place one learns" (p. 166). This, too, may sound a bit platitudinous. But the fact is that too much of what has been said about individualizing instruction—or about providing equality of educational opportunity—ignores what must be obvious to anyone who has ever observed more than two or three people! (Or, I expect, anyone who has ever been in a school, either as student or as a teacher.) If individuals are in fact different from each other and if those differences are recognized as significant determiners of academic achievement, then it seems foolish to deny—or, as is more often the case, not to acknowledge—that truly successful teaching is more likely to increase than to diminish differences in the outcomes of schooling. Yet one of the *promises*—or maybe the word should be *expectations*—that is sometimes stated and almost always implied by advocates of individualized (or "equalized" or even "effective"—take your choice of terms) schooling is that everybody will turn out about the same if only appropriate learning conditions can be established. This false hope is nurtured by certain advocates of mastery learning, by optimistic politicians and by other platitude sayers who seem to have lost contact with reality. How sweet it is to know that sincere advocates of improved schooling for all, like Goodlad and Gordon, are taking a more realistic stance.

The recognition of reality is important, I think, because it demonstrates a level of sincerity and common sense that has too often been absent from discussions. If those of us in the education establishment will approach the improvement of schools and schooling with a little more sincerity and common sense we will have a better chance of making progress. At the very least, a reallstic set of expectations is more likely to get the enthusiastic support of classroom teachers than more pie-in-the-sky platitudes.

Second, Goodlad calls for the completion of a "common school" experience. Now of course arriving at a consensual definition for "common school" presents no mean task; but my purpose here is simply to acknowledge that I see the call as a step in the right direction. (Granted, the notion isn't exactly a new one; nevertheless, at this point in time I think the step is forward, not backward.) I like the idea because it seems to be another demonstration of sincerity and common sense; and it provides a nice balance to admitting that we really shouldn't expect a common product from the schools and schooling. To oversimplify, the balance comes from, on the one hand, acknowledging that every high school graduate won't be ready to matriculate at Harvard and, on the other hand, subscribing to the notion that every high school graduate ought to be ready to participate in a literate society.

Again, it's the reality that appeals to me. By now it is abundantly clear that the schools cannot be everything to everybody. Yet it seems perfectly reasonable to expect that they be *something* to everybody. Reaching complete agreement on that "something" could be difficult; but the concept of the common school has been with us for a long time, so reaching a working consensus seems a reasonable goal.

To the Future

I choose to interpret certain signs of reality about the direction and expectations of schooling with optimism. But it would

be foolhardy to ignore certain notes of caution. For example, speculating about the school curriculum in the year 2000, Apple writes,

> There are many competing conceptions of what everyone should be taught, of what knowledge will be the most valuable to students and to the society. Defining the basics will prove to be one of the most difficult issues that the schools will face, because the schools will serve as arenas in which various groups will do battle for their differing conceptions of what the society should value" (p. 322).

One source of tensions, he says, will be an intensified struggle between business and organized labor to serve their respective goals; another will be continued fiscal problems that limit the resources available to schools.

In addition to the political and economic struggle, Apple foresees another possible trend that would have a serious impact on teachers: "the form or organization of the curriculum will become increasingly technical and management oriented" (p. 323). In Apple's view, the trend since Sputnik has been toward bigger, more elegant curriculum projects, particularly in science and math, that are "teacher-proof." That is, they specify *everything:* not only what the teacher should know, say and do but also how the students should respond. As a result, teachers are being "deskilled"—as they lose control of their own expertise and time, they lose the options that make teaching a professional activity and, ultimately, their teaching skills are lost through atrophy.

One needs not be overly pessimistic to see such a scenario followed by one with an even more standardized curriculum, more standardized tests and more deskilled teachers completely alienated from teaching.

Now I do not mean to suggest that Apple's "worst possible" scenario is the one that will prevail. But there is enough reality to it—particularly for those of us who have learned from and taught from basal readers—to sound a clear note of caution. Wouldn't it be a shame if the common sense appeal of a common school curriculum became the vehicle to destroy individual teaching and learning?

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EQUALITY OF EDUCATIONAL OPPORTUNITY AND A CORE CURRICULUM

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This paper is one of three on the issue of equality of educational opportunity. A common theme among the papers is the need to develop schools that are more sensitive to human diversity and to the attributes and aspirations of individuals (Otto, this volume; Sherk, this volume). Our concern is that popular interpretations of various commission reports on the status of schools has led to increased standards for promotion and graduation without a critical examination of the effects such practices may have on individuals, both students and teachers. In the first paper, Otto reflects on the need to make schooling effective (equal) for all students regardless of social circumstance. He concludes by acknowledging that a core curriculum may be one way to provide students with a common school experience, stressing that schools cannot be everything to everybody but should be something to everybody. John Sherk, in the other paper, keys his remarks to problems of providing effective schooling for students of special circumstance, black children of the urban poor. He argues that the present organization of high schools is ineffective for these students and suggests alternative schools as a way to meet the individual needs of students who differ from the "mainstream" in their expectations of and orientation toward school.

The purpose of this paper is to focus on the notion of a core curriculum as a way to fashion a common school experience in which access to socially valued information and conceptual skills is equalized. To do so, I first briefly sketch changing conceptions of what "equal educational opportunity" has meant in our society. I then summarize current theory and research trends in cognitive psychology which suggest that the subject matter students learn in school exerts a powerful influence on the cognitive skills they develop. Finally, implications of the research are discussed in terms of (1) inequities in school outcomes that result from differentiating the curriculum by ability groups, and (2) constraints domain specific knowledge place on reading-learning skill development.

CHANGING CONCEPTIONS OF EQUAL OPPORTUNITY

Originally the notion of equal opportunity in American education was restricted to mean that those who had the ability to profit from schooling would not be denied access to it due to social circumstance (Cohen & Neufield, 1981). Access was to a common body of knowledge and skills for those most able. For the school crusaders of the 1800's, the mission of public education was to strengthen community ties, instill shared moral and political values, and to distribute knowledge among the rich and poor to reduce the educational and political effects of economic inequality. Schools were to equalize conditions among social classes and served as agencies of political and moral cohesion. As society changed, schools became institutions that mediated between family life

and an increasingly technical and impersonal social order (Kliebard, 1979). With these changes came strongly competitive and controversial conceptions about the function of schools and what types of knowledge were of most value to society. Some argued for a differentiated curriculum tailored to the "natural" endowments and future life roles of various groups of students while others argued that such an approach gave schools the power to determine the social and occupational destinies of students. The latter groups stressed that the curriculum suited for the best and most able students was the best curriculum for all students.

Controversy particularly centered on the high school curriculum as that institution changed from an agency for the intellectual elite to one with near universal attendance. Social efficiency practices dominated school reforms designed to cope with the attendant diversity among students (Cohen & Neufield, 1981). Schools came to serve as agencies that were to prepare students for adult life roles, and it was deemed more scientific and efficient to differentiate the curriculum for students of varied ability who would do different types of work. Equal opportunity came to mean equal access to school sites rather than to a common body of knowledge and skill. The inequity of stratifying knowledge or judging student ability on the basis of standardized test scores, for the most part, was not questioned. Test scores were used to justify the assumption that not all students were capable of learning the content and skills associated with programs of studies designed for students in college tracks.

Recent commission reports and various reform proposals (e.g., Sizer, 1983; Goodlad, 1984a; 1984b) reflect on-going controversy about what equal educational opportunity means — equal access to school sites or equal access to a common body of knowledge and skills — as well as competing views about how it can be achieved. Most reports, however, recommend returning to a core program of studies as a means of diminishing the fragmented curriculum in schools and inequities that exist in the way students are treated in school (Cohen & Neufield, 1981; Cross, 1984; Ravitch, 1984a; 1984b).

Schools have responded to recommendations that they increase course offerings in science, mathematics, and other forms of knowledge associated with technological changes in business and industry. But these and other reforms that have been implemented reflect quick-fix technocratic responses to appeals for excellence that involve discipline, increased standards for graduation, and competency testing (Giroux, 1984a; 1984b; Toch, 1984). The more complex issues of what or why certain forms of knowledge should make up the core as well as how to teach it so that all students have an equal opportunity to master it have been ignored.

Current theory and research on the effects of domain specific knowledge lend some support to those who argue that a differentiated curriculum results in unequally distributing knowledge and skills to students placed in low-ability groups or general/vocational tracks. Results of this research indicate that cognitive skills, like those commonly associated with reading instruction, evolve with and are constrained by the accumulated knowledge students acquire in specific content areas as they go through school. This research suggests that different content and modes of instruction are means to different goals not equivalent routes to the same goal, thus challenging the assumption that students can follow any program of study and leave school with equal knowledge and skill needed to participate in a literate society. Trends from this line of research will be reviewed next and then implications will be discussed in terms of (1) school practices which may perpetuate inequality of treatment among students through ability grouping and curriculum differentiation, (2) practices perpetuated by the reading establishment that may add to this unequal treatment.

KNOWLEDGE EFFECTS

A dominant theme among researchers in cognitive psychology and artificial intelligence is that structure, organization, and meaning are central aspects of human intellectual performance which are closely tied to the life experiences of individuals. Most schema theories are frameworks for investigating how culturally specific information affords flexible access and use of prior knowledge in academic and nonacdemic setting (Bransford, 1979; Rogoff & Lave, 1984). The search for "pure" cognitive abilities that are knowledge independent and highly generalizable across tasks and materials has diminished. Researchers now question whether general capabilities like comprehension, reasoning, or problem-solving exist as previously theorized. Instead of seeking to identify and measure such global all-purpose skills, researchers are more concerned with studying the characteristics and effects of knowledge that is domain specific, cumulative, and acquired over long periods of time (Anderson, 1982; Glaser, 1984; Rogoff, 1984; Sternberg, 1984; Voss, 1984).

This shift in research and theory reflects a growing body of evidence which suggests that individual differences in cognitive performance are often due to the knowledge and experience subjects bring to experimental settings rather than to some hypothetical general ability factor (Glaser, 1984). Thinking is now seen as a practical activity in which people use what they know to understand, solve problems, remember, and to learn new information. Such activities are goal directed and intricately tied to the social and contextual (i.e., physical, conceptual, and cultural) settings in which they occur.

Schooling, within this framework, is just one type of socially organized practice which has its own particular purposes, subject matter, activities, standards, and cognitive effects. And the social practices associated with schooling — such as assignment of children and topics of study to grades or use of test scores to assign students to particular programs of study — are directly implicated as influencing the quality and level of cognitive ability students achieve. Trends in developmental research will be summarized to illustrate this shift in thinking and then research more closely tied to the field of reading education will be reviewed.

Developmental Trends

For years developmental psychologists emphasized differences in cognitive performance among children of various age groups. A guiding assumption in the field was that as children mature physically their minds go through various stages of transformation until they reach a stage of cognitive organization which enables them to engage in hypothetical reasoning and abstract thought. Knowledge, especially

knowledge acquired through school learning, was treated as a nuisance variable. The research goal was to assess pure mental capabilities using supposedly content neutral laboratory tasks in order to chart changes in cognitive organization and ability resulting from maturation (Brown, Bransford, Ferrera & Campione, 1982; Rogoff, 1984). Various maturational stages were assumed to reflect general capabilities which set limits on what students could learn and how they could think.

This assumption was challenged in the 1970's by findings from training studies which indicated that age-related differences in thinking and memory performance could be eliminated if younger or less-able subjects were provided task-appropriate strategies. For example, memory researchers found that when young and retarded children were taught or induced to use cumulative, organized, or elaborative rehearsal strategies their recall matched that of older or more capable students (Brown, et al, 1982). Such findings suggested that young and retarded subjects differed from older students in their ability to employ effective learning strategies rather than in memory capacity *per se*. Development was not just movement through various cognitive stages but involved the gradual acquisition and increasingly sophisticated use of strategies for learning and remembering.

Chi (1978; 1979), in a series of studies, challenged this strategic capacity notion. Working with young chess experts and children of various ages who differed in knowledge about dinosaurs, she demonstrated that the problem-solving and memory strategy advantage of older subjects did not occur if younger subjects had greater knowledge of the specific content in a problem or in the materials to-be-remembered. Chi interpreted her results as showing that as children acquire knowledge within a content domain they also acquire strategies for using that knowledge effectively. Based on similar findings, Chi (in press) and other researchers (Anderson, 1982; Brown, et al., 1982) now suggest that (1) knowledge and strategy development are interdependent, and (2) knowledge of specific content domains is in itself a crucial aspect of cognitive growth.

Many researchers now feel that cognitive development involves recurring, abstract, and pervasive changes in the ability to reason and learn which result from gaining knowledge and using that knowledge in a variety of content domains in school. This suggests that changes in mental ability previously attributed to maturation or the growth of strategies may reflect older subjects' greater experience with and increased knowledge about school subjects and academic learning tasks. Moreover, student capacity to learn particular subjects or perform various intellectual tasks lies not only in the knowledge and experience students bring to classroom settings but also in the expectations placed on them in specific grades and programs of study in school.

Reading, Problem Solving, and Aptitude Research

The wide-spread influence of knowledge on cognitive performance also has been demonstrated repeatedly in studies related to comprehension, problem solving, and intelligence. Research by Voss and his associates (Bisanz & Voss, 1981; Voss & Bisanz, 1984; Voss, Fincher-Kiefer, Green & Post, in press; Voss, 1984), for example, reveals that as children mature they have more knowledge about information in texts, more knowledge about text structures, and more experience using what they know to solve problems and learn new information. These researchers have found that older children are able to make more accurate predictions and recall more information about events and characters in complex stories because of (1) their greater experience using story structures to guide comprehension and memory; and more importantly, (2) their more extensive knowledge about how people resolve personal conflicts or overcome problems in dealing with others in society (cf., Poulson, Kintsch, Kintsch, & Premack, 1979). That is, as children mature they gain more knowledge about human social interactions and can exploit that knowledge to guide their understanding of stories. However, should the information in a story require knowledge from another domain, like the causes and effects of pollution, then the recall of young children who have that knowledge will exceed the recall of older students who do not.

Similar results have been found in studies comparing the comprehension and problem-solving performance of experts and novices in such diverse areas as baseball, mathematics, political science, physics, and mechanics (Voss, 1982; Voss, et al., in press; Voss & Bisanz, 1984). Experts are more effective problem solvers or comprehenders in these domains precisely because they know more about them and have spent more time using what they know to understand and solve problems in their area of expertise. Such skills, however, may not generalize across content domains. Experts in chemistry perform like novices when asked to solve political science problems, and those who are skilled in school mathematics may encounter difficulty transferring their skills to applied settings like tailoring, carpentry, etc. (Lave, 1977; Voss, et al., in press.)

Thus, instead of searching for abstract, all-purpose, or general intellectual capabilities, researchers are now trying to identify (1) the cumulative effects of learning within specific subject-matter areas; (2) the effects learning particular subjects have on promoting generalizable knowledge and skill, and (3) the circumstances in which prior knowledge interferes with or facilitates new learning (Bereiter & Scardamalia, in press; Heller & Hungate, 1984). This research trend suggests that what students get taught in school may be as powerful an influence on the intellectual skills they develop as the methods employed to teach them.

The issue highlighted by research on knowledge effects is that individual differences involve more than just differences in capacity to learn. The major implication is that what gets taught and how it is taught to diverse groups of people counts. Learning occurs within the conceptual context of individual experience and personal knowledge. That knowledge must be identified and exploited for growth to take place and various capacities to develop. This cannot be accomplished if diversity is considered a defect that sets limits on what students can learn rather than a challenge for initiating instruction which leads students to go beyond the level of knowing they bring to classroom settings.

IMPLICATIONS

The domains of knowledge that get embodied in a school curriculum and who gets taught particular forms of knowledge are value-laden issues that should not be left only to psychologists to resolve on the basis of research results alone

(Giroux, 1984b; Hirsch, 1983; Kliebard, 1979). Nevertheless, the theory and research trends summarized above (1) challenge the equity of differentiating the school curriculum by ability groups established on the basis of standardized test scores, and (2) undermine traditional approaches to teaching reading that rely on general all-purpose skills.

To summarize briefly, research on the effects of domain knowledge indicate that the conceptual skills students attain are intertwined with the subjects they learn in school. That knowledge and skill may not generalize across situations and content domains as transfer has been found to be activity and content specific. Students who spend time in school learning to repair automobiles, for instance, may develop the reasoning skills associated with that practice but not those skills associated with spending time learning science, literature, or mathematics. Such findings suggest that different curricula and modes of instruction do, in fact, lead to different outcomes and call into question school practices in which students are expected to learn different things while their academic capability is judged on the basis of tests that may not assess what they have learned.

Use of standardized tests is entrenched in our educational system and could increase given the current emphasis on raising standards and competency testing. The content of these tests, however, represents a "hidden" core biased to assess the acquisition of some idealized course of studies taken by students who aspire to go on to college. For students grouped or tracked into curricular programs that do not teach the presupposed curriculum embodied in these tests, the results have inequitable consequences. These students are tested on what they ought to know not on what they may have studied (Sternberg, 1984). Results of the tests are then interpreted as indices of academic ability to channel students into programs of study that can only perpetuate their inability to perform well. Many of these students and their teachers soon realize that the competition in school is indeed loaded against them (Cohen & Neufield, 1981; Sherk, this volume).

From this perspective, implementing a core curriculum which all students are to master at some basic level can only diminish the unequal outcomes of school for students who vary from the mainstream in their personal experiences and orientation toward schools. Implementation of a core within the existing instructional, organizational, and administrative structures of education, however, would simply maintain the current effects where some students learn more and others less. As noted by Cross (1984) "it is simply unrealistic to think that all students can learn from the same materials, to the same standards of performance, in the same amount of time, taught by the same methods" (p. 171). Without major changes in the way schools and instructions are organized, students in low-ability groups or general/vocational tracks would simply form the lower-ranks of students in the core.

It is, however, unrealistic also for reading educators to assume that traditional forms of reading instruction will help all students acquire the skills needed to participate in a literate society. For too long reading teachers have hidden behind the formal aspects of language skills (e.g., sentence and text structures) and global learning strategies (e.g., SQ3R, REAP, etc.) at the expense of helping students acquire the cultural, scientific, historical, and political knowledge which foster skill development.

van Dijk and Kintsch (1983), for instance, now argue that comprehension results from people using knowledge strategically to construct interpretations of texts. In their current model there is no single (general) set of comprehension skills that apply to all situations, people, and texts. And they characterize comprehension as the result of variable conceptual processes which differ among and within individuals depending upon (1) the situations in which the processes are employed, (2) the language/culture of the people doing the processing, and (3) the types and topics of the texts being heard or read. Similar notions also prevail in the literature on study-learning strategies (Glaser, 1984; Sternberg, 1984).

The research by van Dijk and Kintsch and the research previously reviewed strongly undermine general approaches to reading-learning instruction in which students are permitted to read and study anything so long as they are acquiring and practicing skills. Results of this research underscore the point that reading and learning are not content neutral skills that once acquired can be transferred and used with all sorts of texts in all subject-matter areas. Moreover, this research suggests that the specific content students are expected to read and to learn in school may exert an equally powerful, if not more powerful, influence on the levels of literacy students achieve as the methods and materials employed to teach them.

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DON'T BLAME IT ON READING: AN ANALYSIS OF FACTORS CONTRIBUTING TO THE FAILURE OF SECONDARY SCHOOLING IN ONE LARGE CITY

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For students in the schools in which I work, lack of reading ability is like the tip of an iceberg; everyone wants to talk about the part of the iceberg they can see, and are either unable to talk about, or unaware of the larger part beneath the surface.

Without belaboring the iceberg metaphor, I would like to label the iceberg "Schooling in America," the sea in which the iceberg floats as "society," and examine, subjectively from a perspective somewhat removed, the forces impinging on each.

One of the ringing tenants of the American system, and one which attracts the attention and envy of underprivileged people the world over is "A free and liberal education for all children to the extent they can profit from it." Moreover, the common school is the great "leveler" in a free society, one in which the rich man's son and the poor man's son rub elbows as a result of the common experiences they share in school.

Students in the schools in which I work are sons and daughters of poor men and women. And most of them are black. They do not go to school with the sons and daughters of the well-to-do. Children of the well-to-do, for the most part are white and live in suburbs which surround the city.

The school buildings in the city in which I work are old, worn, and dilapidated, like the surrounding neighborhoods. People in charge say there is no money to fix up the schools. The atmosphere of most schools is depressing. The school buildings in the newer suburbs are bright, spacious, modern, and inviting.

Students in the suburbs can choose courses in math from pre-calculus to differential equations. There are computer labs in almost every school. In my city, most high schools have only one advanced math class, and they rarely include anything beyond college algebra. Few computers are available, and little interest is shown in them. In the high schools in my city

there are few if any advanced placement classes in the disciplines. Little interest is shown in taking difficult subjects.

Admittedly, the things I have mentioned could be described as surface features. It is possible that excellent education could be going on where there are dilapidated school buildings and where pupils lack the fancy frills I have mentioned. And, it is possible that if school boards, parents, pupils, teachers, and patrons in the city in which I live would make up their minds to do so, they could turn their schools into excellent schools, equal to or better than some of those in the suburbs. The raw material is there. The boys and girls of the urban center have great potential.

What is lacking? Purpose, self-confidence, hope. These factors are lacking in students. They are also diminished in teachers, parents, administrators, and school board members. It is upon this trio of elements, purpose, self-confidence, and hope that I want to elaborate, and, in so-doing, point out the futility of attempting to improve reading from a narrowly academic-cognitive-linguistic perspective.

Purpose: to place before oneself as a thing to be done or attained.

The definition of purpose embodies a personal commitment to accomplish some end result. The word "oneself" clearly indicates that intent in the definition. However, in reading pedagogy and practice, the responsibility for establishing or setting a purpose is often handled by the teacher in a didactic manner; "I want you to read to find out . . . " It is possible that many pupils have no experience in "having to place before themselves" a reason or purpose for reading any material or subject matter all day long in school. They merely read because the teacher directs them to do so. We, as teachers, believe, perhaps, that students lack the maturity or the experience to read for valid purposes. Therefore, in an attempt to circumvent students' inefficiencies and irrelevancies, we take from them the most important reason to do the thing we want most for them to do, to become independent, that is "purposeful" agents in their own task, reading.

And, what are the consequences? Recently, in a study designed to develop a metacognitive strategy in high-achieving fifth grade readers, I was told by one such student who had read a selection about koala bears who prefer to eat leaves from the blue gum tree that the selection was about Coca Cola bears and blue bubble gum trees (Leibert and Sherk, 1984). I laughed, and the student became angry because he thought I was putting him down. I replied that I had understood what it meant and that he had to accept responsibility for not understanding, and why didn't he? When he calmed down, we agreed that his recall of the selection was asinine, and that he was capable when reading carefully of understanding and recalling accurately. He went on to tell me that he often did not understand what he was reading, that whether he did, or didn't usually was of little consequence. He said the teacher most always could be relied on to tell what it meant afterward. Reading, for this student, was not a search for meaning. It was an exercise. If it made sense, fine; if not, no matter. "Someone will always tell you what makes sense."

The learning of purposive reading proceeds from a social-external context to become a personal-internal process, the same way that language is learned first socially-externally, then is internalized and personalized. What is the social contest for purposive reading beyond the classroom walls? What models are available for pupils of the use of purposive, independent reading which stimulates thought, engenders problem solving and/or critical discussion? Teachers? Administrators? Politicians? Journalists? Sports celebrities? Entertainers? The answer apparently is, "none of the above." The President states that he is not a reader. Reading is rarely mentioned on television, and people are almost never shown doing it. In fact, it is fair to say that there is no compelling social context for purposive reading in this country, and no viable models for students to emulate in its use. Purposeful reading is one of those things we all talk about, but which, in the everyday life of urban pupils, simply does not exist.

If reading is not purposeful, it is merely an exercise; a schoolhouse game with no relevance in the larger, waiting world.

Beyond this is the question of the purpose of schooling itself for students in urban centers. There is little doubt that there is a difference between what we as teachers, administrators, professors, and school boards see as the purpose of schooling, which is to learn, or to learn how to learn and, possibly, to learn how to think, and what parents and students see as the purpose of schooling, which is to obtain a credential which permits employment. This means-ends difference in viewpoint has much to do with the manner in which teachers, administrators, professors, and school boards view students and vice-versa. The main purpose of the great majority of students in urban schools is to get a high school diploma. They must have a high school diploma, they believe, or they won't be able to get even a menial job. If one fills out a job application which indicates the applicant does not have a high school diploma, the application usually ends up in the waste basket. So the task for urban students is to hang in there until graduation, which is almost inevitable. Many students choose easy courses over difficult ones because it is safer; if one fails a difficult course, one might not graduate. For most students, graduation means only that they endured, that they played the game.

In my opinion, one of the challenges of the next generation is to recapture the purposefulness of schooling. This challenge involves the classroom teacher engaging students in purposeful reading-thinking activities, as well as the larger society resolving the difference of viewpoint about what schooling ought to be.

Thus, one of the parts of the iceberg which lies beneath the surface is purpose: What is the purpose for reading? What is the purpose of learning? What is the purpose of schooling?

Self-Confidence

Persons who possess confidence in themselves are ready to try, to invest energy, to venture forth, to take a chance. A chance of what? Of failing. The reason that self-confident persons are willing to try at the risk of failing is because they know, through experience, that they possess inner resources which will eventually enable them to succeed. It is, therefore, largely a matter of the balance between past success-failure experiences which determines whether one will keep on trying or whether one will withdraw. Those who withdraw, do not try, have become convinced that they cannot succeed, or

that there is too high a personal price to pay for success to be worth the effort.

Reading, learning, and thinking require effort, energy, a willingness to try, to expose one's thoughts to others; in short, risking failure. In order to learn, one must be aggressive, particularly in a competitive academic system. If one ceases to be aggressive, one does not learn very much.

Most teachers in urban schools in my city try to encourage pupils to exert effort to learn in their classes. Pupils in the lower grades respond well to such encouragement, and social reinforcement is a well-established part of their school experience. These younger students have not reached a well-developed state of self-awareness. When they are in school, they learn as they are able, but they are not aware that learning is happening to them. They work hard to satisfy the teacher's requests of them, and they are pleased when the teacher reinforces them with praise for their efforts.

Somewhere along the line, probably between fifth and seventh grades, these pupils begin to become aware of themselves as persons, and they construct an image of self. Such pupils begin to see themselves in relation to others and in relation to their social context, rather than, as was true in earlier years, as being the center of all events and activity. In this period, students begin to interpret what happens to them differently than they formerly might have. Frequently teachers are not attuned to these subtle changes, and are surprised when pupils react differently to things they and other teachers have been doing and saying all along.

Language usage may serve as an example of this phenomenon. Urban pupils frequently bring street language to school with them. In the primary grades, teachers work on shaping street language toward more commonly accepted language of the dominant culture. Young children's speech is routinely corrected by teachers in the classroom, and such correction is accepted by children as a matter of course.

Pupils in the upper elementary grades and in junior high school do not accept correction of their language as readily. Why should this be the case? These students begin to notice that their classmates, friends, siblings, neighbors, and relatives speak the way they do. In fact, many know only one person or group that uses language different from their own; the teacher or teachers in school. At first this may not be conscious awareness, only a vague feeling that something is wrong. But when teachers, who feel they are doing the right thing, continue to demand standard English in the upper elementary and junior high levels, students who are the objects of this well-intended procedure feel they are being "put down." Students also notice at this stage that grades teachers give for participation in class and on tests have a bearing on their status. Students who are able to adjust their language to conform to the teacher's expectations are rewarded; those who are not, are not.

Recently in a seventh-grade social studies class, I witnessed the following exchange: Teacher, writing on the board, CANAL — "What does this word mean?" Class: no response. Teacher: "Ralph, I think you might know. Give it a try." Ralph: "A dish of water." Teacher: "What?" Ralph: "A dish of water." Teacher: "How did you ever get that idea? All right class, turn to your glossary and look up the word, 'CANAL'."

Two questions: What is going on here? What is the effect on Ralph directly and on the class indirectly? Answers: When the teacher asked the question, there was no response. By this time, students have learned not to risk exposure by answering questions of that type. So Ralph was put on the spot. When he tried, saying "A dish of water," it did not register with the teacher. Ralph was saying "A ditch of water." Ralph says "dish" for "ditch," "muss" for "must," "mo" for "more," "flow" for "floor." The teacher's problem was that she could not cope with Ralph's rich vocabulary of homonyms. But all the other students knew exactly what Ralph meant because they speak his language. But no one came forth to enlighten the teacher. Guess why. What was the effect on Ralph and the class? How would you feel if, when looking in the glossary, you found the definition, "A trench or ditch filled with water."? You might mutter to yourself, knowing that you and the class were had again. You don't get any credit even when you do know the answer. It doesn't do much for your self-confidence.

This matter of self-confidence and how it is eroded by schooling is not confined to language. The discussion could have focused on world knowledge, values, behavior, or any of a number of other topics. It is sufficient to say that the current arrangements in place for the schooling of students in the urban center have the effect of diminishing self-confidence at the very time when it is most crucial that ego strength be enhanced. In turn, teachers interpret students' reluctance to respond as indifference rather than lack of confidence, and they gradually come to believe that such students really can't learn or won't learn.

Finally, in my city the local newspaper is kind enough to publish detailed information on test scores, by grade level and school, for the benefit of the public at large. Detailed analyses of how far below some "norm" these students are and how poorly they are all doing in school are provided. Presumably there is no bad news from the suburbs in this regard because the scores of students in suburban schools are never published. This public service does great things for the morale and self-confidence of parents, teachers, and students in my city.

There are some aspects of the organization of schools which serve to undermine the self-confidence of many students. One of these is the exclusive use of the competitive system for assigning grades for class work and for report cards at the junior high and high school level. In this competitive system each student must earn his own grade. There are only so many A's and B's to be given out, and only the top students can ever hope to attain them. Another version of this system is that students are awarded grades based on the number of assignments they complete and are penalized for the ones they don't complete. Either way, it is every student for himself, in accordance with tradition and the American way. In the worst cases, teachers use grades as weapons against students in an effort to control their behavior.

Many students interpret the competitive nature of grading and classroom activity as impersonal and evidence of the fact that teachers are not interested in them as persons or in what they think or know. Outside of school, students function best in their group. They receive support from the group and frame their self-concept in the context of the group. Many students are from single-parent families or are members of extended families. They are valued, and in turn, value group identity.

For the majority, this orientation to group membership and group identity is not simply a matter of choice; it is a matter of survival. They rely on the group and the group reciprocates. Emphasis upon competition in the classroom and the reward for individual initiative, hard work, and deferred gratification are lost on them, and these practices serve to strip the students of the strongest support they have, their group orientation and the support derived from it.

The emphasis on competition in the classroom and the virtues teachers accord to individual effort and initiative have another, less obvious, effect. In groups, leaders emerge. Outside of school, in groups the natural leaders come to be recognized by group members, for whatever reasons. In every group, each member can identify the formal or informal leader. The leader is also aware of his position. In school, the individuals who are the natural leaders on the street frequently have no status in the classroom. This makes no sense to them and to others who recognize leaders as such. These natural leaders, in fact, are often accorded the status of troublemakers by the teacher. Because of their informal status, accorded to them by the others, they are in a position to undermine or sabotage the teacher's efforts. In effect, the classroom teacher who is insensitive to the informal power structure because he/she overlooks the natural leaders who form it, inadvertently strengthens the resistance to the competitive system, and may not even be aware of doing so. The virtue of enlisting the support of the natural leaders, and enabling students to make use of their natural inclination to work cooperatively in groups remains largely unrealized in most of the classrooms of the secondary schools in my city.

Self-confidence, or the lack thereof, is one of the elements of the iceberg which lies beneath the surface.

Hope:

In my city the unemployment rate for black teenagers is approximately 36%. Among black adults the rate exceeds 18%. If one is black and poor, what is the route to a better life? A good job. When teachers admonish students to study their lessons, they often do so in the sincere belief that, cumulatively, such effort will result in improving the quality of their lives. In this respect, I find that often students are less naive about the realities of the world in which they live than are the teachers. Many teachers, including black teachers, do not live in the city; they only work there.

Education and community leaders in my city tend to think of the educational problem of blacks and certain other minorities, such as Hispanics and native Americans as similar to those of the poor in general. This may not be true. These particular minorities may be what are referred to as "Castelike" minorities (Ogbu, 1984).

"A castelike minority group is one incorporated into a society involuntarily and permanently and whose only means of escape from its enforced subjugation is through 'passing' or emigration routes that are not always open." (Ogbu, 1984). It is characteristic of castelike minorities in most societies that they face a job ceiling. "It appears that there are highly consistent pressures and obstacles that selectively assign such groups to jobs at the lowest level of status, power, dignity, and income while allowing members of the majority to compete more easily for more desirable jobs above that ceiling." (Ogbu, 1984).

Whether or not one accepts the assertion that there are differences among minorities regarding their status in this society, a more important consideration, particularly for schooling, is how such minorities see themselves. We are told that such minorities (referred to above as "castelike") do not accept their low status in occupational areas, for example, as legitimate outcomes of their individual failures and misfortunes, but rather see barriers in employment, education, etc. as the primary causes of their low status and poverty. In other words, these groups blame the system. This is in contrast to the views of other minorities, and of the larger society, that the system is open and that it is up to each individual to take charge of his destiny and to, in effect, "play the cards he is dealt in life."

One more of the complexities teachers face in the classrooms of urban schools is that seated in the same classroom may be students influenced by or actively subscribing to these differing points of view. In urban schools, students who want to work within the system, who respond positively to schooling and who attempt to give their best efforts are confronted with classmates who continually try to put them down, to convince them that they won't make it, or suggest that their efforts are making everyone else look bad, the "if no one does much, no one will expect much" psychology. Furthermore, the pressure on the student who is actively involved mounts as he/she progresses through the grades. Those who are convinced the system is to blame and nothing is to be done, learn "survival strategies" which are incongruent with competencies required for school. Meanwhile those students who are striving to succeed encounter more severe tests of their commitment, at the same time their experience with the world is telling them that, in fact, they may be chasing rainbows.

It may seem that these matters are far removed from the day-to-day experiences that students have in school. But they are not. Students who are taught subjects in school which are at odds with their own experiences in the world outside become confused, discouraged, cynical, and frustrated. Many students learn principles of social justice in school and see in the world that the school itself is an instrument for the replication of an unjust system. Students learn about careers and study subjects which purport to prepare them for careers they know they will never enter, for jobs they will never get.

Beneath the surface, one of the elements of the iceberg is hope. If there is no hope, how can teachers convince students they should expend effort, take risks, invest themselves in one of life's most difficult tasks: the attainment of literacy in its fullest sense?

I want to return to an idea mentioned earlier in this paper. That idea is the futility of attempting to improve reading from a narrowly academic-cognitive-linguistic perspective.

Reading is not the most important factor causing schooling to be dysfunctional in the urban districts. It is the tip of the iceberg, the most obvious factor, but, in reality, reading is only a symptom.

Reading is at least as much a sociological phenomenon as it is a linguistic, cognitive and/or academic one. For most of the six or seven decades of this century, during which the research in our field has been produced, we have defined reading solely in linguistic terms. Recently we have begun

seriously to consider cognitive factors in reading. Affective and sociological considerations have never been paramount in our thinking about reading.

We have reached a stage in the evolution of our discipline where it is necessary, I believe, to inform others that reading is not the remedy for all educational ills. I encounter an attitude, particularly among teachers at the secondary level, which holds that if the reading ability of students could be improved to what it formerly was in their perception, then school would work again. By that I take it to mean that teachers believe schools can become what they used to be, and teachers can teach the way they used to teach. I do not think that reading improvement alone will make that much difference. Reading improvement would probably have some positive effect on schooling at the lower grade levels. But at the secondary level, reading becomes a tool for independent learning. In order to use reading effectively and to function independently as a learner, students need strengths which go beyond reading: they need a background of knowledge and information to take with them to the text; they need facility with language, particularly aural-oral language transactions; they need skills in inquiry, so that when they engage text, they are able to extract from it that which will satisfy the requirements of the task; they need to, when appropriate, be able to reason, to conclude, to infer, to summarize, etc., in short to manipulate elements of text and prior knowledge to demonstrate competent critical thinking and reasoning abilities.

In urban schools today the majority of high school students have an inadequate fund of general knowledge, lack effective communication skills, do not know how to ask questions of themselves or others in order to get necessary information or to clear up confusion, and most do not reason effectively. Yet they are exposed to the same curriculum and curriculum materials as other students. They are expected to, at once, learn the subjects they are studying, and learn the skills necessary to learn the subjects.

Under these circumstances it seems to me evident that urban secondary schools can never again be what they once were (if, in fact, they ever were). At one time the secondary school, or the comprehensive high school, was an academic institution designed for the needs of the whole individual, in the words of James Conant, the "crowning jewel" of the American educational system, unlike anything to be found elsewhere in the world (Conant, 1959). In a simpler age there were academic standards, tracks for students of different abilities, school dances, clubs, balanced intramural and interscholastic sports and physical education programs, driver's education and counseling services. Today the urban secondary school, the comprehensive high school, is but a shadow of its former proud image; it is no longer very comprehensive and certainly no longer the "crowning jewel" Conant described.

It seems appropriate at this point to offer some suggestions which might have the effect of improving some of the conditions outlined previously. The premise upon which these suggestions are based is: a single secondary school model, such as the comprehensive high school, is dysfunctional for the urban population it must serve. In its place, less comprehensive but more effective, narrowly-focused schools should be established.

As I have not thought about names for the various schools, I'll simply refer to them as Type A, B, C, etc.

Type A High School

Purpose: High School Equivalency and Job Entry Skills.

This type of secondary school should be established for students who want to leave school as quickly as possible and enter the work force. It should be a four-year school, but organized in such a way that many students could be finished in three years. Four components of the school program should be emphasized: (1) Individual counseling. (2) Group career counseling. (3) Minimum high school competencies in English, social studies reading, science reading, and math, including computation, concepts and problem-solving. Students successfully completing the program in this school would pass a test similar to the GED High School Equivalency exam. This high school should have a large staff of counselors (twenty for a school of 1000 students), and the counselors should individualize the instructional program of each student. (4) Work experience.

A Type A High School would function much like currently existing, successful adult education ABE and GED programs. This type of High School would probably best be run on a year-round basis with a school day no longer than about four hours. The instructional staff would be made up of teachers interested in basic skills instruction and working with non-traditional students. There would be few, if any, elective courses, and none of the usual elaborations of secondary schools such as art, music, or physical education.

Job entry skills would be learned at the workplace in a kind of apprenticeship arrangement. Potential retail clerks, mechanics, receptionists, maintenance engineers, health service workers, etc. would be receiving their initial job training on site and earning some token compensation from participating agencies in the private sector. The money saved because of reduced instructional costs, on a per-pupil basis, could be used to set up a network and incentive system for businesses and industries in the local area to participate in the program.

What the program for a Type A High School represents is what manys tudents say they want, not what educators want. Traditional comprehensive high schools of today are not set up for the 25% of students who would attend a Type A high school. Efforts to teach these students and meet their needs have not been successful. An attempt should be made to give these students a school of the type they say would be useful to them.

I make a case for the Type A High School recognizing a legitimate fact of life in America today. That is, prior to about 1960, the students for whom the Type A High School is organized were nevere seen in the high schools. In earlier times, the lower 25% to 30% of the cohort of any school community dropped out at the eighth or ninth grade level, or at age 16, whichever came first, and entered the work force. It has only bee in the last 25 years or so that these students have remained in school, mostly because compulsory attendance laws are being more rigorously enforced (this because school budgets are built on state reimbursement formulas, of which average daily attendance in school is a major factor) and because the job market for day labor and domestic service has largely dried up for these students because of a surplus of older workers in the labor force.

The comprehensive high school stresses an academic curriculum little different from what it was in the early years of this century. Students at the lower end of the achievement and ability range, who today remain in school for twelve years, have never been able to cope with this curriculum. But they can learn, and what they desire is to learn

things that are within their ability to achieve, that will enable them to work productively, and that will give them dignity and a sense of accomplishment. What they don't need are the ireelevancies (for them) of homework assignments they can't do, report card grades and test scores which degrade them and simply illustrate the inappropriate nature of the standard curriculum for them. The Type A High School, or something like it, in my view, does address their special needs.

Type B School-Within-A-School High School

The purpose of the Type B High School (Boyer, 1983) is to prepare every student for some type of higher education, whether it be junior or community college, four year college or university work or a combination of both.

The Type B High School is organized in clusters of roughly 250 students in grades nine through twelve and eight to ten teachers who form a school within the larger school. These teachers share the teaching of all subjects in the basic curriculum. They are: four years of communications studies (traditionally called English), four years of mathematics, four years of social studies, and four years of science.

Students and teachers stay together for the entire four years. As each class of sixty to sixty-five students graduates, a new group of ninth graders joins the students who have moved into the tenth, eleventh, and twelfth grades, respectively.

Because students and teachers stay together for four years, group cohesiveness and group identity are allowed to develop. The emphasis is on cooperative learning groups in the classroom rather than on the exclusive use of the individual and competitive model of learning used in today's secondary schools. Each unit develops its own administrative and organizational arrangements. They are, in effect, a school unto themselves. This includes, among other things, such aspects of schooling as testing and grading practices, monitoring attendance, reporting to parents, counseling services, and the like.

Reasons for clustering students and teachers this way are several. Clustering permits an alternative to the impersonal atmosphere of the strictly age- and class-graded traditional high school of 1500 to 2000 students. Instead of having to identify oneself as a member of a class of 500 ninth graders, it would probably be more comfortable to identify with a school group within the larger school of only 250 students of different ages and grades, knowing that in this group there is stability. Furthermore, by having students in clusters, feelings of isolation and alientation can probably be reduced and modified. Teachers can get to know their students and parents better, older and younger students can influence one another more easily, and greater flexibility can be achieved in providing for the special needs of individuals. Perhaps, in a manner of speaking, some of the more desirable features of smaller, rural schools can be recaptured within the context of the larger, more complex urban high school.

Regarding the curriculum, it is purposely restricted. Elective courses are rare. The reason is that students need time to master the core subjects. Students need time to acquire background knowledge, to refine oral and written communication skills, to learn to inquire and to reason. By requiring four years of study in each of the four core areas, teachers can afford to go into greater depth in each lesson and/or unit of study because they do not have to cover the amount of material they would cover in two or three years in the traditional program with its elective features, which enables students to avoid math or social studies or science for a whole year. By not allowing students to opt out of, for example, math, there is a greater possibility of achieving the kind of continuity in math education which most students need in order to function effectively in the higher order math they will encounter at the college level. The same can be said for social studies, science, and English (communication studies).

It should be noted that the Type B High School is to prepare students for some type of higher education. In my state only 32% of high school graduates apply for college admission. This fact, in itself, is evidence of the dysfunctional nature of our public secondary education program. For urban high school students, the percentage applying for college admission is even lower. As many as two-thirds to three-quarters of these students should be prepared for some form of higher education. It is the only avenue open to them for better jobs and a better life. In my view, the Type B High School, or something like it, offers some possibility for the attainment of this goal.

Type C High School - The Academy

The purpose of the Type C High School is to educate the academic and intellectual elite of the urban community. It is curious that we have difficulty measuring or even objectively defining what we mean by the academic and/or intellectual elite, but when you go to a school and ask, just about everybody knows who they are.

It would be my estimate that three percent of students in any age group would be selected. Thus, an academy might be comprised of only about 450 to 500 students. These students should receive a rigorous program of study including classical literature, composition, mathematics, chemistry, physics, history, and foreign language.

Since it is true that these students would be successful and would achieve recognition in any school, why have a special school for them? The answer is so that they will be challenged to produce their best efforts. In most comprehensive high schools there are so few of these exceptionally talented students that most of them never learn what it is to compete with their equals. Many of these students never have to extend themselves to excel; they simply are excellent by comparison. By the time they reach a level where there is a significant number of others equal to them in talent, they find it difficult to develop the intensity needed to achieve the goals they and others have come to expect. In fact, some of these students are underprepared for college. They are not prepared psychologically because, in their experience, success has come with too little effort. They are not prepared academically because many have not developed the habit of broad reading, skills of analysis and synthesis, and/or the tolerance for having their work criticized. Some of the very brightest graduates from urban high schools fail in college because they cannot adjust to the new, more competitive academic climate. These students need to have years of experience in competition with others of similar ability in order to be ready for serious, productive academic work at the college level.

In the same way that new types of schools are needed to serve students in urban areas, so too are new types of teachers.

Traditionally the image of a good teacher has been closely associated with expertise in a subject-matter field. Rewards and recognition have gone to secondary classroom teachers who have pursued the study of a particular body of subject-matter at the graduate level. In many large school districts it is not uncommon to find teachers who have doctorates in such fields as chemistry, mathematics, biology, psychology, and English. Frequently, these teachers represent the model of professional attainment for their younger colleagues. I am not suggesting that this model is not appropriate, or that the excellence in scholary work which these individuals represent is not important in public schools.

What is important to recognize, however, is that the current emphasis which is on attainment of expertise in academic disciplines does

not provide enough diversity in pedogogy and the psychology of learning. In short, in urban secondary schools most of the teachers know more than enough about subjects they teach, but not enough about cognitive and psychological growth and development, learning theory, and pedagogical models for the effective delivery of instruction in their subject fields.

First on the list of needed new specialists for urban secondary schools is the reading specialist. In my city there are no reading specialists in the secondary schools, but every elementary school has one. This is true despite the fact that there are more students with reading problems in grades seven through twelve than there are in grades one through six. Two kinds of service are needed in reading at the secondary level. One service is basic instruction in reading in grades seven, eight, and nine for students who have not finished learning to read by the time they finish sixth grade. There are many students in the city who require seven or eight years of instruction in reading in order to learn what we might ordinarily consider six years' worth of reading. This is not meant to reflect negatively on reading in the elementary schools. It is simply a fact we should learn to live with. Another type of service needed is that provided by content-area reading specialists. The services of such specialists have an important positive impact on classroom instruction at the secondary level directly, as these teachers work with students in helping them to learn to deal with textual materials, and indirectly by helping other classroom teachers learn how to incorporate reading and study skills into daily lessons in the content area classrooms.

In reading, we need to achieve a more favorable "balance of force" in the employment of our human reading resources between the elementary and secondary levels of schooling.

Another kind of specialist is needed in urban secondary schools: one who combines knowledge of and expertise in cognitive growth and development with knowledge of text structures and appropriate instructional strategies. Specialists with this combination of knowledge and skills are not available at the high school level. Such specialists could be employed to bring about a change in the organization and thrust of many classroom activities. For example, these specialists could assist classroom teachers in evolving a better balance between activities which are competitive and individual with those which are cooperative and group-oriented. Further, these specialists could be used to help achieve parity between the difficulty level of textbooks used in content areas and the reading levels of students in the classes. In many classrooms, textual materials used for instruction are too difficult for some students to read on their own. Thus, they never read; it follows that their reading never improves. In order to improve reading, one must read occasionally.

Current research in reading comprehension has demonstrated the crucial role of prior knowledge and the application of appropriate personal strategies in learning from text. Classroom teachers in secondary schools have little knowledge of this research and its implications for instruction. Specialists in cognitive growth and development and instructional strategies would be able to facilitate instruction in classrooms in the secondary schools by working with classroom teachers to achieve better outcomes in students' text processing.

Other less-well defined specialists could be mentioned. Among them are: instructional motivation specialists, instructional design specialists, evaluation specialists, and so on.

It is clear, at least from my perspective, that attention needs to be given to the development of new types of teaching roles in order to better serve the needs of students in urban secondary schools.

Conclusion

In this paper, I have made an attempt, crudely perhaps, to indicate that there is a set of conditions which impinges upon the achievement of students in urban secondary schools and which almost precludes the development of high levels of reading comprehension and high-order thinking skills of students in such schools.

The attribution of all educational disorders to poor reading alone is simplistic and will not serve to improve the status of our schools or the students in them.

I have the strong belief that reading does not follow simply from an instructional event or program divorced from the social and/or educational climate in which it exists.

Rather, more likely, in my view, is the possibility that, if the right kind of school is developed, with the right kind of purpose, that is, a purpose which makes sense to those who attend and patronize it, which includes the right kind of teachers prepared to do the work necessary to promote learning and thinking, then reading will no longer be the focus of primary concern in urban secondary schools. Reading is merely one part of a larger process; education is, in part, operational sociology. When we begin to consider social groups and the uses they make of reading, then we will be in a better position to understand how schools can promote reading, learning, and thinking for the benefit of those who attend.

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WHAT DO YOUNG CHILDREN UNDERSTAND ABOUT THE STRUCTURE OF WRITTEN COMPOSITION?

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A review of the language arts literature of the past decade would suggest that educators advocate the notion of integrating reading and writing into a unified curriculum. Evidence for the effectiveness of this practice appears to be well supported at the decoding/mechanical level. It is not at all clear, however, how processes beyond those levels develop (Bracewell, Frederiksen, & Frederiksen, 1982). Some confusion concerning differences in comprehension of discourse by the reader or the writer seems to arise from the variation in terminology used to describe conceptualization in these reciprocal modes of processing. Bracewell et al. (1982) suggest a reorientation in viewing discourse comprehension and production using a common set of constructs and terms for describing behavior.

This paper reviews current hypotheses presented for analyzing the young child's growth in comprehending discourse. It also seeks to discern clues for integrating instruction in reading and writing through reports of observational studies on the growth of children's understanding of the composing process.

Hypotheses about the Child's Knowledge of Discourse Structure

Reader and writer differ in the manipulation of discourse. Moffett (1983) observes that both are involved in behaviors which modify inner speech. He regards both processes as temporarily changing the way we "talk to ourselves," and eventually having the potential to change our thoughts and feeling (p. 315). Smith (1984) observes that children learn almost unconsciously to "listen like a talker" (p. 558). In similar fashion, the developing writer uses authors. The writer must read like a writer in order to write. Smith feels that this understanding of the composing structure is best developed when the child assumes full responsibility for writing and does not rely on the teacher to act as secretary.

Cognitive linkes between reading and writing demonstrate the influences of each mode on the other. Goodman and Goodman (1983) note two important influences on writing. They point out that children use in writing what they observe in reading, but it is only when they try to write that the observation focuses on how form serves function. The Goodmans (p. 591) suggest the seven key points of interrelationship between reading and writing which are summarized here:

1. Productive and receptive roles are more interchangeable in a speech act than in a literary event of written language. It is difficult to identify the specific contributions of reading and writing.
2. Both reading and writing develop in relation to their specific function and use.
3. Most people get more practice reading than writing.
4. The degree of transfer of knowledge of text form conventions, styles, etc., to the writing act is hard to ascertain.
5. It is impossible to write without reading. Effective reading feedback is immediate. Writers depend on feedback from potential readers which is often delayed.
6. Writers must read and re-read during writing. As writing proficiency improves through use, there is a pay-off to reading since the schemata are similar.
7. The relationship between reading and writing are not simple and isomorphic. An understanding of the specific processes in each is necessary to build a unified curriculum.

Squires (1983) supports the points identified by the Goodmans. He affirms that writing requires attention to the various rhetorical modes and functions of language. Young children must have experiences using the varied forms and functions if they are to comprehend and compose effectively. He further asserts that instructions in comprehension and composing should concentrate on the total process of constructing and reconstructing ideas. For the young child, this is not an easy task. Vygotsky (1962) observed that the advanced conceptual development required for such tasks requires elements apart from the concrete experiences in which they are embedded. As the individual applies the use of similar features to new experience, concept mastery occurs. Translated to the writing act, this implies that growth in familiarity of forms and conventions occurs when the child understands the relationship of the parts or elements to the total work and then applies the process learned to new writing experiences.

How children develop a consciousness of form in discourse is described by several classic studies. Applebee (1978) finds early evidence for the spectator role required for a "sense of story" in the behaviors of preschoolers. Attention to rhythm as an organizer of ongoing life processes, practice of language sounds and focal words and repetitive ordering of thought are precursors of story concept. Applebee notes that young children demonstrate knowledge of the formal characteristics of story in the telling or retelling by using the following features: (1) formal opening and closing phrases, (2) change in voice pitch and tone while telling a story, (3) acceptance of fantasy, (4) use of conventional characters and types of situations, and (5) consistent use of past tense. According to Applebee (1978, 1979), the young child's growth in knowledge of story structure is shown in the complexity of the experiences dealt with, the mastery of the techniques and conventions of literary form and the ability to deal with separation of reality and fiction. Story production evolves from loose associations to, at age five, material organized around a problem or theme and having an identifiable beginning and end. The separation of fact and fiction which ultimately permits the generation of stories outside personal experience evolves slowly. Calkins (1983) also observed that concern for truth predominates until the child gives more attention to audience and text form. Applebee believes that this slow emergence of concepts of representation is important not for establishing distinctions between fact and fantasy but to provide opportunities for the child to observe recurrent patterns of values, and stable expectations about cultural roles and relationships.

The young child's mastery of form and conventions is further delineated by Graves (1975) in his descriptions of reac-

tive and reflective young writers. In contrast to the reactive writer, the reflective writer in Graves' study writes with the confidence of one who understands form and convention and needs little rehearsal. The reflective writer re-reads to adjust language and has a growing sense of audience. This mature writer has an empathic understanding of character behavior.

Graves (1982) explains a five-stage growth of concepts in child writing from the earliest point of using words while unaware of meaning to independent use of words with intent to revise. He observes that children address content in their writing when motor-aesthetic conventions (spelling, handwriting) are behind them. Next, they deal with organizational imbalances. Graves urges teachers to avoid emphasizing information when the child is struggling with handwriting and mechanics. Coping strategies to get from lower level stages to content are areas addressed in conferencing sessions. Siegel (1983) presents a similar account of developmental stages of children's writing proceeding from transcribing to independent writing. During the independent stage, forms are not rigidly used. The child works for coherence and builds structure and sequence into the writing.

Dyson (1982, 1983) contributes important insights from her ethnographic studies concerning the way young children conceptualize in early writing. She observes that children begin with writing by labeling their drawings. They first symbolize what is known in their environments rather than discover or create new aspects of their world. Dyson emphasizes that the precise connection between talk and print is not understood. She concludes that young children's knowledge and use of the written language system appears to involve several levels at once. These levels include perceptual features, symbolic features, structural characteristics, discursive procedures (transforming dynamic experience into explicit, ordered and linear format), sociocognitive features (relating meaning to the knowledge of the reader), and functional capacities (arbitrary and precise uses of written language). Dyson cites Durkin's reference to "paper and pencil kids" as she describes those spontaneous writers who know how language works and who engage directly in the writing as opposed to those who dictate to a teacher.

A model for developing critical readers through writing is presented by Newkirk (1982). In his presentation of the elements of beginning writing, Newkirk shows the progression from proto-critical judgments to critical judgments about the child's own writing. He feels that critical thinking is more easily acquired through writing than through reading because children tend to regard a text as fixed — beyond criticism. Criteria for criticism can be juggled in one's own written work. Newkirk observed that the critical thinking skills acquired in writing do not always transfer to reading.

The hypotheses presented by the literature reviewed thus far suggest that children's concepts of discourse structure seem to occur in discernible stages with gradually changing foci or priorities. Mature young writers seem to get beyond hurdles of handwriting, spelling and conventions and are able to focus on theme, character development, order, and style. What is still unknown are the exact relationships between comprehension in reading and writing.

Observational Studies on Children's Understanding of the Composing Process.

"Watching a first grader write a story is a little like witnessing a bandit pick a lock." (Hauser, 1982, p. 681.) This analogy seems to describe aptly the beginning writer's struggle to apply a variety of knowledges and skills as he/she tries to being an event alive in print. Unlike reading, in which young children tend to open themselves to receptivity and the text becomes their own inner language, writing requries transformation of ideas along a logical progression. The writer makes connections of thought, memory, and feeling (Moffett, March 1983). In their ethnographic studies of child writers, Graves (1979, 1983), Hauser (1982), Pradl (1979) and Golden (1984) document the child's growth in control of story structure. Typically young children begin with generalized themes or retellings of events. The writing is at first real-life oriented and egocentric. Although sensitivity to audience and use of linguistic markers are evident, the child lacks an adult sense of chronological and thematic coherence. Gradually the young writer learns to add details and conclusions. He/she omits extraneous information and chooses more elaborate organizational structures. Formal beginnings, middles, and endings are clarified during revision. Plot is not fully developed in early stages of writing. In later stages of writing (second and third grade), Graves (1979), McConaughy (1982) and Golden (1984) observe that elements of setting and character are determined in the prewriting phases allowing ideas to flow more smoothly during writing. Character attributes and use of dialogue are features of this age. Action or physical causality is the predominant focus as opposed to character development in adult writing.

Echoing Applebee and Moffett, King and Rentel (1981) describe the first giant step in writing as producing discourse without interaction with a conversational partner. The task of the child writer is to appreciate language as a structure separate from actions. King and Rentel observe that young children can use many elements of cohesion in an appropriate writing atmosphere. Their study of kindergarten and first grade writers show that direct teaching does not play a significant role in the acquisition of the fundamental skills of cohesion. They suggest that children notice these distinctions through exposure to well-written stories, discussions, and other informal activities. Ganz (1983) shares her observations of children's writing to solve problems. She asserts that the creative and psychic energy of problem-solving often result in quality work. Her case studies reflect more elaborate and cohesive writing when children deal with strong emotional themes. Donnelly and Stevens (1980) also observe high emotional content of topic to be a strong factor in children's writing for two students over the period from first through third grades. These case studies note similar growth in story length, approximation of adult conventions, language complexity, cohesion and sophistication of subject matter for both students. Each child experienced an erosion of previously mastered skills when attempting to deal with new cognitive problems. Individual differences are observed in the voice used most frequently. The child using the poetic voice (a more advanced form) had less control over writing conventions. The investigators caution teachers not to restrict the focus of the work of young children and not to generalize or label behavior

on the basis of a few writing samples.

Bracewell et al. (1982) use frame construction theory to analyze second and fourth graders' comprehension of discourse structure. They find that children's early writing reveals skill with language devices but lack of a type of conceptual frame, suggesting a time lag between comprehension and production. On the six comprehension tasks, the subjects show a distinct preference for a narrative frame prototype over a conversation frame. There are marked individual differences in ability to vary frame used at both grade levels.

Calkins (1979, 1983) identifies a sequence for concept development in writing. Her observations show that concepts and concept organization undergo constant revision for active young writers. Calkins examines concept development in terms of overlapping interconnected characteristics (Calkins, 1983, p. 143-151).

1. Correspondence between writing products and concept development. Breakthroughs occur in both good and bad efforts.
2. Changes in the number of concepts in the child's repertoire. The number of concepts a child uses may relate less to concept development than to the writing context.
3. Changes in sophistication of these concepts. Action becomes a tool rather than a goal. Concern for absolute truth is superceded by concern for audience and text. Poetic license is observed.
4. Changes in concept density. By fourth grade, Calkins' subject is able to juggle multiple concept criteria. She could explore various treatments of a topic. This was the start of thematic unity. The subject expressed her growing control over a piece of writing by stating, "It's better now, . . . I can tell because I listen to it and look it over. It just feels better." (p. 151).

The observational studies cited seem to suggest that young children acquire a widening sense of discourse structure through their early writing experiences. A number of similarities in development occur across the studies. Because the child must produce script and manipulate forms and conventions in writing, he/she is likely to profit from inclusion of writing in reading instruction. Searle (1984) cautions that schools should not attempt to structure or monitor the writing experiences too rigidly for the child. Flexible scaffolding which allows children to initiate topics or to shape experiences for themselves may provide more nurturing environments for concept building. It seems apparent from the literature presented that the young child's reading performance can be significantly enhanced by writing experiences. The key to successful integration is in the teacher's ability to create appropriate learning environments in which both processes can flourish.

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RESEARCH ON COMPUTERS IN READING

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Until recently, describing the "state of the art" in research on computer use in reading instruction was a task analagous to describing the effect of the printing press on reading instruction. Like the printing press, the computer causes print to be displayed so that it may be read. Also like the printing press, the computer can display pictures before or after text or simultaneously with the display of text. Like the printing press, the computer can display novels, textbooks, crossword puzzles, word searches, posters, maps, graphs, and charts.

The difference are these: (1) The computer can flash pictures or text or cause them to change size and shape or to move on the screen. (2) The computer can withold printed messages so that they appear only under conditions specified by the program designer. (3) The computer can display messages simultaneously on its own screen and on the screen of another computer or group of computers at many locations. (4) The computer can instantly change its messages to reflect changed opinions or information. (5) The computer can transmit spoken messages as well as printed ones. (6) The computer can recognize a few spoken messages.

The research investigtations in which the computer's differences with the printing press have been exploited are few. I'll discuss with you only ten of these. Each will be a separate sub-topic in my presentation:

1. Increasing Comprehensibility of Text by Decreasing Readability

L'Allier (1980) used a computer program which could revise passage structure of expository text so as to lower the readability estimate. Subjects read text from the screen, responding to questions periodically. When response time and/or comprehension errors so indicated, the text was modified so as to decrease its readability level. High school subjects reading the adaptive text scored higher than those reading the original version or the totally revised non-adaptive version. Poor readers reading the adaptive version scored significantly higher than high ability readers who read the non-adaptive original passage version.

2. Pronouncing Unfamiliar Words

McConkie (1984) has reported a preliminary evaluation of a program for adult illiterates. Text is presented on the video display screen. When the student encounters an unfamiliar word, shining a light pencil at it causes the machine to pronounce the word, using that pronunciation which is appropriate to its context. Observations indicated that words requested once were again requested with decreasing frequency — that students did not develop a dependency upon the computer.

3. Providing Access to Text-Processing Aids

Reinking (1983) asked good and poorer readers to read three difficult passages and three easy passages in one of four treatment conditions. In one condition readers could ask for (1) words to be defined as appropriate to the context, (2) a less technical version of the passage, (3) background knowledge, (4) a pictorial illustration of the most important concepts, relationship, or skill, or (5) a display of the structuring of the main ideas in the passage. In the second condition, readers read passages from the computer with no text manipulations available. In the third, readers were required to view all the textual manipulations, and in the fourth, readers read printed pages (the usual).

The results were difficult to read because of an interaction between treatment condition and passage difficulty. However, a tentative conclusion was that readers having access to text manipulations did not comprehend better than those who did not. The results also suggested that (1) it takes some time for intermediate grade children to become facile with using interactive text, and (2) interactive text seems more useful with difficult passages. The study supported an earlier one by Blohm (1982) in which college readers who could request glosses (paraphrases) recalled more ideas from experimental passages than did those without access to glosses.

4. Providing Workbook Pages on the Computer

Prince (1984) compared the effects of three types of practice on synonym learning by upper elementary subjects. One group practiced using an arcade game computer program. A second practiced using a standard drill and practice (programmed text) computer program. A third practiced using workbook activities created by a computer program and printed out on paper. She found no significant differences in synonym pairs learned, even though she gave the maximum possible teacher assistance to the "workbook pages" group and even though she used the "arcade" program to present words for initial learning when it had been designed only for drill and practice on words previously taught by a teacher. The computer-presented programs equalled the results of a good teacher working closely with students who were completing workbook pages.

5. Presenting Beginning Writing and Spelling Skills by Computer

Murphy and Appel (1984) reported their evaluation of the IBM Writing to Read Project's second year. Of the 10,513 children and the several hundred teachers, who participated at more than 60 school sites, those in 23 schools undertaking a second year and in 12 schools in their first year of participation were selected for evaluation. Superintendents named other schools in their districts to serve as controls. The major conclusions were that the program worked — children learned to read with Writing to Read and they wrote better than the

children in comparison schools.

Kindergarten children did better in reading than controls, but first graders did not differ in reading performance. They spelled as well as control students and teachers and parents were positive about the program. However, teachers did report spending more time on reading and writing instruction when their children were involved with Writing to Read. Furthermore, Writing to Read children scored at the 81st percentile on the pretest while control children scored only at the 67th. These and the time differences mandate that the results be viewed with caution.

6. Providing a Microcomputer Authoring System

Powers (n.d.) directed a comprehensive microcomputer-assisted reading-in-the-content areas curriculum for teachers and students in grade 7-12. Selected as exemplary, READ:S was named an NDN Lighthouse demonstration site in June, 1983. In this project, English teachers test for and work toward the development of "priority reading skills" while content area teachers create microcomputer lessons involving application of these vocabulary, comprehension, and study skills to the text passages used in their instruction. The READ:S project provides teachers with CAI authoring programs which enable teachers to create instructional programs, some of which involve phrase-reading and some of which involve timed reading. The program resulted in marked gains (20 + %ile points) in standardized reading scores.

7. Serving as an alternative to reducing class size, tutoring, or lengthening the school day

Levin, Glass, and Meister (1984) used meta-analysis to compare the cost-effectiveness of four interventions on the reading and mathematics achievement of elementary students in the Los Angeles Unified School District. By converting standard scores to effect size estimates, and by making many assumptions (such as that 80% of the extra time in a longer school day would be used for instruction, that only a third of the elementary school day is devoted to reading, and that present day CAI, with color and better software, is no different than the standard colorless drill and practice of the seventies), the authors concluded that tutoring approaches were the most cost-effective, that reducing class size and increasing the length of the school day were the least effective, and that computer-assisted instruction ranked between the most and the least effective.

8. Comparing electronic communication to face-to-face

Kiesler, Sigel, and McGuire (1984) explored the impact of computer communication (electronic mail or teleconferencing) on group interaction and decisions. By comparing records of group meetings which were (1) face-to-face, (2) electronic and anonymous, or (3) electronic between known group members, they found marked effects on communication efficiency, participation, interpersonal behavior, and decision making. They found less inhibition, with more name-calling and swearing, when the conference was electronic. They also found the electronic conference to entail more disorder and a longer time to be needed for decision-making, perhaps because group participation was more equal. When a computer program designed to allow only one person to "talk" at a time was employed, the participants disliked it. The authors interpreted their results to mean that computer conferencing depersonalizes the communication and lessens the dominance of those who would otherwise lead. This was equally true when the conference topic was addressed with electronic mail between conferees instead of teleconferencing.

9. Generating microcomputer cloze tests for content teachers

Starshine (1984) found microcomputer-generated 10% random deletion cloze tests to be valid and moderately reliable tests when passages were taken from fourth and sixth grade social studies texts. Furthermore she found that an adequate level of reliability could be achieved with as few as 19 items.

10. Determining text considered during cloze passage completion

Fortier (1984) allowed college students to request words one-at-a-time to provide the context with which to attempt to complete cloze blanks. He found differences in good and poor readers' ability to use following context, but no differences in the information they attempt to process from that text preceding the missing word.

SUMMARY AND IMPLICATIONS

We are finding ways to use the computer to fill the difficulty gap between the reader and his text. Soon a text passage will be presented by computers equipped to help with any task from reading the text aloud, to simplifying it, to explaining every word and sentence in simple terms or even with pictures. We are gaining evidence that in school programs within which the computer's role is clearly laid out, the reading scores of pupils can be improved significantly. And we are beginning to learn that text presented on the screen by computer as a replacement for conversation, discussion, or even workbook and textbook pages may engender very different responses from humans than the same text presented as printed pages, face-to-face speech, or voice-to-voice telecommunications.

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THINKING LEVEL AND READING COMPREHENSION

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In the State of Texas, a new educational plan was passed by the Legislature, July, 1983, titled House Bill 72. It is an extremely complex plan in which one of the mandates is that 70 is the passing grade for every course. Any student failing to earn 70 in every course would be ineligible for extra curricular activities, football, baseball, the band, etc. Grades are reported every six weeks. Students who fail to earn a grade of 70 or C would participate in a special remedial class each day after regular school hours. Inherent in the legislation is the concept that children in each grade level should be able to do the work and pass. It is the teacher's responsibility to teach every student in such a way that he passes. This appears to be developmentally unsound.

Not only do children grow cognitively at different rates, but the developmental pattern of different functions is also different. The growth curves of three of eleven tests of the WISC-R show the general trend and pattern of growth during the elementary school years up to age 15. The continuous development of vocabulary from age five to 15 is an indication of the importance of language development as the child grows to maturity (Sigel, 1953; Wechsler, 1950; Clymer, 1961).

As L.S. Vygotsky (1962) pointed out, the relationship between intellectual development and education is reciprocal. It is possible to accelerate childrens' thinking operations and levels by providing suitable school experiences geared to their cognitive capacity and mode of functioning. In L.S. Vygotsky's terms, didactic instruction normally plays a role in facilitating transition from one stage of cognitive development to another. It is mostly accomplished by making intellectrual demands on students that go beyond their current capabilities. The far reaching implications in new teaching methods and curricular practices imposed by House Bill 72 points up the need for students in the fifth and sixth grades to shift from predominantly concrete to predominantly abstract modes of understanding and deal with complex abstract propositions. Contrary to Piagetian developmental stages, students at 10 and 11 years of age are expected to become an abstract verbal learner. Students in modern curricula must acquire new concepts and learn most new propositions by directly apprehending verbal and symbol relationships.

This study was an attempt to find levels of abstract functions as they relate to reading ability and power among a select sample of fifth graders.

METHOD

68 students in the fifth grade of an urban population school district were administered the PN-6 form of the Degree of Reading Power (DRP). Forty five percent of the student sample participated in the Federal lunch program. Two groups of 34 students were identified on the basis of relatively high or relatively low DRP scores. Each of the 68 students was administered individually the Gelb-Goldstein-Weigl-Sheerer Object Sorting Test.

The purpose of the Object Sorting Test is to determine whether S is able to sort a variety of simultaneously presented objects according to general concepts and shift these frames of reference. Objects for Ss are toy spoons, chocolate cigars, candles, play-chips, matches, knives, forks, screwdriver, bicycle bell, nails, etc. A total of 31 objects was randomly placed before each S in the following manner. (1) Each S was asked to group articles with an object which S selected himself or herself (Handing Over); then, to group articles with one the examiner selected (Passive Sorting). (2) In the second phase of the test, S was asked to group all the articles as S thought they belonged together (Group Sorting). (3) After completion, S was asked to arrange all articles in still another way (Abstract Shift). (4) If S did not comply satisfactorily for one reason or another, the S was presented with new groupings by the examiner and asked why the objects presented were grouped together in the given manner (Coercive Sorting). In each stage of the test, S was asked to explain why S grouped the articles as S did, or why S did (or did not) accept the groupings.

Data from the protocols of the Object Sorting Test, in each of the five subtests, were rated as passing or failing according to the criteria already presented.

Pass-Fail Criteria For Cognitive Functions On Parts I To IV

Tests	Pass	Fail
Part Ia, Handing Over	Ability to sort concretely, predominantly, or exclusively	Inability to sort
Part Ib, Passive Sorting	Capacity to sort from at least 3 objects of departure	Inability to make at least 3 concrete sorts
Part II, Group Sorting	Ability to sort all the objects into suitable groups, and capacity to explain	Inability to sort all the objects into groups, or failure to explain reasons for grouping
Part III, Abstract Shift	Ability to shift volitionally to abstract frames of	Inability to make sorts with abstract concepts
Part IV, Coercive Sorting	Ability to explain abstract sortings of at least 3 groups	Inability to explain passive sorts, or abnormally concrete

RESULTS AND DISCUSSION

Group A, in which students' scores (DRP) were in the upper fifty percent of the scores, were found to have 19 (56%) scoring on the Object Sorting Test as predominantly abstract in cognitive functioning. The remaining 44% of the students use concrete modes as the predominant way of solving verbal problems in the test. Students in Group B had DRP scores below the fiftieth percentile. At least 10 students showed dominance in abstract funtioning, while 24 students were observed using concrete operations in their primary thinking level.

The relationship of word recognition and reading comprehension with concept formation and reasoning is well established in the research literature. If teachers can motivate students to increase their vocabulary and expand their reading of books, it will provide the best predictor of abstract volitional shifts. Young students at 10, 11, and 12 years of age are being challenged rigorously in today's curricula to free their dependency on concrete and observable props and to think rationally in an abstract manner. Probably the inability of students to think symbolically and abstractly is the most frustrating experience of teachers of fifth, sixth, and seventh graders. Frequently, economically deprived students have moderate to severe developmental lag in reading and mathematics. Without the foundation of reading vocabulary and comprehension, it is almost impossible to develop abstract thinking skills and problem solving. Expecting children in remedial classes to perform and make up for inadequate thinking in abstract modes is filled with frustration and despair. When reading skills are not there, thinking levels are reduced to consequences of verbal deficits.

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IMAGERY LEVEL OF TEXT: TENTATIVE OBSERVATIONS

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The concept of imagery is not a new one. Wundt (1884) thought that all thought processes were accompanied by mental images, whereas Huey (1908) maintained that relational and connective words had no imagery. What is the elusive imagery? For the purposes of this paper, mental imagery is defined as a mental representation of a pictorial form elicited by an isolated word or a group of words. It is the mental representation one uses to answer a question such as: Does a racehorse have a braided tail? The definition of mental imagery denotes an internal representation involved in thought (Brock, p. 9), and these images are not photographic pictures in the mind but are representations underlying the experience of seeing (Kosslyn, 1980, p. 18).

Imagery is an important concept for both education and research because by gaining more insight into the "how's" of imagery in mental representations, we gain more insight into how people learn and retain information. The primary purpose of this paper was to determine whether text itself could be coded on an imagery factor. Then, a later step would be to determine whether student reading comprehension is affected by the imagery level of the text. This paper will report the procedure(s) used to code the imagery level of text.

RATIONALE'

Imagery appears to be closely aligned with the concepts of concreteness and abstractness. Kosslyn's (1980) idea that images are representations underlying the experience of seeing assumes concreteness, especially for a beginning "seer." We can see a "racehorse," but not an "of."

Another aspect of mental imagery is that it appears to be a developmental learning phenomena. Pressley's (1977) review of research examined the conditions under which imagery increased children's learning of verbal materials. His summary and discussion related to specific task situations in paired-associate learning, recognition, recall, verbal discriminating learning, and prose learning. Nursery school children did appear to have the learning facility to internally elaborate; the six and seven year old children could internally elaborate for the paired-associates; and the older children could internally elaborate for prose. This type of information supported Pressley's (1977) conclusion that internal visual elaboration is a developmental process.

The child's learning of sight vocabulary words, which requires instant recognition, would fall into Pressley's (1977) paired-associate task paradigm. Children have to see the printed word and pair its visual stimulus with an existing response to that printed word. A child's instant recognition of the word indicates prior experiences which have been

associated with a visual representation and incorporated into his existing learning schema. What would happen if the word is so abstract that a mental image is not forthcoming immediately? Kosslyn's (1980) conclusion that images can affect cognitive processing is a possible application in that it could suggest that primary grade young children who have image representations of words would learn them more quickly than words with which they had little or no image representation.

As a test of this hypothesis, Kolker and Terwilliger (1981) conducted a study of the comparison or rates of beginning first and second grade children's learning of high and low imagery nouns as sight vocabulary words. The randomly selected children were pretested individually to determine if they could recognize instantly the printed words taken from the Paivio, Yuille, and Madigan List (1968) and if they could give the meaning of the unrecognized word when presented orally to them. The words which the child did not recognize instantly but had a knowledge of their meanings comprised the word sets for systematic sight word drill. Responses of the daily individual word drills with these noun flash cards were recorded over a three-week period. The "learned words" which were compared for differences in rates of learning evolved from the sequence of (1) three consecutive final responses out of five on any given day (2) a correct response the next day in one flash presentation (short term recall) and (3) a correct response 72 hours later in a one flash presentation (delayed recall). Repeated analyses of variance indicated support to the conclusion that both beginning first grade and second grade children could be expected to learn in isolation as sight words the high imagery nouns more rapidly than the low imagery nouns. A comparison of the mean scores of the first and second grade children indicated similar pattern of learning but a substantial difference in the rate of learning (first graders $X = 17.31$; second graders $X = 6.84$) for the high imagery words. It was concluded that the coded imagery level of a word appeared to be a source of prediction for the rate of a first and second grade child's learning a sight word in isolation.

Pressley's (1971) review of mental imagery and its relationship with learning indicated that the bulk of research to that time had been done within the paired-associate learning paradigm. However, a paired-associate framework is not an accurate description of prose or text processing. If mental imagery representations affect word processing in isolated paired-associate learning tasks, would the imagery representations also affect prose or text processing? More recent research has studied imagery and its effect on the comprehension of prose or text. Several of these studies have provided imagery instructions to elementary children of third grade and above prior to their reading the text (Miccinati, 1981; Prawat and Kerasotes, 1979; Steingart and Glock, 1979; and Gambrell, 1981). These studies reflect the procedure commonly called induced imagery, that is, the experimentor induces imagery in the child's cognitive processing by giving prior instructions. Typically, the children are assigned to an experimental or control group, and prior to reading, the experimental group is instructed to make pictures in their heads to help them remember the story as they read (Gambrell, 1981). The children either respond to prediction questions after reading or answer questions relating to what they have read (Miccinati, 1981). From the induced imagery type of study it has been noted that induced imagery instructions to middle and upper elementary school children have improved their level of comprehension of what they read (Miccinati, 1981; Prawat and Kerasotes, 1979; Steingart and Glock, 1979; and Gambrell, 1981).

In many studies of the imagery effects on text processing, the passages which the children were required to read were determined in various ways. A readability formula was used in the selection of an appropriate grade level of the passage to be read (Gambrell, 1981) or, children rated the passage or sentence read as having either high or low imagery (Eddy and Glass, 1981). In the readability type of text rating, the length of sentences and number of syllables determined the grade level of the passage; the imagery level of words was not scrutinized. In the child's imagery rating type of test rating the content of the passage itself was varied. In this type, only the cognitive processing of the child was recognized. Neither of these types of text rating seems concerned with the imagery value of the words in the passage itself.

As a result of their previous studies into the effects of imagery on learning words, Kolker and Terwilliger (1981) accepted the position of those who thought that the level of imagery of prose passages to be an apparent factor in the child's learning from prose or text. However, there appears to be neither a rationale nor a mechanism, readily available in the literature, to determine whether a passage can be rated as having high imagery or low imagery. Therefore, the purpose of this discussion is to provide a tentative mechanism to ascertain the imagery level of a prose or text passage.

METHOD

Description of Word Lists

Isolated words have been classified on the levels of high and low imagery, and concreteness and abstractness (Paivio et al., 1968; Toglia & Battig, 1978). The Paivio et al. (1968) list contains 925 nouns taken from the Thorndike-Lorge List (1944). The Thorndike-Lorge List (1944) was based on frequently occurring words in English. College students rated Paivio's 925 nouns on a seven point scale to determine I (imagery), C (concreteness), and m (meaningfulness). The standard deviation was computed for each words ratings. For example, the word/arrow/had a mean I value of 6.57 with a standard deviation of 1.07, while /boredom/ had a mean I value of 3.83 with a standard deviation of 1.63.

The Toglia and Battig (1978) list contains 2854 words, enlarging the Paivio et al. (1968) list. Toglia and Battig (1978) invited researchers to send them lists of words to code which would be useful in further research. The lists coded by Toglia and Battig (1978) included rhyming words, homophones, synonyms, conceptual categories such as Shapiro-Palermo (1970) category norms, and stimulus words of Postman and Keppel (1970). Undergraduate college students completed the ratings for concreteness, imagery, meaningfulness, familiarity, and pleasantness, similar to the procedure used by Paivio et al. (1968).

Description of Text Coding

Text passages were selected from fourth grade basal readers. The basals selected were texts not used in area schools because

of possible pupil knowledge of the text when stories were presented to pupils to read. Selections of 150 to 200 running words were taken from 40 different stories.

The Paivio et al. (1968) list of nouns was then classified by the experimentors into three categories for computer input: low imagery words (X = 1.0 — 3.9), middle imagery words (X = 4.0 — 5.9), and high imagery words (X = 6.0 and above).

A SNOBOL computer program was written to match the words in the passages with the words in the Paivio List. The computer printout for two sample passages looked as follows:

Text 1

From: Words:High — Gave 320 words, matched From: 14 words
From: Words:Middle — Gave 340 words, matched 0 words
From: Words:Low — Gave 257 words, matched 0 words

Text 2

From: Words:High — Gave 320 words, matched 5 words
From: Words:Middle — Gave 340 words, matched 0 words
From: Words:Low — Gave 257 words, matched 0 words

In Words:High, the Paivio High Imagery nouns dictionary, the 320 words in the dictionary matched only 14 times with nouns in text passage one and only five times in the text passage two. The investigators ran 10 text passages in a trial run and noted that it was very obvious that a more accurate imagery level of the text required a rating of the other parts of speech in the text. Simply, five nouns would not be a very valid indicator of either a high or low imagery level text, especially when the total words ranged from 150-200.

Therefore, the Toglia and Battig (1978) word list which included all parts of speech was classified into three imagery levels for computer input: low imagery (1.0-3.29), middle imagery (3.30-5.49), and high imagery (5.5-8.0) to be used in combination with the Paivio et al. (1968) list. These level ranges were established to accommodate the ratings of the Paivio words which appeared on the Toglia and Battig (1978) word list. Thus, words common to both word lists were counted once and represented similar levels of imagery. The total number of dictionaries for computer input was nineteen : Paivio list — three noun levels; Toglia and Battig list — three noun, three adjective, one conjunction, three verb, two preposition, two adverb, and two pronoun levels. Some parts of speech did not reflect value ratings for all three levels of imagery. For example, on the Toglia and Battig (1978) list there were no words on the conjunction high or middle, preposition high, adverb high, or pronoun high word dictionaries.

The SNOBOL program was run again and this time both word lists were matched to each of the 40 text passages. As seen in the following replication of a computer printout for text passage two, there were 15 words in the Prep:Low dictionary but there were 17 matchings. Of these 17 matchings there were four occurrences of "for," two occurrences of "from," four occurrences of "of," two occurrences of "on," and five occurrences of "to."

Text 2: Computer Printout

From Words:High*	Gave 320 words	Matched 5
From Words:Middle*	Gave 340 words	Matched 0
From Words: Low*	Gave 257 words	Matched 0
From Noun:High	Gave 603 words	Matched 4
From Noun:Middle	Gave 624 words	Matched 7
From Noun:Low	Gave 200 words	Matched 1
From Adj:High	Gave 20 words	Matched 0
From Adj:Middle	Gave 301 words	Matched 13
From Adj:Low	Gave 64 words	Matched 29
From Conj:Low	Gave 27 words	Matched 12
From Verb:High	Gave 26 words	Matched 0
From Verb:Middle	Gave 451 words	Matched 4
From Verb:Low	Gave 87 words	Matched 18
From Prep:Middle	Gave 7 words	Matched 2
From Prep:Low	Gave 15 words	Matched 17
From Adv:Middle	Gave 16 words	Matched 2
From Pron:Middle	Gave 13 words	Matched 1
From Pron:Low	Gave 7 words	Matched 2

*Paivio et al. (1968) list.

Each of the forty text passages had a similar computer printout. Each text passage printout was coded by the investigators in the following manner (Table 1):

Table 1

Coding of Each Text From Computer Printouts

	Text	Nou(P)	Nou(B)	ADJ	CONJ	VERB	PREP	ADV	PRON	Total
	H	5	4	0	0	0	0	0	0	9
2	M	0	7	13	0	4	2	2	1	29
	L	0	1	29	12	18	17	2	2	81
	H	1	20	1	0	0	0	0	0	22
4	M	2	5	9	0	12	4	0	6	38
	L	1	0	30	9	12	24	5	2	83
	H	7	1	0	0	0	0	0	0	8
6	M	1	4	6	0	17	1	1	5	35
	L	0	0	15	10	8	23	2	1	59

Text 2, for example, contained a total of nine high imagery (H(words, 29 middle imagery (M) words, and 81 low imagery (L) words. Now the questions was: How does one use the figures obtained from the computer to determine a high or low imagery classification? Would one category of words be a better predictor of imagery level or a combination of categories?

Since a reader would have to read every word in the passage, it was decided to count each word occurrence. Observation of the ratio of the high imagery words to the low imagery words clearly indicated that in every instance, the low imagery words exceeded the high imagery words. This can be seen from Table 1. There were nine imagery (H) words and 81 low imagery (L) words for Text 2; 22 H and 83 L for Text 4; and 8 H and 59 L for Text 6. Thus, the identification of a high imagery passage would have to be based on a 1:1 ratio: that is, a H to L ratio.

The investigators arbitrarily elected to use three groups of ratios because of the distribution of H and L of the forty texts. There was not a 1:1 ratio in any of the forty passages. Thus

the investigators decided to classify H passages as close to the 1:1 ratio as possible. The arbitrary ratios fell into three categories. Twenty-five percent of the forty sets of ratios comprised the high level text, fifty percent the medium level text, and twenty-five percent the low level text. The range of the H to L level ratios was high level 1.0:2.3, to 1.0:3.9; medium level 1.0:4.0 to 1.0:5.9; and low level 1.0:6.0 to 1.0:9.0. This classification provided two extreme sets of imagery levels and reduced the effect of borderline passages.

The intent of the study was to determine whether text could be coded on an imagery factor. The results suggest that an operant option has been defined. Other tentative options may include varying the numerical values for imagery levels of words, and varying the range of high-low ratios. Also, a greater number of passages may provide more critical percentage ratios; however, a set of twenty passages produced the same pattern as did the forty passages.

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MEET "STEPHEN," A COMPUTERIZED DIAGNOSTIC CASE STUDY

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When Stephen was in third grade he enrolled in the Michigan State University reading clinic to receive help with his reading difficulties. His reading problems were diagnosed by an expert clinician who then planned and implemented a remedial program for Stephen. Since that time, "Stephen" has been helping learning disabilities specialists, classroom teachers, reading specialists and prospective diagnosticians become more reliable in their diagnostic judgements. How can an eight year old child improve the reliability of diagnostic decision-making? A microcomputer disk has made this possible.

"Stephen" is one of five computerized diagnostic case studies developed at the Institute for Research on Teaching (IRT) at Michigan State University. The case studies were developed for use in a series of studies focusing on the diagnostic reliability of educational practitioners. The first series of studies showed that reading specialists and classroom teachers did not agree with themselves or with one another in their diagnostic judgements about simulated cases of children with reading problems (Vinsonhaler, Weinshank, Wagner, & Polin, 1982; Weinshank, 1982, Vinsonhaler et al., 1983; Weinshank & Vinsonhaler, 1983). A second series of studies attempted to improve reliability through training (Vinsonhaler, et al., 1983). In this series of studies, the subjects were ten classroom teachers and five graduate students in reading, all with minimal experience in reading diagnosis. They worked with simulated cases presented on a microcomputer disk, together with diagnostic decision aides. Each disk contained test scores, test description and examiner comments. Audio tapes and completed test booklets were included in an accompanying study guide. Results indicate that this specialized clinical training improved diagnostic reliability in reading.

The successful use of the minicomputer case studies led to the development of an Apple II Plus microcomputer reading diagnosis training system for prospective diagnosticians and classroom teachers. The training system is comprised of five simulated case studies of "real" children. "Stephen," one of the microcomputer case studies, was recently field tested at Hood College. The purpose of the field test was to determine whether "Stephen" could improve the quality of training offered to student-clinicians preparing to diagnose reading problems. This paper describes and discusses the field test.

Procedure

"Stephen" was incorporated into the training of three graduate student-clinicians enrolled in a clinical diagnosis and prescription course. This course prepares graduate students for diagnosing the reading problems of prospective clinic students. First, diagnostic procedures and testing instruments were discussed. The student-clinicians then "met Stephen" and diagnosed his reading problems. Finally, the student-clinicians diagnosed the reading problems of "real" children.

Since all three student-clinicians were inexperienced in the use of microcomputers, a brief introductory lesson/demonstration focused on how to run "Stephen" on the Apple II Plus. The student-clinicians then spent approximately twelve hours completing the three operating subsystems of the program: (1) collection of data, (2) diagnosis, and (3) comparison of diagnosis with a criterial diagnosis stored in memory.

Each student-clinician requested test data from the computer for seven critical reading performances: instant word recognition, decoded word recognition, word meanings, oral reading, silent reading comprehension, listening comprehension and attention/motivation. Test scores, test descriptions and examiner comments were presented via the computer. Completed test booklets, audio tapes and other written documentation were included in the accompanying study guide. When this information was requested, the computer program referred the student to the appropriate section of the study guide.

On the basis of data collected, each student-clinician then diagnosed "Stephen's" reading problems using diagnostic decision aids which forced the student-clinician to make decisions about the critical reading performances. When the decision aids were completed, the student-clinician returned to the computer and entered performances. The diagnosis was then stored in the computer memory. Each student-clinician's diagnosis was then automatically compared with the criterial diagnosis stored in the computer memory. The computer listed both diagnoses, noting areas of disagreement and calculating percent of agreement.

The student-clinicians were encouraged to confer with each other as they collected data. The investigator observed and interacted with the student-clinicians as they discussed "Stephen's" reading problems. Practice diagnoses made by the student-clinicians were discussed in class. The investigator and each student-clinician kept a log of comments about "Stephen's" reading problems and the use of such a computerized case study as a training device.

Results and Discussion

Results indicate that the use of the computerized case study improved the quality of training offered to student-clinicians preparing to diagnose reading problems. The program enabled each student-clinician to (a) become familiar with administering, scoring and interpreting a diagnostic test battery, (b) make diagnostic decisions with a thorough understanding of the likely underlying factors causing the reading problems, and (c) gain self confidence as a diagnostician.

The student-clinicians became familiar with several testing instruments as they were administered to" Stephen." A great deal of time was spent reviewing and discussing each test, the data and the audio tape recording of the test administration. On several occasions the student clinicians disagreed with the testing and scoring procedures. For example, the student-clinicians commented that Stephen's errors on the oral reading subtest of the *Durrell Analysis of Reading Difficulty* should

have been qualitatively analyzed. Also, on several occasions the student-clinicians felt that Stephen sounded tired and should not have continued with the testing. In-class discussions frequently focused on test administration and scoring procedures that seemed questionable to the student-clinicians.

The decision aides were particularily effective in directing the student-clinicians to consider systematically all reasonable diagnostic categories and the likely underlying causal factors relative to Stephen's reading problems. The decision aids, which were later used when diagnosing the reading problems of "real" children, helped the student-clinicians become more reliable in their diagnostic judgements.

Student-clinician comments revealed that "Stephen" improved the self-confidence of each student-clinician. The student-clinicians said they felt more confident when diagnosing reading problems of "real" children because they had "practiced" administering an entire test battery and interpreting the test data beforehand. The program also made it possible for group discussions to focus on one set of data. In reality, it would be impossible for each student-clinician to diagnose the reading problems of a single "real" child for the purpose of group analysis and review of one set of data.

Conclusions

Results of the field test indicate that the use of computerized diagnostic case studies could improve the quality of instruction provided in reading methods courses for preservice teachers, and special education diagnosis courses. The program would help these students (a) prepare for classroom diagnosis of reading problems, and (b) better understand clinical diagnosis of reading problems.

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REACTION: THE EFFECTS OF THEMATIC ORGANIZERS ON COMPREHENSION AND TRANSFER LEARNING

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Riskos & Alvarez (1984) conducted two (2) studies concerning the use of Thematic Organizers with a) 48 poor college readers and b) 64 sixth grade subjects of all abilities. Their results were positive *contrary* to many former studies dealing with advance organizers.

The major reason for their success, I believe, lies in their well-thought out and developed thematic organizers. This seems to be one of the key elements in this type of research, yet they are usually not included in research reports due to their brevity. In order to advance research in this area, copies of advance organizers need to be included in research reports (I was supplied with them by the authors in a preliminary paper) since their content and format is the base upon which these studies stand. Without them, replication is virtually impossible and probably is one of the major reasons we find such mixed results in advance organizer research.

Finally, these researchers seem to have followed Tierney and Cunningham's (1984) advice: "Clearly, more research in how advance organizers interact with text characteristics, learner characteristics, and type of learning desired is called for" (616). Unfortunately, our present method of presenting research too frequently prohibits the sharing of important details.

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THE EFFECTS OF THEMATIC ORGANIZERS ON COMPREHENSION AND TRANSFER LEARNING

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The purpose of this paper is to discuss the results of two experiments designed to study the effect of thematic organizers on activating readers' prior knowledge to facilitate conceptual transfer across texts. The first experiment was conducted with college students enrolled in developmental reading classes and the second with sixth grade good and poor readers.

Background

A sequence of studies have been conducted to investigate the effect of an instructional strategy (thematic organizer) on activating average and poor readers' (elementary, secondary, and college students) prior knowledge when reading text and verse (Alvarez, 1980, 1983; Alvarez & Risko, 1982, 1984; Risko & Alvarez, 1982, 1983a, 1983b).

Experiments were conducted in classrooms and remedial settings by teachers. Findings indicated a significant difference between experimental and comparison groups on literal and inferential comprehension. The ability to discuss and elaborate upon the implied, thematic concept was enhanced by the relevant framework that was presented prior to and during textual reading.

Rationale and purpose of studies

While it is important to investigate the effect of instructional strategies on reading comprehension, it is equally important to determine whether such strategies aid students' ability to understand new examples or variations of concepts that they have previously learned when they are presented in novel passages. Few studies have investigated the effects of transfer from one discipline to another. One exception is the set of studies conducted by Royer and Cable (1975, 1976) that found that an explicit passage acts as an organizer when followed by an abstract passage. Royer and Perkins (1977) replicated these studies and found that the same results did not diminish over an extended time interval.

It seems that there are at least several requisites for transfer of learning to occur. First, students need to know that what they have learned previously can help their understanding of information presented in new contexts. Second, depending upon the nature of the task students can rely on identical information or generalized principles to help them perform with novel contexts. Third, there is a need for practice situations that illustrate the relevance among attributes of previously learned concepts and those concepts presented in new and different contexts.

Cognitive psychologists, such as Bransford (1979), recognize the role of prior knowledge in transfer learning. Studies of reading comprehension, however, have not identified how instructional strategies that enhance and activate prior knowledge can encourage students to use what they have learn-

ed to comprehend and recall new, but related information in varied texts. If knowledge acquisition depends on the interplay between present information and currently activated knowledge, then it seems necessary to investigate whether an instructional strategy, such as a thematic organizer, can facilitate this interaction.

The first experiment investigated students' ability to identify and generate novel information about concepts in varied content materials. The second experiment was conducted to determine whether students could comprehend a concept that was discussed in two different passages.

Thematic Organizer

A thematic organizer was constructed by modifying a procedure developed by Alvarez (1980, 1983). A thematic organizer is a text adjunct designed to: (a) highlight systematically and explicitly the central theme of the text; (b) relate the theme to experiences and/or knowledge believed to be within the knowledge base already possessed by students; and (c) provide cohesion among the ideas to accommodate text structure.

Method

Experiment One: Data were analyzed with a 2 x 2 ANOVA with repeated measures. Forty-eight poor readers enrolled in college developmental studies classes were selected for this experiment. Subjects had a composite score (English, mathematics, social science and natural science) ranging from 2 through 9 on the American College Test (ACT). Natural settings were used and an instructor conducted the experiment. Subjects were identified by randomization with replacement and assigned to each of four groups. Comparison and experimental groups each contained 12 subjects. After analysis for passage effect (no difference) groups were collapsed into two groups with twenty-four subjects in each group. Subjects in the experimental group received the thematic organizer. All subjects were given two passages (one science passage and one literature passage) which presented the concept "scientific method of research." Passages were counterbalanced across groups. Questions following the readings were used to assess student ability to transfer or "generalize" their understandings of concepts across content materials. Data were analyzed descriptively.

Experiment Two: Data were analyzed with a one way ANOVA. Sixty-four sixth grade subjects participated in this experiment. Subjects were randomly assigned by their classroom teachers to eight groups by stanine scores based upon the Reading Subtest of the Metropolitan Achievement Test, Form JS (1978). Good readers were grouped according to stanines five through nine; poor readers had stanines of two through four. Comparison and experimental groups each contained eight subjects. After analysis for passage effect (no difference) groups were collapsed into four groups (experimental good readers with thematic organizer and passages, comparison good readers without thematic organizer; experimental poor readers with thematic organizer and passages, comparison poor readers without thematic organizer). Each of the four groups contained sixteen subjects. Subjects in the experimental group received the thematic organizer. All subjects received two social studies passages, one defined the concept "immigrants" while the other provided details about "immigrants" but did not contain an explicit definition. Passages were counterbalanced across groups. Questions following the readings were used to assess student ability to transfer or "generalize" their understanding of concepts across both passages. Data were also analyzed descriptively.

Results

Experiment One:

Subjects with the thematic organizer performed significantly different from the comparison group on literal comprehension questions ($F = 5.54$, $df = 2/46$, $p < .05$), inferential comprehension questions ($F = 9.30$, $df = 2/46$, $p < .01$), and transfer questions ($F = 5.61$, $df = 2/46$, $p < .02$). The means and standard deviations are reported in Table 1.

Table 1
Means and standard deviations for responses to literal, inferential, and transfer questions

	Experimental	Comparison
Literal		
M	3.20	2.33
SD	1.32	1.40
Inferential		
M	5.29	3.20
SD	2.36	2.55
Transfer		
M	4.08	2.62
SD	2.22	2.14

The subjects in the comparison group had significantly more *incorrect response* ($F = 23.39$, $df = 2/46$, $p < .001>$ than subjects in the experimental group. The means and standard deviations for the Experimental Group were 1.20 and 1.25 respectively; and for the Comparison Group 3.75 and 2.25 respectively.

Experiment Two:

Both good and poor readers who received the thematic organizer treatment performed significantly different from subjects in the respective comparison groups on literal and inferential transfer comprehension questions.

Experiment Group — Poor Readers = Literal Comprehension Questions $F = 6.77$, $df = 1/30$, $p < .025$; Inferential Transfer Comprehensive Questions $F = 9.38$, $df = 1/30$, $p < .005$.

Experimental Group — Good Readers = Literal Comprehension Questions $F = 6.87$, $df = 1/30$, $p < .001$. The means and standard deviations are reported in Table 2.

Table 1
Means and standard deviations for responses to literal, inferential, and transfer questions

	Experimental		Comparison	
	Good Readers	Poor Readers	Good Readers	Poor Readers
Literal				
M	11.63	6.89	8.5	4.25
SD	1.53	2.63	4.51	2.70
Inferential Transfer				
M	11.94	7.43	9.38	3.75
SD	1.48	3.33	2.19	3.47

Discussion

Activating and expanding knowledge of thematic concepts prior to reading (through the use of a thematic organizer) facilitated subjects' ability to generate explanations for "new" information that were plausible and meaningful. Subjects with a thematic organizer could create integrated and meaningful interpretations of concepts across contexts. The ordering of passage presentation according to structure did not affect comprehension differentially. The analysis of means of incorrect answers revealed that significantly more incorrect responses occurred when the older subjects read the passages alone (regardless of text structure) than when they received the thematic organizer and passage.

The results of these experiments provide support for the use of a thematic organizer to enhance recall and transfer of learning. Providing explicit examples of how attributes of a concept can be generalized to varied situations in a context relevant to subjects' prior knowledge aided reading comprehension. The thematic organizer may enable readers to "fill-in" the gaps left void by an ill-defined concept (experiment one) and supplement the text by organizing its structure (experiment two).

This investigation suggests that the role of prior knowledge cannot be underestimated in its effect on transfer learning. Alerting students to common elements between their prior knowledge and concepts presented in varied contexts can reduce confusion and encourage generalizability of knowledge.

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COMPREHENSION AND LANGUAGE CUES

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According to the principle proponents of the psycholinguistic philosophy (K. Goodman, 1970; Y. Goodman, 1975; Burke, 1975; Mavrogenes, 1975; Allen, 1976), reading requires not so much skills as strategies that make it possible to select the most productive cues present in language. Reading strategies are the myriad ways readers process information when dealing with written language; they are the methods employed to reconstruct a message as readers perceive the author produced it. The most basic and important strategy (Smith, 1971; Cooper and Petrosky, 1976) is the utilization of redundancies — orthographic, syntactic, and semantic — to reduce uncertainty about meaning. Communication theorists use the word "redundancy in a special sense to describe a tendency of language to restrict the sequences in which language symbols can occur, to furnish several cues to the same bit of information, and, thus, to be less than 100 percent efficient in the amount of information transmitted per unit of language (Smith, Goodman, and Meredith, 1976). This inefficiency or redundancy has two germane effects on reading: firstly, it provides repetitious cues within words and in the flow of language, and, secondly, it provides a narrowing of elements in language that can occupy certain slots. The process by which the reader immediately or eventually recognizes a word is a kind of tentative "zeroing in" (Smith, Goodman, and Meredith, 1976). Successive sets of redundant cues narrow the number of possible words in the language that can fit. As he responds to these redundant cues, the reader is guessing, but he is an enlightened guesser. He is using his knowledge of language, his past experience, and his developed concepts. If he makes a mistake, there are almost always abundant additional cues to tell him that he is wrong and to tell him what is right.

The more redundancy there is, the less visual information the skilled reader demands (K. Goodman, 1966, 1967). In passages of continuous text, assuming that the language is familiar and the content is not too difficult, every other letter can be eliminated from most words, or about one word in five omitted altogether without making the passage incomprehensible (Smith, 1978). Since its development, the cloze procedure (Taylor, 1953) has been used as a major tool in the investigations of a number of the above-mentioned theoretical positions. Cloze is based on the assumption that the interaction of all semantic, grammatical, and stylistic characteristics of a message will affect the degree of redundancy, that is, the predictability of a message. A highly redundant article should be easy to read because it contains many frequently used words arranged in commonly used language patterns so that the reader is, in large degree, aware of what is coming next at any point in the text. A cloze test may, therefore, be considered a sample of message redundancy because it samples the reader's ability to predict what comes next at chosen points in the article (Rankin, 1959). From the point of view of linguistics, cloze tests are particularly attractive as a means of testing the comprehension of text since they call on the per-

son taking the test to employ the constraints of language in order to perform the testing task (Griffin, 1978). A reader who succeeds in completing correctly a relatively large number of missing words might be regarded as one who is able to make greater use of redundancy in the passage and who consequently, comprehends it more (Smith, 1978).

Psycholinguistics appears to offer a viable conceptual foundation on which to base the exploration of some of the underlying processes involved in reading — the exploration of reading as an active, learning process rather than a final product. Since even a cursory examination of a cloze exercise would reveal that producing correct responses involves sensitivity to both distributional and sequential redundancy, the use of such a technique would seem to be a promising approach for investigating language and reading competency. This study was an attempt to examine whether, in fact, comprehenders at the secondary school levels possess the ability to utilize the constraints of syntactic and semantic redundancy as reading strategies. One way in which this analysis may be useful is to provide the theoretician with evidence as to what a model of comprehension might encompass. If certain aspects of the process appear more difficult than others, researchers may gain insight into the hierarchical nature of the components of the skill. In addition, contrasting comprehenders at various stages of the acquisition process should provide pedagogical implications. To design reading comprehension instruction for the reader requiring remediation, it may be pragmatic to determine at what points in the process good, average, and poor comprehenders do and do not diverge.

Purpose and Procedures

The present study was an investigation of how language cues used during silent reading are affected by level of comprehension and grade level placement. Specifically, the purpose of the study was to examine the abilities of good, average, and poor comprehenders at the eighth, tenth, and twelfth-grade levels to utilize syntactic and semantic redundancy as reading strategies. Additionally, the relationship of syntactic to semantic scores for good, average, and poor comprehenders, and the relationship of syntactic to semantic scores for eighth, tenth, and twelfth-grade students were explored. The particular questions addressed were as follows:

1. How do good, average, and poor comprehenders at the eighth, tenth, and twelfth-grade levels differ in their abilities to employ syntactic redundancy strategies during silent reading?
2. How do good, average, and poor comprehenders at the eighth, tenth, and twelfth-grade levels differ in their abilities to employ semantic redundancy strategies during silent reading?
3. Are syntactic and semantic redundancy abilities differentially related in regard to level of comprehension?
4. Are syntactic and semantic redundancy abilities differentially related in regard to grade level placement?

The subjects for this study were 180 eighth, tenth, and twelfth-grade students selected from Jefferson High School, Jefferson, Georgia. At each grade level, 60 students were assigned to one of three comprehension level groups. The basis for determining the reading levels of these students was a standardized reading test at the secondary level, *The Nelson-Denny Reading Test,* Form C (J. Brown, 1976). Percentile ranks and grade equivalents were employed to stratify subjects into good, average, and poor comprehension level groups.

The instruments used for data analysis were six modified cloze tests, a set of two designed for each grade level. Initially, two selections of approximately 300 words in length and a readability level in the 7.0 to 8.0 grade equivalent range were chosen for the tenth-grade sample. These passages were rewritten downwards to a readability level in the 5.0 to 6.0 grade equivalent range for the eighth-grade sample and upwards to a readability level in the 9.0 to 10.0 grade equivalent range for the twelfth-grade sample. Rewriting was executed by manipulating syllabication, word length, and sophistication of vocabulary. Syntax was held constant. Final readability was substantiated by both the Fry Readability Graph and the Raygor Readability Estimate. Three passages were then examined to identify the syntactic/structural elements and three passages were examined to identify the semantic/lexical elements. The criteria utilized for differentiating the grammatical elements were Fries' (1952) function and content word classifications. According to Rankin (1959), structural meaning is signaled by individual function words which include such words as verb auxiliaries, articles, prepositions, conjunctions, and possessive and relative pronouns. Lexical meaning, conversely, is conveyed by nouns, verbs, adjectives, and adverbs. To construct the cloze tests, an every fifth word deletion pattern was employed on the targeted structural elements and on the designated lexical elements. The 180 subjects were requested to complete two modified cloze tests, a syntactic and a semantic, randomly distributed from the appropriate grade level cloze passages. In the scoring of responses, only exact word replacement was accepted as correct.

Two two-way factorial analysis of variance designs were used to test the hypotheses related to questions one and two. Eta coefficients were calculated to establish the magnitude of effect size of significant *F*-values. Bonferroni *t*-statistics were performed to compare group means when analyses resulted in significant *F*-values. The hypotheses written from questions three and four were tested utilizing two tests for the significance of differences between independent correlations. The .05 level of confidence was used to determine statistical significance.

DISCUSSION

The results of the present study indicate that grade level placement had a fairly moderate and statistically significant effect on secondary students' abilities to utilize syntactic and semantic redundancy. Approximately 12 percent of the variance in performance on both syntactic and semantic cloze tests can be accounted for by knowing a subject's grade level placement. Specifically, a comparison of group means revealed that two stable mean differences existed. Students in the twelfth-grade group achieved appreciably higher scores on the two measures than did their eighth and tenth-grade counterparts. These findings appear to add little in explaining the contradictions emerging from previous research. The data from some well-designed experiments suggested that there was no relation between level of grade placement and sensitivity to

language structure and passage meaning. For example, Siler (1973-74), Rode (1974), and Ryan and Willows (1979) found that older, more skilled readers made no greater use of these sources of information than did younger, less skilled readers. In contrast, Pearson and Studt (1975), Streib (1976-77), and Deck (1977) have reported results that appear to be in direct conflict with those just presented. These latter researchers have compared groups across grade levels, and have concluded that children utilize syntactic and semantic information more and more effectively than one grade to the next. Methodological variations may contribute to these diverse findings since research with the cloze procedure has not been consistent in deletion patterns, type of text, age of subjects, and tests used as the criteria.

The results of the present investigation also indicate that comprehension level had a moderate and statistically significant impact on secondary students' abilities to employ syntactic and semantic redundancy strategies. Approximately 23 percent of the variance in performance on a syntactic cloze test and 40 percent of the variance in performance on a semantic cloze test can be explained by knowing to which reading level a subject was assigned. Good comprehenders scored considerably higher on both tasks than did average and poor comprehenders. These findings support all similar studies in the related literature. Cromer and Wiener (1966), Rousch (1972), Watson and Clay (1975), Clearly (1976) Neville and Pugh (1976-77), and Ryan and Willwos (1979) have shown that regardless of grade levels used good readers demonstrated the ability to use grammatical and contextual constraints more proficiently than poor readers. The difficulty of the test materials may have been confounded with level of reading ability, such that any differences in performance between good and poor readers might be attributable to the relatively greater difficulty of the task for the poor readers. Because of the amount of variance explainable by grade level placement and level of comprehension, it appears that the completion of a cloze test requires a complex set of factors. As Rankin (1974) and Streib (1976-77) have stated, such factors as background information, general language ability, and attention span should be considered. Another reason may be that the intellectual challenge of engaging in the "psycholinguistic guessing game" of predicting, sampling, selecting, confirming, or rejecting is insufficiently appealing to motivate some children to exert the necessary effort.

In the present study it was also found that syntactic and semantic cloze scores were not more positively related between grade level placement groups or between comprehension level groups. Comparisons of correlation coefficients between eighth and tenth-grade subjects, tenth and twelfth-grade subjects, and eighth-and-twelfth-grade subjects demonstrated no significant differences. Likewise, there were no statistically significant differences between the correlation coefficients of good and average comprehenders, average and poor comprehenders, and good and poor comprehenders. All initial correlations were stable and fell within the moderate range (.312 to .589). These findings are somewhat lower than those reported by Vaughan, Tierney, and Alpert (1977) whose results (.49 to .70) indicated moderately high positive correlations across grade levels. However, this previous study analyzed the data in terms of syntactically acceptable and semantically acceptable cloze scores, and not in terms of exact word replacement. In accord with the latter research, results of the present study suggest that syntactic and semantic elements of language are neither independent of one another nor totally dependent. Instead, these elements are related aspects of language and should both be considered when attempting to explicate language and its relationship to students' reading achievement. In view of assessing observed responses in reading comprehension via cloze tests, a meaningful relationship exists between syntactic and semantic elements.

Finally, the results of this study show variable functioning of language deletion systems with a secondary school sample. Semantic cloze tests with deleted content/lexical words were more difficult to complete than syntactic cloze tests with a function/structural word deletion pattern. These findings are in agreement with those of Taylor (1957), Rankin (1957), Louthan (1965), Weaver (1965), Weaver and Bickley (1967), and Hittleman (1971), who utilized similar deletion systems. For the total sample in the present research, successful syntactic cloze responses were 2.2 times greater than successful semantic cloze responses. These ratios for good, average, and poor comprehenders were 1.9, 2.3, and 2.9, respectively. Across grade level placements, the ratios for eighth, tenth, and twelfth-grade students were 2.4, 2.3, and 2.1, respectively. It would appear that good readers at the eighth-grade level as well as poor readers at the twelfth-grade level have problems identifying nouns, verbs, adjectives, and adverbs from context. One explanation for this phenomena may be that syntactic redundancy is rooted in linguistic predictability, whereas repetition tends to figure more importantly in semantic redundancy. Consequently, the conceptual information needed to reduce uncertainty about content test items would be more widely scattered throughout a passage and less easily retrievable from a "language storebank." That readers at the secondary level where, supposedly, experiential background is at a more advanced level and decoding skills have been mastered can infer context accurately through reading appears open to conjecture. Instead, it seems that readers at all levels require direct instruction in the employment of redundancy and context clues as efficient and fruitful strategies. The use of cloze materials for training purposes in the reading classroom would appear to be a promising approach for developing these sensitivities.

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A NATIONAL SURVEY ON THE USE OF BASAL READERS

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The first reading series published in the United States, written by William H. McGuffey, appeared between the years 1836 and 1844 (Smith, 1965). Since that time basal reading series have been used consistently in elementary schools throughout the country. In 1981 Aukerman indicated that 80 to 90 percent of schools used a basal reading series in one form or another as the primary source of reading instruction. Concern about teachers' use and perceived value of basal readers led to the development of a questionnaire by two West Virginia University Reading faculty members. The questionnaire was designed to obtain information from elementary teachers about their perceptions and reactions to the use of basal readers within their classrooms and schools.

The questionnaire was sent to twenty randomly selected elementary schools in each of the fifty states. This random selection came from a computer tape of public schools located throughout the United States (Department of Health, Education and Welfare, 1977-78). Three hundred and ninety-one schools (39.1%), representing all fifty states, replied to the questionnaire. A cover letter addressed to each principal explained that his/her school had been selected to participate and provide information for this national survey. The principal was asked to give the questionnaire to a teacher, who taught in grades one through six, in a self-contained classroom. If the school organization was other than self-contained, the questionnaire was to be given to any elementary teacher who was then requested to indicate, as a general comment, how the school was organized. Participants in the survey were assured that their identity would remain anonymous and their responses confidential. The questionnaire solicited: (1) background information, (2) current method of reading instruction, (3) use of a basal reader, (4) perceptions of a total reading program, (5) grouping and evaluation practices and (6) general comments applicable to the questionnaire.

Statement of Purpose

The purpose of this research was to determine on national and local levels how and to what extent basal readers were being used by elementary grade teachers. Specific information requested included: (1) the current method of reading instruction, (2) the role of the basal reader in a total reading program, (3) the series and copyright dates of basal readers being used by teachers in grades one through six, (4) the extent to which the teacher's manual was used, (5) the relative use/nonuse of supplementary reading materials, (6) the extent to which grouping was used, (7) the methods used to evaluate student progress in reading and (8) the level of teacher satisfaction with the use of a basal reading series as a primary means of instruction and with the basal series currently in use.

METHOD

A questionnaire was designed, with the assistance of Dr. Kathleen Bissonnette, Associate Director of Institutional Research at West Virginia University, to provide the information indicated in the Statement of Purpose. The three page questionnaire, twenty-eight items, was mailed to a national randomly selected sample of public schools (twenty per state) with a request to the principal to distribute the questionnaire to an elementary classroom teacher in his/her school.

In the questionnaire teachers were asked first to provide background information concerning their sex, years of teaching experience, the grade or grades they were currently teaching, setting of their schools, the number of classrooms and grades within their schools, and the number of students assigned to their classroom. Secondly, the teachers identified their methods of reading instruction and their perceptions concerning a total reading program. The process for selection of basal readers, as well as satisfaction/dissatisfaction regarding the procedure, was indicated. Other questions included the use of teachers' manuals, supplementary materials, grouping and evaluation of students in addition to satisfaction/dissatisfaction with the basal readers and the total reading program. At the conclusion of the questionnaire, teachers were given the opportunity to add general comments which they deemed relevant to the study. The completed questionnaires were returned to the researchers in self-addressed, postage paid envelopes and prepared for computer analysis with the assistance of Steven Rinehart, a doctoral student in Reading at West Virginia University. Results of this study were based upon the total number of responses to individual questions rather than the total number of questionnaires which were returned.

RESULTS AND DISCUSSION

Background Information

Of the 391 respondents who returned the questionnaire, 318 (82.2%) were females and 69 (17.8%) were males. Four did not respond to this item. The years of teaching experience ranged from one to fifty-five years with the mean being eighteen years. For the purpose of this study, the years of teaching experience were divided into four categories: the beginning teacher (1-2 years), the critical years for the teacher (3-7 years), the experienced teacher (8-31 years) and the experienced "plus" teacher (33-55 years). Six respondents did not answer this item. Eight teachers (2.08%) were beginning teachers and sixty (15.58%) reported they had taught between three to seven years, years which the researchers termed "critical" because some teachers choose to leave teaching during this period to enter another field or profession. Three hundred and ten teachers (80.52%) were identified as experienced (8-31 years). Seven (1.82%) had taught beyond thirty-one years.

The majority of the respondents indicated the grade or grades they were currently teaching. Three hundred and seventy-eight reported a range from first through sixth grade with some teachers reporting combinations of two or three grades, dependent upon the school's organization. The responses to the number of students per classroom were as follows: (1) one to ten students in seven rooms, (2) eleven to twenty in ninety-five rooms, (3) twenty-one to thirty in 262

rooms and (4) thirty-one plus in twenty-one rooms. Six participants did not respond to this item.

School location was requested in this survey and the settings were identified as urban, suburban, rural and "other." Forty respondents (10.34%) reported their locations as urban, ninety-five (24.55%) as suburban, 236 (60.98%) as rural and sixteen (4.13%) as "other." Four participants provided no setting. School size ranged from small, one to seven classrooms (10.10%), to large, more than twenty-two classrooms (24.87%). The average school size was between fourteen to twenty-one rooms (37.05%).

Reading Instruction

Of the 391 respondents, 371 (95.37%) reported they used basal readers as their major means of reading instruction. Eighteen participants (4.6%) provided a variety of responses which included individualized instruction, language experience approach, use of multiple basals, phonics and/or comprehension programs, content area integration and programmed instruction. Ninety-three (25%) of the participants who used basal readers as their primary means of instruction indicated they perceived the basal reading series as the total reading program.

Basal Reading Series: Selection and Reactions

According to the population represented in this study, basal series were selected at state, regional, county, city/town, school and teacher levels. Respondents indicated that teachers and schools play an important role in the selection of basal series. However, approximately one-third of teacher and school selections were dependent upon prior city/town, county, and/or state decisions. Regional areas played a relatively small role (.06%) in the selection of basal series. Three hundred and forty-two (93.19%) of the respondents reported they believed that their method of selection was appropriate. Only twenty-five (6.81%) indicated that the method for selection was inappropriate.

Respondents were asked to submit the name(s) and copyright date(s) of the basal series adopted for their schools. A total of twenty-one basal series were mentioned. Some respondents indicated more than one series approved for their schools from which they could select a basal reader for their classroom. Although some respondents listed multiple basals, they did not, or could not, prioritize the series approved for their schools. Consequently, the separate listings were collapsed by the researchers into one list. Coincidentally, of the twenty-one basals which were listed, five publishing companies appeared at the top of each listing. The series most frequently mentioned were those published by Houghton Mifflin Co.; Ginn and Co.; The MacMillan Publishing Co.; Harcourt Brace Jovanovich, Inc.; and Scott, Foresman and Co. The next two companies mentioned were the Economy Co. and Holt, Rinehart and Winston. Over sixty percent of the basal series which were mentioned for school approval had copyright dates of 1979 or later.

Respondents were then asked to indicate the name and copyright date of the basal reader currently being used in their classrooms. Most teachers reported one basal series but mentioned a second series which, in some instances, was used as a supplementary basal. Of the twenty-one series listed for school approval, four publishing companies appeared at the top of the classroom listing: Houghton Mifflin Co.; Ginn and Co.; The MacMillan Publishing Co. and Scott, Foresman and Co. The next three companies listed were Harcourt Brace Jovanovich, Inc., Holt, Rinehart and Winston, and The Economy Co. Approximately fifty percent of the basal readers used in the classroom had a copyright date of 1980 or later.

Teachers' reactions relative to satisfaction/dissatisfaction of basal reading series were requested. Eighty-eight percent of 375 respondents reported "very satisfied" or "satisfied," 4.8% were "uncertain" and 7.2% indicated "dissatisfied." A second question regarding satisfaction/dissatisfaction of the use of a basal reading series as a primary means of reading instruction was requested. Eighty-nine percent of 373 respondents were "very satisfied" or "satisfied," 7.2% were "uncertain" and 4% were "dissatisfied." No respondent indicated "very dissatisfied" with the basal reader as a primary means of instruction.

Teachers' Manuals and Supplementary Materials

Only one of 374 respondents reported that he/she was not provided with a teacher's manual. Thirty-one percent of 356 respondents indicated they were *expected* to follow the manual "very closely," sixty-two percent indicated "somewhat closely," while only 6.74% reported they were not expected to "closely follow" the manual. When asked how closely they thought the manual *should* be followed, ninety-six (25.74%) of 373 respondents replied "very closely," 263 (70.51%) indicated "somewhat closely," while fourteen (3.75% reported they did not think it was necessary to "closely follow" the manual.

When asked, "Does your school provide supplementary materials published as part of the basal series?", 363 participants replied *yes*, twelve replied *no* and sixteen, no reply. Those respondents who indicated *yes* to this question reported that basal series workbooks were the predominant type of supplementary material being provided. Library type books, audio-visual materials and "other" were reported to a lesser degree. "Other" included materials such as wall charts, duplicating masters, bonus books and kits.

Total Reading Program

Respondents were requested to provide information concerning the components they perceived as being important to a total reading program. Three hundred eighty-five respondents viewed basic instruction as important, 383 considered content reading skills as important and 381 regarded recreational/library reading as important. Ninety-one of 383 respondents suggested "other" components they considered important. Some of the "other" components mentioned were remediation materials, functional literary skills, study skills, research and listening skills.

Supplementary Materials — A previous question requested the teachers to indicate whether or not supplementary materials were provided as part of the basal series. A second question requested information concerning general supplementary materials used in the classroom. In descending order the general supplementary materials included comprehension materials (368 respondents), phonics materials (329), kit materials (295), magazines (236), newspapers (223) and

"other" (138). "Other" materials mentioned included comic books, filmstrips, old basal readers and library books.

Grouping — Grouping was another consideration within a total reading program. Three items on the questionnaire dealt with grouping. Within their classrooms, 322 (83.20%) respondents reported grouping. Within grade levels, 231 respondents (59.59%) used grouping; within the school, 161 (41.60%) used grouping; while fifteen (3.91%) respondents indicated other combinations.

Respondents were asked whether provisions were made *in* the classroom for children who have above average ability. Three hundred sixty-eight respondents (95.34%) reported *yes* while eighteen (4.66%) reported *no*. When questioned about provisions made *outside* the classroom for children with above average ability, 256 (65.98%) reported *yes* and 132 (34.02%) indicated *no*. Respondents were also asked about provisions for the below average student *within* the classroom. Three hundred seventy-five (97.15%) reported *yes* while eleven (2.85%) indicated *no*. Provisions for the below average student *outside* the classroom were reported by 367 respondents (94.59%) as *yes* and twenty (5.41%) as *no*.

Evaluation — A third consideration within a total reading program involved evaluation of students. Methods used by teachers for evaluation included, in descending order, observation, 378 respondents (97.42%); basal reader tests, 349 (90.18%); standardized tests, 324 (83.5%); and workbook tests, 303 (78.50%). "Other" evaluations, such as oral tests, writing activities, state competency tests and teacher-made tests, were indicated by 130 (33.77%) respondents.

Satisfaction — The final item requested the relative satisfaction of each respondent regarding his/her major means of reading instruction with the total reading program. Three hundred sixty-one (93.28%) respondents were very satisfied/satisfied, fifteen (3.88%) were uncertain and eleven (2.84%) were dissatisfied/very dissatisfied.

General Comments

At the conclusion of the questionnaire, participants were given an opportunity to submit general comments which they felt were important or appropriate to the study. Many of the comments were extensions or clarifications of answers previously indicated. The researchers organized the comments into three main categories with subheadings. A sampling of comments follows:

I. BASAL READERS and . . .

A. Total Reading Program

- We feel very satisfied with our reading program. This is due in part to our basal reading program, but also to the fact we place a great deal of emphasis on reading. We have daily silent sustained reading throughout the elementary school, take part in RIF, and do many activities which emphasize reading skills in our own classroom and with other classrooms. The basal series has been a good foundation on which to build our program, but it is in no way responsible for all the success in our reading program.
- Basal readers seem very important to use in the first couple of years of reading. The controlled vocabulary is very important. The upper elementary grades do not need to depend as much on a basal reader. An excellent reading program could be built around library books with many different areas of subject matter.
- Sorry, I couldn't help you to evaluate the basal series, but I haven't used one for ten years. I emphasize reading aloud to the class on a daily basis, daily creative and practical writing activities, cooperation activities, and plenty of silent reading for fun.

B. Supplementary Materials

- I like the reading series that we are now using because it has more than enough supplementary materials to build on each individual's needs.
- We also have a variety of reading materials, along with our own media center whereby a teacher may check out materials to fit the needs of each student.
- I feel I do not have enough supplementary materials, such as magazines, kits, etc., in my classroom. These are available in the learning center; however, I would prefer more materials in the classroom. A lack of funds makes many types of materials unavailable.

C. Satisfaction/Dissatisfaction

- Our children have had phenomenal success learning to read with a phonic/linguistic approach.
- I feel we have a very satisfactory reading program. I also believe a good reading program needs good instruction.
- Our basal reading series is a sight vocabulary series. Phonics is not stressed. I found a need to add more phonics to the program for those who are not as quick with sight vocabulary. I prefer a reading series that incorporates language skills and spelling as part of the whole reading experience.

II. MULTIPLE BASALS

- In our school we teach reading in a language arts block. The children are grouped according to reading ability. We use 2 basal readers, one for the top 10-15% and another for the other students. A weakness of our overall program is teaching study skills.
- In the near future our school system hopes to go on a bi-basal reading program (intended for high group, above average ability).

III. GROUPING

- I enjoy teaching reading. The problem comes with the wide range of reading abilities within a class. I, therefore, have five reading groups daily. This makes it very difficult, if not impossible, to do all the various strands of instruction that are mentioned in the Teacher's Guide.
- Students are placed in basals on the level of their achievements. Basals are not the only approach.
- We have a non-graded approach to reading and the students are sent to the level on which they are reading rather than a self-contained classroom situation. In the classrooms the basal readers are used almost exclusively as a means of reading instruction.

SUMMARY AND CONCLUSIONS

Although much research has been conducted concerning the use of basal readers, this particular study was directed to elementary teachers to determine teachers' use and perceived

value of basal readers. Additional information concerning the teacher's background and experience, reading instruction in general, grouping and evaluation of students was provided by the participants. Responses were received from teachers in each of the fifty states with a return rate of 39.1% reflecting national trends and practices. All grades, kindergarten through sixth, were represented in this study. Nearly seventy percent of the classrooms had twenty-one to thirty students while only five percent had above thirty-one. Less than two percent had ten or fewer students. Over eighty-five percent of the school locations were identified as rural or suburban.

The major conclusions of this study were:

(1) Basal readers remain the predominant approach to reading instruction in the United States.
(2) One fourth of the respondents viewed the basal reader as a total reading program.
(3) The majority of schools used a committee of teachers and administrators to select their basal readers. Many of these selections were dependent upon prior city, county or state decisions.
(4) Although twenty-one basal reading series were mentioned, only five major series were predominently used within the schools. Four of these five series were consistently used within the classrooms.
(5) Almost all teachers were provided with the manuals which accompany their basal reading series.
(6) The majority of teachers used supplementary materials which were either part of the basal reading series and/or general supplementary materials.
(7) Most teachers utilized grouping within their classrooms.
(8) Observation and basal reader tests were the most popular means of evaluation.
(9) Over eighty percent of the teachers indicated satisfaction with their basal reading series as the primary means of reading instruction.
(10) Over ninety-three percent of the respondents indicated they were satisfied with their total reading program.

The data reported in this study involved a compilation and synthesis of the information provided by the respondents. Because basal readers continue to be the major approach to reading instruction in the United States, additional expanded research needs to be conducted. The data from this survey will be reexamined and manipulated to determine the correlation between the use of basal readers and (1) teachers' experience, (2) grade levels taught, (3) pupil enrollment and (4) school size and location. Further research may involve the use of basal instruction with supplementary materials, other reading approaches and grouping. Because reading success appears to be dependent upon the skills presented in basal readers, educators must continue to reevaluate how and to what extent basal reading series are perceived and used by classroom teachers.

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VARIATIONS IN VISUAL AND AUDITORY MEMORY FOUND IN A GROUP OF ILLITERATES

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Literacy is a goal which is common to most cultures and most individuals. Historically, most movements seeking to improve man's lot have included efforts to increase literacy. Certainly there is an occupational necessity for more flexibility in learning than ever before. The entry level skills for industry are not likely to decrease in a society of ever increasing technology. Consequently, an upturn in interest in attacking illiteracy is evident.

There has been a shift from some of the more traditional views about illiterates and the patterns recommended for literacy education. The traditional view of the illiterate was that he was a "deprived learner" who had been prevented by geographic isolation, physical disabilities or economic hardhardships from enjoying the advantages of public education. A statement written as recently as 1977 maintains that "there remain many adults who are unable to functionally read and write merely because they lack the opportunity." (Cook, p. 106). The illiterates who participated in an educational program were viewed as motivated and eager to learn. A pattern of voluntary programs was developed, a tradition which still operates. However, educators are becoming aware of a large group of illiterates, school dropouts, who are not "deprived learners" in the traditional sense, but are individuals who for a wide range of reasons did *not* learn with *only* normal classroom instruction. This group is becoming larger each year.

A recent issue of *Journal of Reading* (December, 1984) estimates that "each year more than two million people join the pool of functionally illiterate U.S. residents. Of these, 60% are refugees and immigrants, 40% are school dropouts.

More and more frequently literacy programs are being asked to teach individuals who were not successful learners in the past. If we grant the truth of a frequently stated axiom—namely, educational programs succeed when they meet the needs and wants of the participants, educators are faced wtih identifying the specific needs of these diverse individuals. There is, however, little evidence in the professional literature that systematic diagnosis of undereducated adults is widespread. Therefore, the diagnostic information presented here may have some value for others.

The information reported here was obtained because the clients were assigned by a CETA counselor to a "reading academy" for a reading diagnosis. It was explained to the clients that this diagnosis was the first step toward placement in a training program; consequently, the diagnosis was viewed as a component of the placement procedure and each individual completed a reading diagnosis that required approximately two and a half hours. The diagnostician explained that the purpose of the diagnosis was to determine materials and teaching strategies that were suited to the individual's style of learning and needs. At the end of the diagnosis most of the results were shared with the clients and the diagnostician emphasized that the client's needs and interests had been considered when materials and methods of instruction were selected.

Among the measure (tests) used in the diagnosis were:

1. An Adult IRI
2. Mitzel Word Recognition Test
3. Botel Phonics Test
4. Detroit sub-tests #6 and #9 (visual, auditory memory)
5. Spelling Test (when time permitted or results suggested.)

The statistics reported here deal with 118 clients for whom complete data is available.

Sex Distribution of Clients

Males	58
Females	60

Ethnic Background of Clients

White	81
Black	33
Other	4

Age Distribution of Clients

16 yrs. — 20 yrs.	33
21 yrs. — 25 yrs.	30
26 yrs. — 30 yrs.	32
31 yrs. — 35 yrs.	9
36 yrs. — 40 yrs.	2
41 yrs. — 45 yrs.	6
46 yrs. — 50 yrs.	5
51 yrs. +	

In order to summarize the data from the Detroit tests, mental age equivalents were utilized. The higher mental age was noted (either auditory or visual) and the number of months and years difference between the two scores was computed. For example, H.S. (Male) earned the following scores:

Detroit #9 (visual): M.A. 14-0
Detroit #6 (auditory): M.A. 11-6

The difference between the two scores equals 2-6. When the scores were treated in this manner, the results are indicated in the following chart.

VARIATIONS IN VISUAL AND AUDITORY MEMORY

Clients Whose Auditory Memory Scores Exceeded Visual Memory Scores

Number of Months (degree of variation)	Number of Clients
37-48 mos.	1
25-36 mos.	1
13-24 mos.	2
1-12 mos.	6
Total Auditory > Visual	10

Clients Whose Visual Memory Scores Exceeded Auditory Memory Scores

Number of Months (degree of variation)	Number of Clients
121-131 mos.	1
109-120 mos.	2
97-108 mos.	1
85-96 mos.	5
73-84 mos.	9
61-72 mos.	15
49-60 mos.	19
37-48 mos.	16
25-36 mos.	11
13-24 mos.	20
1-12 mos.	6
Total Visual > Auditory	105

Clients With Equivalent Auditory and Visual Memory Scores

Total Visual = Auditory	3

The results indicated that 105 of the clients had higher visual scores and thirteen clients had higher auditory scores. Assuming that a difference of two years or less is not likely to be of enough importance to influence the type of strategy a teacher would use, those clients were instructed with traditional approaches. Eighty-nine of the clients had pronounced strength in visual memory as opposed to two clients who demonostrated pronounced strength in auditory memory.

This information was utilized in planning instruction for these clients. Phonics was not heavily utilized as a way of teaching decoding skills to the eighty-nine clients mentioned. Linguistic patterning was utilized with emphasis on both seeing the spelling pattern and writing it. Glass analysis materials with the emphasis on "clusters" were used with a number of

these clients; words which could be used as "key words" were presented at sight and then used as "keys" to learn other words following the same pattern. Materials that did not require minute auditory discrimination were selected. For the most part, clients responded to this approach. It should be added that clients with strength in auditory memory were instructed using Mott, and/or Steck-Vaughn materials with Systems-80 materials used for independent activities.

When the program was evaluated, it was found that, on the average, clients gained one reader level for every forty hours of instruction. Each student attended the academy for two hours a day. During the first hour, the client worked with a tutor on a one-to-one basis; the second hour was devoted to supervised but basically independent activities.

The strength in visual memory appeared so pronounced among the members of this group that the diagnostician began a search of the literature to determine if researchers had noted similar results with adults. Underwood (1969) noted that "The attributes which are established as a memory during learning may differ as a function of the developmental stage." He suggested that the dominant attributes in young children may be auditory and spatial, but that after exposure to learning experiences in a school setting, "associative verbal attributes may become more important." Johnson and Cortright (1970) attempted to determine if a deficit in cross-modality matching could be a useful diagnostic and predictive indicator for adults learning to read. They reported that "visual matching may be a separate skill which influences the rate of learning in readers at a relatively advanced stage but which at an earlier stage is of secondary importance." Haith (1971) commented that only adults "visually rehearse the encoded information."

It may be that it would be appropriate for instructors of adults to consider the degree of visual memory which each learner brings to the reading task. We have long known that students displaying speech difficulties, hearing limitations, or the inability to speak standard English fluently required a modification when working with decoding skills. Furthermore, for many undereducated adults, phonics may trigger memories of failure. Others view it as childish, "the way little kids are taught." Many of the traditional materials used with undereducated adults, such as Mott and Steck-Vaughn, are heavily phonetic, but the presentation of these materials can be modified. Instead of emphasizing the recognition of the sound of the long or glided "a" in a word such as cake, the VCE pattern can be presented. The client can visually identify the pattern, can write the word, and use this as the "key" in order to decode lake, take and other words which follow this pattern. Writing appears to be a technique helpful to word recognition and can be referred to as "spelling" which most adults will accept. This combination of emphasis on seeing the pattern of the words and writing it as well as other words which follow the same pattern proved very helpful to learners who were diagnosed as having visual memory strength. It is therefore strongly suggested that the identification of the relative strength of auditory and visual memory of each client can contribute to the effectiveness with which the individual adult can be taught to read.

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THE EARLY READER GOES TO SCHOOL: DELIGHT OR DILEMMA

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In the spring of 1983 a group of researchers at Lamar University in Beaumont, Texas, embarked upon a research project that had an immediate goal of identifying a sample of three, four, and five year old children who were reading before beginning formal reading instruction. The long term goal of the research project is to longitudinally investigate these subjects, especially their academic progress and instructional treatment in their formal educational environments. With the aforementioned goals in mind, the authors of this article conducted a pilot study to look at kindergarten teachers' responses to questions concerned with their instructional interaction with early readers. A general profile of the subjects who have been identified as early readers, and a summary of the responses to a questionnaire given to 16 kindergarten teachers are included in this article. Although no precise data are available

on the number of children who are coming to school already knowing how to read, most educators agree that the number of children beginning formal education with some degree of reading proficiency has increased in recent years and will probably continue to increase (Forester, 1977; Cassidy and Vakelich; Lass, 1982). If this trend continues the kindergarten teachers' instructional relationship with early readers will develop into an important aspect of teacher training for colleges of education.

Teacher effectiveness research has affirmed that effective teachers diagnose student needs and plan instruction based on their findings (Blair, 1984). Thus, the increased number of preschool readers and the need to differentiate their instruction poses a potential problem for early childhood educators. The relative ease of identifying a sample of early readers convinced the researchers that kindergarten teachers in the Beaumont area were in fact receiving children with reading skills.

Questions such as, "Were the teachers differentiating instruction and, if so, to what degree was instruction being differentiated," were the questions the researchers attempted to answer in the pilot study. For the purposes of this research project, differentiated reading instruction is defined as " . . . small group and individual instruction to meet the needs of students of different levels of reading (or readiness) competence" (Harris and Hodges, 1981). The assumptions by the authors are that it is the responsibility of the teacher to provide differentiated reading instruction and that only through differentiated instruction can the full capacity of early readers be developed. The latter hypothesis will be tested in subsequent research.

Table 1 provides a profile of the 37 three, four, and five year old subjects who have been identified as early readers. These subjects were each given a reading test, the *Test of Early Reading Ability* (TERA) and an intelligent test, the *Kaufman Assessment Battery for Children* (K-ABC). The percentile scores on both the reading and intelligence tests are reported for the 37 subjects identified as early readers. Any subject who scored 80th percentile or above on the *TERA* was identified as an early reader.

Information about kindergarten instruction for early readers originated from 16 kindergarten teachers who were asked twelve questions about their work with early readers (See appendix A for teacher questionnaire). The questions pertained to what teachers did about screening, readiness testing, readiness training, grouping, enrichment, as well as whether or not they believed the number of children beginning formal education with some degree of reading proficiency had increased in recent years. Most information about the kindergarten teachers' instructional strategies was obtained through a structured telephone interview. Four teacher questionnaires were filled out by the teachers without a formal interview. Interviews took approximately 15 minutes. The sample of teachers selected for this study represented six school systems in the Southeast Texas area. The teachers represented both rural and urban school systems.

The teachers who were interviewed during the pilot study were not the teachers of the early readers who have been identified in the research project. The kindergarten teachers of the early reading subjects in the study were purposely omitted until all the data from the pilot study has been examined carefully by the researchers. This will allow the researchers to ascertain if the questions and procedures used to collect the data are appropriate for subsequent use with the teachers who are actually teaching the early readers in our study.

The primary finding in the pilot study was that the majority of kindergarten teachers provided little differentiated instruction for any students. When asked if children were grouped by reading (readiness) level in the classroom, 25 percent of the kindergarten teachers reported children were not grouped. Thirty-one percent reported grouping occurred, however, instruction was not differentiated. Differentiated instruction did occur according to 37 percent of the kindergarten teachers approximately three months before school dismissal. In only one instance did a kindergarten teacher report that differential instruction occurred at the beginning of the school year. These responses were cross-validated with responses to questions four, five, seven, and eight where most of the kindergarten teachers suggested that they seldomly to never accelerated early reader to higher instructional levels. Also, early readers were seldomly to never taught on levels that differed from their classmates. This was especially true during the first three-quarters of the school year.

A consistent claim among the kindergarten teachers was that all children must participate in readiness training. Ninety-three percent of the kindergarten teachers expressed the necessity for all the children to know the reading prerequisites. According to the teachers, the prerequisites involved letter recognition, knowing consonant sounds, comprehending positional terms, developing appropriate auditory/visual discrimination skills, and using proper oral language.

While the kind of instruction was not found to be differentiated among most of the kindergarten teachers, the quantity of instruction was. Each kindergarten teacher indicated that enrichment activities were provided for early readers. The enrichment activities usually included additional materials such as center activities, language experience stories, library books, and teacher made games. The kindergarten teachers worked with the nonreaders, while the early readers worked independently on the extra enrichment activities.

Summary

There has been an increasing amount of literature about early readers during the approximate 20 years since Durkin's noted study (Durkin, 1966). Although most educators believe that there is an increase in the numbers of children who begin school with reading skills, there appears to be no established pattern of instructional behavior that teachers follow for these children. Continued longitudinal research should help establish the best means of instructing early readers. According to the present findings, however, kindergarten teachers appear to be doing little adaptive or differentiated instruction for children who enter school knowing how to read.

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APPENDIX A

TEACHER QUESTIONNAIRE ABOUT PRECOCIOUS READERS

1. What do you do about screening for reading in your classroom?
2. What do you do about readiness testing for reading in your classroom? If readiness tests are given, what kinds are administered and when are they given?
3. Do early readers go through readiness training in your classroom?
4. What readiness training do the early readers in your classroom go through?
5. Are children grouped by reading (readiness) level in your classroom? If so, how are children grouped according to reading (readiness)?
6. Do you ever accelerate early readers to the next grade?
   Always Frequently Occasionally Seldomly Never
7. Do you ever accelerate early readers to higher instructional levels?
   Always Frequently Occasionally Seldomly Never
8. Do you teach early readers on the same level as their classmates?
   Always Frequently Occasionally Seldomly Never
9. Do you provide enrichment activities for early readers?
10. What kind(s) of enrichment activities do you provide for your early readers?
11. Have you seen a substantial increase in the number of children who are entering school with some reading skills?
12. What reading skills do you see in your children compared to previous years?

TABLE 1

READING AND INTELLECTUAL PROFILES OF THE EARLY READERS

					Kaufman-ABC Percentiles			
Subject	CA		TERA Percentiles		1983		1984	
ID#	1983/1984	Sex	1983	1984	MPC*	ACH*	MPC*	ACH*
**003	5-5/6-5	M	99+	91	79	99	94	95
**004	5-6/6-6	M	96	83	81	97	66	92
**005	4-10/5-10	F	83	71	95	97	97	86
**006	3-9/4-8	F	98	97	96	96	94	91
**009	5-2/6-2	F	81	98	96	97	90	96
**010	4-6/5-7	M	97	98	99.6	99.7	95	98
**011	5-3/6-3	F	83	99	99.4	94	99.6	93
**012	5-4/6-4	M	97	97	94	99	99	99
**014	5-3/6-3	M	97	93	32	73	25	82
*015	5-5/	M	97+		81	97		
**017	4-4/5-4	F	85	87+	88	66	68	82
**018	5-1/6-1	M	97	83	86	97	66	87
*019	6-3/	F	93		66	84		
**021	5-9/6-8	F	99	99	99	97	99	98
*022	4-6/	M	94			99	96	
**023	5-4/6-5	F	83	86	91	81	90	79
024	6-0/	M	96		84	86		
**025	3-5/4-4	F	97	98	90	96	99.6	99.6
*027	5-5/	F	97		96	98		
**028	4-8/5-7	F	86	87	50	87	81	97
**029	5-8/6-8	F	97	95	96	92	99	97
*030	3-5/	F	95		82	90		
*032	/4-5	F		96			98	95
**033	/5-8	F		98			94	95
*034	/6-0	M		98			99.6	95
*037	/5-0	M		96			92	99.7
*038	/4-4	M		90			95	96
*039	/4-10	M		97			90	97
*041	/4-11	M		96			99	66
*043	/4-2	M		95			98	95
*044	/4-9	F		88			95	86
*045	/4-11	M		97			88	93
*049	/4-6	F		94			91	94
*056	/5-5	F		93			88	96
*057	/4-4	F		98			99	99.6
*058	/6-5	M		92			94	86
*059	/3-11	M		88			97	73

*Precocious Reader
**Precocious Reader tested in 1983 & 1984
MPC* Mental Processing Composite
ACH* Achievement

CHANGES IN PRESERVICE TEACHERS' CONCEPTIONS OF THE READING PROCESS: A FOCUS ON COMPREHENSION

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Introduction

For a variety of reasons, the general public, numerous national commissions, many teacher educators, and in Ohio, the State Department of Education are considering a reconceptualization of teacher education programs. This restructuring is being done in response to the belief that the quality of American education has been declining.

Perhaps in some instances we, as teacher educators, have not appropriately prepared preservice teachers. We have sometimes placed the cart before the horse. Preservice teachers may be asked, for instance, to memorize reading terminology before they understand what the reading process is. They may be asked to examine materials before they know the purposes for which the materials were designed. These activities may result in facts appearing to be detached and unrelated to what the learner already knows. When this type of instruction occurs, it is not surprising that some teachers are not adequately prepared to take on the responsibilities for educating elementary or high school students.

In order to gain a new perspective on the preparation of inservice teachers for the teaching of reading, studies have been done in which the conceptions of comprehension for elemen tary preservice teachers have been examined. Duffy and Metheny (1979) have measured elementary teachers' beliefs about reading, and Bawden, Buike, and Duffy (1978) have examined elementary teachers' conceptions of reading and the influence those conceptions have on instruction. Michelsen, Duffy, and LaSovage (1984) have examined how preservice elementary teachers conceptualize their knowledge of reading instruction. However, similar studies have not examined the conceptions of prospective secondary teachers who will be involved in the teaching of reading. The study reported in this paper investigates two preservice secondary English teachers' conceptions of reading, the nature of those conceptions and how conceptions change over the course of a ten week quarter. It is hoped that, by studying what happened with two students, insights can be gained so that future investigations can be planned that will have generalizability to the population of preservice English teachers.

Background

The goals of our instruction of secondary preservice teachers are to provide opportunities for them to gain a theoretical understanding of the teaching/learning process, a grasp of current research on reading and reading instruction, to gain knowledge of the content to be taught, and to have experiences applying the theory and content in a variety of field experiences.

In planning a course of instruction, we, as instructors have examined research findings, talked with public school personnel, reviewed current materials and have reconstructed what we believe is important based on our own teaching experience and our educational philosophies. Our hope is that our preservice teachers will be influenced by what we have taught and that they will be competent teachers.

Recent research on teacher planning suggests that teachers do not focus their planning energy on writing objectives. Instead, teachers tend to focus on the content to be taught (Taylor, 1970; Zahorik, 1975; Peterson, Marx, and Clark, 1978). Based on the content, teachers plan activities and strategies taking into account students' interests and attitudes.

Additional research suggests that effective teachers are decision makers who engage in information processing (Shulman, 1975; Shulman & Elstein, 1975) and that there is a crucial link between teacher thought and teacher action. Teacher thought can exert a profound influence on what is taught, how it is taught, and ultimately on what is learned in schools (Clark & Yinger, 1977; Shavelson & Stern, 1981.)

The belief that a reading teacher's view of the reading process has an impact on instruction has long been a position of reading educators (McKee, 1967, Carroll and Chall, 1975; Cunningham, 1977). An individual's view of the reading process can influence all of the variables described above.

Tying together this recent research with our goal of providing quality instruction for preservice teachers leads to some interesting speculations, especially as one considers a course such as "Improving Reading in the Secondary School." First, are students learning to see the "big picture," the overarching concepts necessary in dealing with complex classroom problems? In other words, do they develop their own model of what reading is? Have we as instructors provided the setting in which this can occur? Second, are students able to integrate new knowledge into their model of reading based on the variety of experiences which they have? To what extent do preservice teachers apply in their field practicums what they have been taught in their reading methods courses? Have we encouraged them to be flexible enough to be open to new theoretical and practical suggestions for change? Third, and perhaps most basic, do differences in the models of reading result in different activities and interactions? Do models have an influence on what content is chosen thus having an effect on what is taught in secondary classrooms?

Models of the Reading Process

The concept of a model of the reading/comprehending process is an intriguing one. It is a concept we believe needs to be investigated to ascertain what the power of models might be and whether models have an influence on what and how a teacher teaches.

The Nature of Models: Years ago, Singer (1970) suggested that models be organized into three categories. The first category would describe theories or procedures for teaching; the second would describe the processes used as one reads; the third would describe the skills and activities required for reading. These categories make the task of looking at reading more manageable: guidelines are provided as the reader compares and contrasts the components of different models. As individuals produce models in any one of the three categories, they are influenced by their differing backgrounds, experiences, education and personal beliefs. Due to these in-

fluences ". . . there is no single reading process . . . there can be no single model for reading" (Levin and Gibson, 1975, p. 438).

The Power of Models: Kenneth Goodman, in writing about the reading process states that there should be no dichotomy between theory and practice. "Theory must become practical; and practice must achieve theoretical validity" (Goodman, 1972, p. 143). His theory of reading instruction is based on an understanding of the reading process as it interacts with the content of what is taught. "This instructional theory can, in turn spawn sound methods and materials which weave the wisdom gleaned by educators from years of teaching children to read into a theoretically sound, articulate instructional program" (P. 143). Goodman's model is congruent with the paradigm proposed by Singer, including processes, abilities, and procedures for teaching.

Samuels is in agreement in relation to the importance of theory. He argues that " . . . there is nothing so practical as a good theory" (1977, p. 15). "Theoretical models," he continues, are "capable of summarizing the past, elucidating the present, and predicting the future" in that well constructed models (1) summarize, in simplified form, many findings and facts in a few principles or generalizations, (2) help us to understand current and on going happenings, events, and processes, and (3) enable us to generate predictions and hypotheses about future events. "A model of the reading process should be able to mirror or represent to some degree what goes on when we read" (1977, 15).

Method

Two undergraduate preservice English teachers were randomly selected from a secondary reading methods course. Each pre-service teacher had completed a course in content area reading and was enrolled in a secondary developmental reading methods course and a 60 hour practicum in a reading and study skills setting. The instructor of the course, the cooperating teacher and the supervisor of the preservice teachers during the practicum were all unaware of those students selected for the study.

Using *Secondary School Reading: What Research Reveals for Classroom Practice* (Berger & Robinson, 1982), the methods course was designed to help preservice teachers translate current research into classroom practice. The practicum setting, a college developmental reading program, provided an opportunity to experiment with these techniques in an environment where a cooperating teacher and university supervisor could give immediate feedback.

During the first week of the course, each of the subjects was asked to draw a diagram to reveal her understanding of the reading process. These "concept maps" forced the subjects to organize their ideas and to show relationships among the elements included. They developed their concept maps by organizing 97 terms related to reading and could include other additional terms as needed. Both subjects' explanations of their concept maps were tape recorded.

During the ten-week practicum experience, each subject was observed and debriefing conferences were held. A final con cept map was developed by each subject in the final week of the course. The same procedures were followed and each subject's explanation was recorded.

Description of the Maps

Mary's original concept map displayed a dozen separate clusters of terms. While she used the words "reading" and "cognitive" as a superordinate heading for her concept map and explained on the tape that "reading is cognitive," there were no visible connections among the twelve differentiated categories. As she explained each cluster of words, Mary made no attempt to establish connections.

For example, Mary discussed the cluster labeled "recreational reading" (including such terms as "enjoyment," "enrichment," and "sustained silent reading") and immediately discussed the terms listed under "language experience" (including terms such as "study guides," "content," "vocabulary," and "inquiry"). Following the course and the practicum experience, Mary retained the "reading is cognitive" focus in her second map and continued to categorize terms in isolated groups; however, the categories were more clearly delineated and some categories received greater or lesser emphasis. For example, "grammar," the category having the greatest number of subordinate terms in the first map, assumes a minor role under "reading" in her second map. While specific teaching techniques appeared under many headings in the first map, Mary created a new category, "instructional methods," in her second map. Words such as "phonics," "digraph," and "sound it out" were grouped with terms like "composition," "clarity," and "antonym" under "grammar" in her first map. They were placed under "decoding" in the second map along with "antonym" which appeared under "grammar" in her first map.

While Mary clearly had a conception of the reading processes and consistently saw comprehension as the key, her maps do not reveal a great deal of change. Carol's maps on the other hand, revealed a more dramatic shift. An initial map hierarchically arranged along a continuum from decoding to encoding, evolved into a dynamic pattern of four interlocking circles in her second map.

Carol's tape revealed considerable frustration as she attempted the initial mapping task. Finally completing the task, she signed, "This is hard!" and "If someone were to come into this room and spill these all over the floor, I might put them back in a different order." This frustration and uncertainty was mirrored in her initial map. Carol's initial map displayed four main categories ("reading," "listening," "speaking," and "writing") along a continuum as mentioned above. While this continuum, labeled "language experience," served as a central organizer in her first map, Carol found she had to resort to delegating some terms to isolated little pockets and even labeled eight especially troublesome words "don't fit anywhere." While Carol's initial focus on the four language arts was retained in the second map, she saw the whole reading process as "a lot more cyclical." "Testing" was the only area that maintained the hierarchical structure in Carol's second map and she commented that this area of her map depicted "a calculated and more delineated process that is not easily integrated." While the four language arts, arranged on a continuum in the initial map, remained a central focus in the second map, Carol now forms them into four intertwined circles. Each circle is filled with words that relate to that particular mode of communication and other words are used to bridge the interlocking areas. For example, "subvocalization" joins

"reading" and "speaking" and "sounds" and "inflections" joins listening and "speaking." Carol circumscribed the total map in a larger circle which she indicated encompassed "the entire language experience."

Comprehension held a much more important place in Carol's second map and was accompanied by appropriate concepts such as "cognitive," "expectations," "purpose," "understanding," and "psycholinguistic theory." In her initial map "comprehension" was lost among terms such as "competency," "grade level," and "weaknesses" and the term "pyscholinguistic theory" was relegated to what she called her "psychology corner."

Carol attributed the "study skills" area in her second map to her practicum experience in the developmental reading setting. She also separated what she called "the specific skills taught in class" ("outlining," "study guides," "directions," etc.) from more abstract metacognitive terms such as "inference," "inquiry," "insight," and "implied." She pointed out that "study skill need to be moved from long term memory to short term memory."

Carol's maps not only revealed a conception of the reading process and the role of comprehension in that process, but they also revealed a change in those conceptions over the ten-week course and practicum. While it is impossible to make explicit connections between her methods course or her practicum experience and the changes that occurred in her conception of the reading process, the maps and accompanying tapes provided some insight into Carol's thinking about reading and the teaching of reading.

Summary of the Study

No firm conclusions or generalization can be based on a descriptive study of just two preservice teachers. Nevertheless, the concept maps of the two preservice English teachers reveal conceptions of the reading process and reveal that these conceptions changed during the duration of a methods course and developmental reading practicum experience.

While the practicum setting and student-teacher interactions seem to have had an influence on these preservice teachers' conceptions of the reading process, additional quantitative and qualitative assessments need to occur. Methodology used with elementary teachers (Bawden, Buike, and Duffy, 1979) needs to be adapted for use with secondary teachers responsible for developmental reading instruction. The use of videotapes to stimulate recall of the teaching situation, teachers' self-reports, formal classroom observations, surveys such as the Propositional Inventory (Duffy & Metheny, 1979), teacher interviews, and the stimulation and gathering of teachers' reflections seem to be especially fruitful avenues for future investigations.

Finally, teacher educators must understand the crucial importance of teachers' own conscious awareness of the processes utilized or mobilized in the act of comprehension. This is distinct from teacher knowledge of procedures of teaching and skills and abilities required for reading attainment. This aspect of teachers' conceptions of comprehension appears to be most crucial to translating research into practice. Teachers need to be able to engage in reflective teaching to (1) become aware of their espoused theory of comprehension, (2) examine their teaching practices, and (3) bring their theory-in-use into congruence with their espoused theory.

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USE OF A COLLEGE DEVELOPMENTAL READING PROGRAM AS A PRACTICUM SITE FOR PROSPECTIVE SECONDARY ENGLISH TEACHERS

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The purpose of this paper is to report on the use of a college developmental reading program as a practicum site for graduate and undergraduate students enrolled in two College of Education courses: Teaching Reading in the Contents Areas and Reading Improvement in Secondary Schools. The two students used in the study described in the accompanying paper, "Changes in Preservice Teachers' Conception of the Reading Process: A Focus on Comprehension" by Amspaugh, DeSalvo, and Laine, were randomly selected from the winter quarter, 1984, practicum students who chose to use the Reading and Study Program as their practicum site. Their specific Reading Program assignments and practicum requirements will be described.

The Reading and Study Program as Practicum Site

In the University College — University of Cincinnati, students are openly admitted. This is, they need meet no specific requirements in order to be formally admitted to University College. Approximately eighty five percent of entering freshmen are from the local area high schools. Their high school grade point averages tend to be lower than their counterparts who are admitted into four year colleges in the University of Cincinnati. Many are first generation college students. The Reading and Study Program, along with other developmental programs, provide the intervention and support students need in order to move successfully through the two year program for either transfer to a four year program or completion of an Associate's Degree within the University College.

The Reading and Study Program is offered as a practicum site choice for the field experience, Practicum in Secondary Reading, which supplements the reading courses: Teaching Reading in the Content Areas and Reading Improvement in Secondary Schools. Several area high school reading programs are also offered as practicum sites. Because the Reading and Study Program is part of the University, it's location and schedule make it a convenient practicum site. Also, the Reading Program's students' reading levels are similar to the reading level of students in the high school practicums. It is during the winter and spring quarters that students are accepted as practicum interns in the Program because that is when the two accompanying courses are taught.

A ten week summer testing program screens approximately one third of the entering freshmen in University College into the Program each year. This number of students who enroll in the Reading Program's courses each fall vary between three hundred and fifty and four hundred students. The criteria for admission into the Reading Program is scoring under the 12th grade reading level on the Degrees of Reading Power Test.

In the fall, approximately sixteen sections of Effective Reading I are offered to the identified students. Each course meets three times a week for fifty minutes and is offered for two credits. A course limit of twenty students insures that individualization of instruction in group settings can occur in the courses. Also offered each fall quarter are six sections of paired reading courses. Three reading courses are paired with Psychology I; the other three courses are paired with Human Motivation, one of the three courses in a series of courses consisting of Human Motivation, Human Development, and Human Relations. During winter quarter approximately twelve sections of Effective Reading II are offered along with six sections of paired reading courses. Three reading courses are paired with Psychology II; the other three are paired with Human Development. During spring quarter, approximately eight sections of Effective Reading III are offered along with three sections of paired reading courses. These reading courses are paired with Human Relations.

Two persistent problems in the Program led to the development of paired classes in the Reading and Study Program. One, students screened into the developmental program took the non-paired reading course simultaneously with the content course in their declared major. A typical student reading at a low high school level, therefore, would likely also be taking courses in Psychology, Sociology, History, or the Fine Arts. The textbooks used for these courses are more difficult than the instructional reading level of the students. Also, the developmental students lacked the necessary study skills to enable them to effectively organize material, study in their textbooks, and prepare for tests.

The second problem in the Program is that many of the students view taking the reading course for three sequential quarters as a deterrent to progress in their chosen field of study. Thus, they do not re-enroll for Effective Reading after the first quarter they are tested into the program, fall quarter. Through examining the quarterly reading gains of our students, it had been ascertained that the majority need a year of developmental reading. If they do not complete this year, it is doubtful that they can successfully complete courses in their majors because their success depends so greatly on their effectiveness in reading textbooks and using study skills.

To alleviate these two problems paired courses were organized and implemented beginning in the fall of 1982.

The two randomly selected practicum students were assigned to the Program's two full-time faculty courses during winter quarter, 1984. One practicum student (Carol) was assigned

to one of the reading sections paired with Psychology II; the other practicum student (Mary) was assigned to an Effective Reading II section.

A description of their practicum assignments and responsibilities follow after TABLE I — Differences in Practicum Site Courses.

Table I
Differences in Practicum Site Courses

	Non-Paired Course Mary	Paired Course Carol
Course Entry	Results of summer testing using the degrees of reading power test makes course enrollment mandatory.	Voluntary enrollment in the course — some developmental students.
	All 10 students were developmental students.	Twenty (20) students total 15 were developmental students 5 were reading appropriately.
Course Credit	2 hours credit — course met Tues.-Thurs. early afternoon for 1½ hours.	2 hours credit — course met late morning Mon.-Wed.-Fri. for 50 minutes each course period.
Course Organization	Reading and study skills applied to all students' content courses taken that quarter.	Reading and study skills applied to Psychology II — the paired content course. Psychology II topics 1. Thought and language 2. Motivation 3. Emotion 4. Intelligence and creativity 5. Personality 6. Adjustment
Specific Skills	**Vocabulary Skills** Structural Analysis Contextual Clue Analysis Dictionary Use **Comprehension Skills** Literal details and concepts Inferential details and concepts Main idea identification **Study Skills** Time Management	**Study Skills** Time Management Notetaking System Textbook Reading Techniques Test Preparation Procedures Reading Rate Flexibility **Comprehension** Main idea identification **Other Skills** Writing skills Values Clarification
Intern Activities	1) Individual tutoring with two students that included choral reading, dictionary exercises, word attack practice (in context) with structural analysis. 2) Small group direction giving for vocabulary and comprehension activities in workbook used. 3) Directed discussion of main ideas of short reading selections in students' workbooks. 4) Check student work with individual students.	1) Develop study guides for chapters in the Psychology textbook containing a section of key words and questions that guided students through their Psychology textbook. 2) Taught writing skills through daily journals and writing a short research paper in Psychology. Presented information on study skills such as SQ3R. Cornell notetaking system made up worksheets for students to use. 4) Used values clarification activities such as prioritizing limited resources and defending stances on current issues to allow students to develop critical thinking skills and work in small groups.

Description of Internship in a Paired Reading Course

Carol interned in one of the three sections paired with Psychology II during winter quarter. The course met for three fifty minute periods each week on Monday, Wednesday, and Friday. Psychology II is the second segment of a required course (Psychology I-II) for approximately one third of the associate degree and program transfer students in University College. As such, each Psychology II lecture course has approximately sixty students in it. These sixty students make three sections of twenty students ach in the paired reading courses. In the course in which Carol interned, of the twenty total students, fifteen were developmental students and five students were reading at the college level.

In the paired courses, the primary emphasis is on the knowledge of and ability to use study skills. These skills include time management, notetaking techniques, textbook reading techniques, test preparation, and increasing the flexibility of reading rate. Vocabulary and comprehension skills are also taught in the course as these are areas in which the student show deficiencies. Students are graded on their ability to use the study skills taught in the paired course with their psychology course. Course assignments consist of making a weekly and quarterly study schedule, using the Cornell Notetaking System in the psychology course lecture, using the SQ3R system in studying psychology textbook chapters, unlocking unknown vocabulary words in the textbook, using text preparation procedures for the quizzes and tests, and varying the students' reading rate to match their reading purpose. The paired course uses a textbook, *Study For Success* by Meredith and Joyce Gall, which is a skills oriented approach to gaining the knowledge of and ability to use study skills.

Because the paired course was new, a variety of activities were tried consisting of those listed above and others. The other activities consisted of writing activities, the development of study guides for the psychology textbook, and values clarification activities. The course was organized in a fairly traditional manner with minimal lecture, some discussion, and a heavy use of group work on assignments.

Carol was primarily involved with these activities during her practicum assignment:

1) She helped develop worksheets (study guides) for each chapter in the student's psychology textbook. Those guides contained a vocabulary section of key words plus outline questions that assisted students in reading through the psychology material.

2) She helped develop their writing skills. As one activity, students were assigned to write a small research paper wherein they had to design a small experiment, observe it, and write it in report format. Each week students kept a journal of the activities they worked on in class.

3) She used values clarification activities to help students develop critical thinking skills while working in small groups. One such activitiy was a situation of a plane that had crashed in the Swiss Alps. There was not enough food for all the remaining survivors. Solutions to the problem had to be suggested by the group.

4) She developed mini-lectures on traditional study skills such as the SQ3R tecnique, the Cornell Notetaking System, time management techniques, and other ways to effectively use their textbooks.

Description of Internship in a (Non-Paired) Effective Reading Course

Mary interned in a Tuesday-Thursday early afternoon Effective Reading II course. Ten students were enrolled in the course, a low number for one of the Effective Reading courses. The ten student all had completed the prerequisite, Effective Reading I, the previous quarter. These students were not typical of the reading level heterogeneity found in other courses; eight of them were in the lowest reading range typically found in the program (middle school level and under). The other two students read at a normal level for a college developmental reading program. Because of the small number of students in the course and their skill levels, they were organized into groups of two or three students for instruction. The instruction was intensive individual practice in reading and study skills reinforced by completion of the computer modules KERNEL and Vocabulary Skills Laboratory.

In the Effective Reading II course, the primary emphasis is on the development of vocabulary, comprehension, and study skills. The emphasis for this class in vocabulary development was on the structural analysis of words, contextual clue analysis, word meanings from Greek and Latin roots, and dictionary skills. Reading comprehension skills consisted of the development of literal facts, inferential facts, topic and main idea development, and paragraph development and organization. Usually, study skills are emphasized in Effective Reading II. In this course, because of the low reading scores, study skills were not emphasized.

Mary was therefore primarily involved with these activities during her practicum assignment:

1) She individually tutored outside of the course hours with two of the lowest reading students in the group. She designed a variety of activities including choral reading, oral practice in pronouncing words, dictionary exercises, and diary or journal writing.

2) She gave directions for short vocabulary exercises that were in the practice book which were primarily practice in vocabulary (structural analysis, context clues).

3) She led discussions of main ideas after short reading selections were ready by the students.

Conclusions

The nature of the practicum experience had some effect upon the student's broadening of experience as evidenced by the changes in their semantic maps. Although Mary and Carol each had a different practicum experience in terms of the class and instructor, it is apparent that each of them gained many insights about the reading process as depicted in their individual semantic maps. Because the two practicum experiences were very different experiences for the two students, it would be difficult to determine an equal baseline from which changes in the conceptualization of reading can be ascertained.

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COMPUTER ADVENTURE GAMES AND THE DEVELOPMENT OF INFORMATION PROCESSING SKILLS

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Information Processing Skills

Among the many recommendations of the National Commission on Excellence in Education is included: "Instruction in effective study and work skills, which are essential if school and independent time is going to be used efficiently, should be introduced in the early grades and continued throughout the student's schooling (1983:29)." This proposal is not particularly novel, yet most surveys show that the average teacher pays very little attention to instruction in study skills (e.g. Askov, Kamm & Klumb, 1977; Askov, Kamm, Klumb, and Burnette, 1980).

While study skills do not receive much attention in the classroom, they have generated a great deal of interest in the university research community, under such labels as

megacognition, mnemonics, planning, monitoring, learning strategies and tactics. (See Forrest-Pressley & Gillies, 1983, for a review.) We will use the all-encompassing term *information processing skills* to describe the collection of skills which the student may use during the course of processing a circumscribed body of educational material. The research literature suggests a number of tentative conclusions about the student's use or non-use of information-processing skills.

Cook and Mayer (1983) reviewed research which shows that when information processing skills are employed, success at learning, problem-solving, and remembering is enhanced; that is, such skills *do* make a difference. However, they and Hale (1983) point out that these skills are not learned spontaneously by most students, and when known are not always put to use when the situation would seem to call for it. They conclude that one needs to *teach* information processing skills *and* when to use them.

Other investigators have provided specifics on this general topic. Barclay (1979), for example, suggests that students do not use information processing skills because they fail to see their efficacy. This point was confirmed in a study by Paris, Newman and McVey (1982) in which students who were given elaborate feedback on the effects of their own information processing skills used these skills much more effectively. Similarly, Anderson (1980) reports that information processing skills are used more effectively when students are provided with adjunct study aids to guide and reinforce their application. Finally, however, we take note of Peterson and Swing's (1983) cautionery review which underscores the need to test these laboratory findings under real world conditions.

The Promise of the Computer

The same commission reports which pointed to the need for increased emphasis on study skills also recommend the rapid expansion of computer-assisted instruction. Again, however, a comprehensive survey has shown that while the number of computers in the schools has increased exponentially, their use has remained low. Becker (1983) found that up to a quarter of all elementary schools surveyed use their computers no more than an hour per day. Undoubtedly, one of the main reasons for this state of affairs is the lack of good educational software. For example, while hundreds of pieces of software have been evaluated by the Educational Products Information Exchange Institute (EPIE) only 3 to 4 out of a hundred are judged "excellent" and only about 25 out of a hundred meet what EPIE considers to be minimal standards (Komoski, 1984).

There are, however, many exemplary programs for children on the market, although they don't happen to be labeled "educational." "Fantasy adventures," "adventure games," "mystery adventures," and "role-playing games" are of particular interest (Stanton, Piochowansky & Mellin, 1984). A blue-ribbon report to the National Science Board, has recommended the use of "education games, including adventure games, which develop reading comprehension and problem-solving skills" (Coleman & Selby, 1983:53). In a similar vein, Cook (1983; see also Unwin, 1983) lists a vertible catalog of skills which are exercised in the course of playing an adventure game including map-making, record-keeping, reading, problem solving, and note-taking. Several of the items on Cook's list are information-processing skills. However, there is a lack of research investigating the instruction effects of adventure games. The issue we would like to address, then, is whether, via the medium of adventure games, an underutilized resource, the computer can be employed for instruction in a neglected area, information processing skills.

An Adventure Games Curriculum

The basic format of the adventure game is the "quest." The player is presented with a series of dilemmas he/she must resolve in order to complete the quest; e.g., finding the treasure, rescuing the maiden, identifying the criminal. Although the adventure game has been around for a long while, there have been four recent noteworthy developments in the genre. First, personal computers with extensive memory capabilities have led to the addition of snappy, colorful graphics to support the prose portion of the adventure. For example, "Death in the Caribbean," released late in 1983, has many "screens" or illustrations, each a masterpiece of the computer illustrator's art. Second, adventure games have become much more complex. Early adventure games offered students a very limited response repertoire: "right," "left," "stop." Newer fantasy adventures accept hundreds of English words or phrases as legitimate commands. The adventurer can walk, run, climb, open things, interrogate, and turn on lights as he/she collects clues and equipment needed to succeed in the adventure (Strehlo, 1984). Third, the depiction of the fantasy has become much richer. In addition to the added graphics mentioned above, many adventure games now come with novels, posters, treasure maps, and other "props," all designed to elaborate and deepen the player's involvement with the fantasy. Fourth, adventure games have broken out of a narrow mold (explore "rooms" in a house or cave) and begun to take on the great variability characteristic of juvenile fiction. "Sci'fi" titles are well represented, as are detective mysteries and dungeons and dragons. Increasingly, however, we will see fantasy adventures patterned on specific childrens' classics like "Jenny of the Prairie" from Rhiannon Productions. In addition to the topical variety, Sierra-on-Line, a leading video game company, has broken new ground with "Troll's Tale" and "Dragon's Keep," two fantasy adventures prepared with younger children in mind. The text portion of both of these adventure games has been carefully written at the third grade reading level.

All of these characteristics have a bearing on the enormous appeal of adventure games and lead us to think that they might be used in an area where the present array of instructional offerings is limited and uninspiring. Beyond their motivating power, adventure games have at least two features which the research literature suggests are important in the development of information processing skills. First, it is immediately apparent to the player that he/she will have to have some means of keeping track of all the information. Adventure games inevitably incorporate numerous characters, scenes, tools, treasures, locations, written messages as well as possible other information. Second, the game provides immediate feedback, in the form of forward progress through the adventure if the right decisions are made, or, death to the player, for wrong decisions. Thus, the player will be given a clear indication of the adequacy of his/her information processing techniques.

On the other hand, we were not so naive as to think that merely giving students access to adventure games would result in the acquisition, use and transfer of information processing skills. We previewed and allowed children to play nearly 30 adventure games and eliminated from further consideration those that seemed too difficult for elementary-middle school age children or that did not hold the students' interest and attention. Because adventure games vary enormously in difficulty, we prepared a "developmental sequence" that would introduce the student gradually to the genre and move towards games in which more and more information had to be processed with fewer and fewer aids provided by the computer itself. This sequence ultimately consisted of "Dragon's Keep," "Troll's Tale," "Mystery at Pinecrest Manor," "Death in the Carribean," and "Dark Crystal," in that order.

Each game either came with its own "adjunct study aid" or we constructed one for it. In the case of "Dark Crystal," for example, we gave the students oversize graph paper and showed them how to "map" their movements. Students would be encouraged to use these aids, but not required to do so because we hoped they would themselves come to appreciate the aids' usefulness.

Although our central question should now be clear, we are not prepared to provide an unequivocal answer in this first, small-scale study. The study should be viewed as a pilot. Among the feasibility issues we wanted to explore were: How do students respond to a cognitively challenging and complex game? Will they persevere in their effort to complete the game? Are students with prior computer experience more proficient at playing adventure games? Is it possible to assist students in solving the difficult parts of the adventure by providing hints? Do students cooperate or compete with each other as they attempt to discover solutions to dilemmas posed in the adventure? Is there a discernible interaction between particular games and particular students, e.g. are there obvious preferences? Are these preferences a function of gener? Can a project of this nature be implemented in a computer lab with 25+ students? Do students get better at solving adventure games with practice? Some of these questions were answered with more assurance than others.

Procedures

The purpose of this pilot study was to examine the feasibility of using computer adventure games to teach study skills. We used a pretest-posttest control group design (Campbell and Stanley, 1966), augmented by extensive observation during the treatment period.

To obtain subjects we advertised an experimental program in the Microcomputer Learning Center to be held in conjunction with the campus lab school's summer program. The program ran from 12:30-2:30, Monday-Thursday for four weeks and the fee assessed was $15.00. The program was limited to students in the 4th-8th grades. Not surprisingly (e.g. Miura & Hess, 1983), of the twenty-two students who signed up, 16 were male. We randomly assigned the students to experimental and control groups. The eleven students (7M, 4F) in the experimental group had a mean age of 12.1 (SD = 1.0) and grade of 6.0 (SD = .9), while in the control (9M, 2F) the mean age was 11.6 (SD = 1.1) and grade was 5.3 (SD = .6).

A widely used measure of information-processing skills is the study skill element of the Wisconsin Test for Reading Skill Development (Stewart, Kamm, Allen, & Miles, 1973). Among the various sub-tests available, we determined that note taking and outlining best reflected the kinds of skills likely to be exercised in the course of playing adventure games. Specifically, we pretested with: Level E, Skill 14 Note taking; Level F, Skill 11 Outlining; and Level G, Skill 10 Outlining. Posttests were administered using different forms of the above.

There were 11 computer stations in the lab (9 Apple IIe's and 2 Commodore 64's), each with CPU, color monitor, disc drive and game controllers. Students were assigned in pairs to specific stations at the beginning of each session. At each station, we booted up the particular game that we wanted that pair to play. In the experimental group, students were assigned to "Dragon's Keep" until they finished it, then "Troll's Tale," then "Pinecrest Manor," progressing to the more difficult games. Records were kept of how long it took each pair to complete each game.

For the control group, we booted up various video games from our library. At the end of an hour, students were free to exchange the game they were playing for any other game from the library. Most took advantage of this option except some of the older students. When heavily involved with "Death in the Caribbean" or "Dark Crystal," they would spend the entire session with one of these games. After the first week, we also found it necessary to let students choose new partners within their respective groups. The main outcomes of student's selection of their own partners were to eliminate mixed-sex pairs and to better match the skill levels within each pair.

Students in the experimental group were given adjunct aids to assist their processing of information during play. For the first two games, we used aids provided by the game publisher. Each came with a quasi-map which guided the students travel through the territory and also provided a mnemonic for keeping track of treasures collected or animals released from the "Dragon's Keep." For "Pinecrest Manor" and subsequent games, we gave the students a simple aid which we had devised. A sheet of paper was ruled off into three sections labeled "commands," "item chosen," and "information or result." When we presented this to students, we explained it was for recording and making notes of important information they gained from playing the game and reminded them regularly during play to use it. "Death in the Caribbean" came with its own map. We had it laminated and gave the students erasable marker pens and showed them how to take notes on the map itself. For "Dark Crystal" we gave the students oversized graph paper and showed them how to make a schematic as they proceeded to explore the territory. We gave no general instruction in note-taking, outlining or map-making.

As game play proceeded, the proctors moved around the room recording observations and assisting the students. There were never fewer than two proctors available at any time and there were usually three or four. All were experienced computer users and adventure gamers. We acted often to help students get around particularly difficult obstacles in order to keep their frustration at tolerable levels. We also offered encouragement to use the information processing aids.

Test Results

We administered study skill tests to all the students who had registered to take part in the computer workshop. However, attendance was eratic so we will report the results for those students on which we have complete data. Pretests and posttests in outlining and note taking were used in the study. Table 1 indicates the results of the outlining tests.

Several problems are immediately apparent from Table 1 aside from the 36% attrition. First, there is a ceiling effect whereby many students get perfect or nearly perfect scores on the pretests. Second, the within group variance is extremely high. Third, many student's scores actually decline from the pre to posttest. In view of these severe technical problems, we have made no further attempt to analyze these data.

Table 1
Percentage of Correct Responses on Outlining Pre and Posttest

Student	Level F Skill 11 (Outlining)		Level G Skill 10 (Outlining)	
Experimental Group				
	Pre	**Post**	**Pre**	**Post**
Alice	92	67	20	13
Joan	92	92	73	87
Steve	92	83	7	73
Joyce	83	50	13	27
Tyler	83	83	20	27
Mike	67	83	60	33
Kevin	92	75	100	67
Control Group				
Jane	83	92	73	67
Brady	33	100	93	87
Chris	75	9	80	100
Matthew	83	92	13	80
John	100	100	92	100
Kyle	67	83	60	33
Bryan	75	58	67	53

*Names of Students have been changed.

In addition to outlining, we also examined the notetaking skills of the students. We used *Skill 14, Level E Notetaking* as a pretest measure. We used this pretest performance as an indicator of the general level of proficiency students had in the skill. However, since no posttest of this skill is provided by the test developer, we had to resort to subjective judgment concerning student achievement in this skill. In an effort to assess any gains in notetaking proficiency, we examined the student's record forms and maps from their individual files. Based on the completeness or incompleteness of the records that students turned in each day over the course of the program, there was no noticeable change in the extent or quality of notetaking. However, as we will point out in the following sections reporting our qualitative findings, the students simply did not make extensive use of notetaking, outlining or map-making as they played the games, so it is unreasonable to expect them to have improved much in these skill areas.

Observations Regarding Students

Initial interest varied greatly, however, all students eventually got deeply involved with their respective games. The shift from low to high interest was particularly noteworthy for girls. Although we scheduled a break after the first hour, most students refused to stop playing the games and elected not to take a break. Attendance varied a great deal. Several students came to every session and some students were invariabley 15-30 minutes early. On the other hand, family vacations and other summer activities had a marked effect on attendance and some students attend 1/3 or fewer sessions. However, attendance patterns did not vary noticeably between experimental and control groups.

An aura of cooperation and collaboration permeated the learning center. The most popular game among the more than forty we made available to the students was "Peanut Butter Panic" which requires that two players cooperate to make peanut butter sandwiches and score points. Regardless of the game, players tended to cooperate with each other. However, mixed-sex pairs did not cooperate and were eliminated when we let them freely choose their partners, a move which resulted in higher levels of cooperation for nearly all pairs. As students in the experimental group had to deal with more and more challenging adventure games, the level of cooperation increased as each pair shared its discoveries with other pairs.

We also note that, despite the fact that students were engaged in "play" throughout the session, discipline problems were nonexistent. By utilizing a large library of games and giving students freedom to choose which games to play, we kept them squarely "on-task." A disadvantage of having game variety and flexibility, however, was that the adventure games tended to be less attractive by comparison to many of the more exciting and less (intellectually) demanding video games.

Observations Regarding Games

Perhaps the most remarkable thing about computer games is that students assume they can readily figure out how to play them. They do not sit around waiting for someone to show them what to do and in many cases, they are right. The best games (e.g. "Peanut Butter Panic") have brief instructional sequences at the beginning and gradually increase in difficulty as the players become more proficient.

In the general area of adventure games, many problems emerged which will need to be solved before their full educational potential can be realized. Even the simplest games like "Dragon's Keep" and "Troll's Tale" presented some insurmountable obstacles to some students, fortunately, other students who had already mastered the game were only too willing to help. On the positive side, the "adjunct aids" that come with these two games were very effective and students made good use of them. With the more difficult games, problems with vocabulary and syntax were encountered, students had to learn fairly arbitrary conventions about what the computer would or would not accept by way of commands. Another problematic area was the lack of predictability in some of the games whereby a strategy which worked once wouldn't work the second time through. This randomness is a feature of most board games, of course, as when the dice is tossed, but it plays havoc with attempts to teach students to keep systematic records of their actions.

Adventure games strain the standard definition of games in other ways. For example, students are accustomed to playing a game and winning, at least some of the time. However, none of the students succeeded in solving "Death in the Caribbean" or "Dark Crystal" despite an aggregate over the group of at least 50 player hours invested. Most board games last less than an hour, whereas, computer adventure games can take days to complete. They are, in this sense, similar to "Dungeons and Dragons," which our subjects had not played to any extent.

These definitional issues are in no sense trivial. We know from previous research (e.g. Lancy, 1975, a,b) that students freely define various school activities as "work" or "play" and their behavior is guided accordingly. With "Pinecrest Manor," "Death in the Caribbean" and "Dark Crystal," students did *not* make extensive use of the adjunct aids to guide their application of information processing skills. Nor (in the case of "Dark Crystal") did they take full advantage of the documentation provided by the company. In all these cases, there was an implicit message of "this stuff is work—it gets in the way of our playing the game." For example, the map in "Death in the Caribbean" was used much more extensively than the map in "Dark Crystal," because (a) it was provided as part of the game rather than having to be drawn by the student, and (b) it was very colorful and "authentic" looking. Another possible reason, of course, for the failure to utilize explicit information processing strategies was that, as research suggests, is students have had so little experience in doing so. Finally, we would note that there seemed to be a trend whereby older players made much greater use of the study aids than younger players.

Discussion

It should be re-emphasized at this point that this study was not designed to establish conclusive or generalizable hypotheses concerning computer adventure games. In this pilot study we wished to explore some informal hypotheses, but also wanted to observe students' interaction with computer adventure games as a learning environment. We also wanted to generate potential hypotheses for future research. In the remainder of the paper, we will discuss some implications of our study and offer some suggestions for possible areas of future research. In addition, we will provide some ideas regarding the usefulness of adventure games in a school setting.

Due to the rather challenging and difficult nature of the available software, we would suggest that fifth grade students or above be used in studies utilizing adventure games. We would also suggest not having control gorup and experimental group students together at the same time. As experimental group students observed control gorup students playing different "video games," they would sometimes become more interested in these games than in the ones they were assigned to play. This "conflict of interest" appears to be unavoidable to a certain extent, given the "shoot and kill," "run and jump," constant action format of the "video game" opposed to the thoughtful, methodical, "problem solving" skills required for interaction with the adventure game.

Another implication for future research concerns the use of existing test measures. Based on the inconclusive test results from the measures that were used to assess the development of study skills in this project, we would suggest that researchers consider the development of their own measures. We are unaware of available tests that would better assess the information processing skills that were of interest to this study.

It should also be noted that even though the students were assumed to have received classroom instruction in the use of study skills, it became apparent that structured intervention would be needed if these skills were to be fully utilized by students. There is a need to help students become consciously aware of the value and use of the techniques of information processing needed for successful interaction with computer adventure games. While we provided adjunct aids for the students' use in notetaking and outlining, these aids need to be "integrated" more fully with the games. In other words, based on the actions of the students, it seemed they could easily recognize the value of a map that came with a game, but failed to see the value of "mapping" their movements in games that did not provide a map.

Finally, we would recommend that future studies be conducted during regular school sessions rather than in summer computer workshops or after school computer clubs. This would help avoid the problems with student attendance. In our study, even though students paid a small tuition to participate, they were forced to miss sessions due to family vacations or outings. Summer school computer activities must compete with many other very attractive activities. We would recommend that approximately 30 minute daily sessions in a classroom or school computer lab be the setting for research investigating the value of computer games. Student selection or participation in a study could be based on enrollment as a reward activity or an enrichment activity.

Suggestions for Further Study

Computer adventure games present three kinds of opportunities for further study. First, adventure games may provide opportunities for the development of certain relevant cognitive skills while helping to overcome any apprehension that students might have about computers. Second, as a cognitively demanding task in their own right, adventure games require creative and problem-solving responses from students that are worthy topics themselves. Third, adventure games may provide an environment in which differences in style or developmental stages, particularly those that relate to problem-solving, may be examined.

Given the small sample of our study, we were left with more questions than answers. Some that warrant consideration for future research are:

1. How are the activities of exploration and experimentation, and the type of questions asked by students, related to success in adventure games? What are the different problem-solving strategies employed by boys and girls, and are these related to success at adventure games? Do these differences (if any) relate to learning differences in other related areas of study: computer program, mathematics, science?
2. Is there relationship of performance of success with adventure games to learning computer programming? Does practice with adventure games improve the ability to understand programming principle?
3. Are there certain cognitive skills that can be enhanced by participation in adventure games?

4. Is there a relationship of performance on computer adventure games to analyzing verbal logic problems incorporating the same concepts? Does practice with adventure games enhance the ability to solve such problems (or vice versa)?

Classroom Use of Adventure

To get the most good from student participation with adventure games, it appears to require three steps: (1) getting the student to actually work with the programs, (2) making them aware of the processes they are exploring, and (3) extend their learning to related areas. Each of these areas can be supported by a variety of activities. Dickson and Raymond (1984) suggest that the following are representative of possible activities a classroom teacher might consider.

1. Motivations: Getting students merely to play the adventure is not ordinarily the concern; the concern is to get them to play the game you want them to and staying with it long enough to achieve your instructional purpose. To encourage students in a certain direction, at least two suggestions are worth consideration:

(a) Sponsor an adventure club, which could meet after school or during an activities period.

(b) Sponsor a competition, rewarding the students who solve the adventure most quickly, most efficiently, or with the most treasure or loot (depending on the format of the adventure game).

2. Sharpening Awareness: We are hearing and reading more often that to improve students' writing they should read more and that writing will help students better understand what they read. However, we know that this is not an automatic process. Students need to be made self-consciously aware of techniques employed by authors of the works they are reading. The same is true of adventure games. To gain the most from these games, students must be made to think consciously about the techniques they are observing and recording.

(a) Ask student to describe the characters and summarize the plot of the adventure with which they are working. This will most likely require making or using a map or notes on which the character's journeys and encounters have been recorded. (The charting and recording of such information are useful skills in themselves.)

(b) Ask students to describe, not merely the plot, but the logical puzzles they have encountered and solved. The actual solution might have come through common sense, intuition, clever deduction or just plain luck. However, once they have a solution they can be encouraged to work backward and decipher the logical processes involved in its solution.

3. Extending the Learning:

(a) Ask students to write either of the above activities in essay form. This combines metacognitive awareness with writing practice.

(b) Students can illustrate key episodes of the adventure.

(c) Ask students to develop and write their own adventures. These can be mock adventures in which they establish a scenario, set up puzzles, map the setting and provide the command sequence. It is now possible with programs such as "Adventure Master" from CBS software, for students to develop and program their own adventure with very little computer or programming experience.

The above respresents but a few of the potentially beneficial uses of adventure games in the classroom.

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PARENTS' IDENTIFICATION OF CHILDREN'S LIFE CRISES: STRESS AS A FACTOR IN READING DIFFICULTIES

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In the fields of biology and medicine there is considerable disagreement over the definition of *stress* though the term is widely and persistently employed (Mason, 1975, p. 6). Use of the term stems from the 14th century, and its meanings are many:

> Thus, stress seems to apply equally to a form of stimulus (or stressor), a force requiring change or adaptation (strain), a mental state (distress), and a form of bodily reaction or response (that is, Selye's

general adaptation syndrome of stress). (Rutter, 1983, p. 1).

Cannon (1915) first described the effects of stress on physical and psychological problems as the "fight or flight" phenomenon. He used the word *hemostasis* for the body's ability to adapt to stress. Later, Selye (1976) developed the concept of stress as the body's response to any extra demand made upon it. Selye has spoken of situations, events, or people who produce stress reactions as *stressors*.

Elkind (1981) expanded upon the work done by Cannon and Selye. According to him:

> *Stress*, then, is any unusual demand for adaptation that forces a child to call upon energy reserves over and above that which s/he ordinarily expends and replenishes in the course of a 24-hour period. (p. 144).

While it is difficult to know what a particular youngster would "ordinarily expend and replenish" in a specified period of time, Cannon's "fight of flight" phenomenon, Selye's concept of "stressors," and Elkind's definition of stress are guiding principles and point the way to a deeper understanding of many students' personal and academic problems. Specifically, it may be that the task of learning to read becomes increasingly stressful for students who fail to cope with events in their personal lives that require them to make excessive social and emotional adjustments. The heightened stress and anxiety that develop as children perceive themselves at a loss to control critical life events may carry over to reading when it becomes yet another problem for them.

This study investigated the kind and number of life events youngsters, who were referred for reading difficulties to an interdisciplinary center, had experienced in the three years prior to their referral. Using an adaptation of Coddington's (1972) Social Readjustment Rating Questionnaire (SRRQ) and information obtained from parental interviews, 20 parents were asked to identify specific events in their children's lives that occurred during this three year period. They were also asked to discuss the effect they felt these had had on their younster's behavior and to describe any relationship these events may have had to the child's reading difficulty. The SRRQ has been found effective in explaining the relationship between stress and maladaptive behavior in children (Gersten, et. al., 1977).

The Instrument: (Appendix A)

The SRRQ contains hierarchically arranged life events in rank order according to their potential for producing stress as determined by groups of teachers, pediatricians, and mental health professionals. Each event is assigned a specific point total on the basis of its significance. Typically, if a child's score falls below 150 points on the questionnaire he or she is about average with respect to stress load. If the child's score is between 150 and 300 points he or she has a better than average chance of showing some symptoms of stress. However, if the child's score is above 300 points there is a strong likelihood he or she will experience a serious change in health and/or behavior (Elkind, 1981, p. 162).

The questionnaire is divided into age groups, i.e., Preschool, Elementary School, Junior High School, and Senior High School. There are 36 life events appearing on the Elementary School scale. At the top is "Death of a parent." This event merits a score of 91 life change units (LCU), while the last event is "Becoming a full-fledged member of a church," which merits a score of 25 LCU. Some of these events differ for each age group and others, while reappearing, are ranked differently because their effect on a child is perceived as being more or less significant at that point in the child's life. The SRRQ contains both socially desirable events as well as those that are negative or traumatic but which may cause stress in the youngster's life because they require the child to make additional social and emotional adjustments. But, for purposes of this study, only those events that parents perceived to have a negative influence on the child were used to compute the life change units score.

Subjects:

Twenty elementary school children from grades one through five were included in this study. These subjects ranged in age from 7.2 years to 11.5 years. All had been identified and referred for having reading difficulties by their teachers and parents. Standardized (Gates-MacGinitie, 1978) and informal reading tests (Burns & Roe, 1980) were used to determine each student's reading grade level. Three of the twenty students read at grade level. Four read one half year or less below their current grade placement. Two read one half to one full year below grade level and six read one to one and one half years below grade level. Although all these students were referred for reading difficulties four read almost one half year above grade level and one student read almost one full year above grade placement. The range of these students' Wechsler Intelligence Test scores (WISC-R) was 81 to 125. The students' mean WISC-R verbal score was 104, mean performance was 108, yielding a full scale mean score of 106.

Using Harris's (1975) Reading Expectancy formula, a Reading Expectancy Age score was also established for each student. One student read at expectancy level. Three read one half year or less below expectancy, four read one half to one year below expectancy, six read one to one and one half years below expectancy, one read between one and one half and two years below expectancy, and two read two or more years below their expectancy. Three of these students read above their expectancy levels.

Using only the negative events as a means of determining these students' life change units on the SRRQ the mean score was 297 for the group. However, one student's LCU score was 85. If this lowest score is eliminated and the mean computed on the remaining nineteen students it rises to 322.

Results:

As evidenced by the high LCU mean score on the SRRQ most of these children experienced an excessive number and variety of critical life events in the three year span preceding their referral to the center. Furthermore, parents frequently attributed some of these children's behavioral and reading difficulties to heightened stress resulting from these events. Since all these children were enrolled in grades one through five, virtually all of them had encountered these negative and traumatic events during their first three years in school when they were also trying to learn to read.

Interestingly enough, those events such as parental divorce

or separation, the incorporation of a child into a blended family situation, the child living in a single-parent home, a home in which the mother begins working, etc., were generally not seen by parents as having any serious effect on their children's behavior or reading. But, those events that signaled a loss of parental or social support and self esteem were those that parents tended to cite most frequently. And, they viewed these as being partially or mostly responsible for their children's behavioral and reading difficulties. For example eight of these twenty students had failed at least one grade in school. Nine had become increasingly argumentative with their parents (beyond what you might expect for children in this age range). Eight of these children's parents also described a negative change in the manner in which their peers accepted them. Seven of these children's families had recently moved to a new school district (most of these were from out-of-state), and nine of these children's fathers had changed occupations requiring increased absences from their homes.

It is important to note that the three children who read above their reading expectancy levels had an equal or greater LCU score on the SRRQ than all of the students reading below grade level. These children's parents also perceived that certain critical life events had had adverse effects on their children's behavior and reading, although contrary to their parents' perceptions these children appeared to have made a healthy adjustment to the increased stress in their lives and were coping successfully. However, these students' parents commonly described their children as being well liked and supported at home, in school, or among friends, and having a positive and consistent relationship with their father. Whereas, many of the other children's parents cited frequent social difficulties for them and noted that their fathers had taken jobs that required them to be away from home regularly.

While the SRRQ is supposed to be helpful in predicting a negative change in behavior or health as the result of an excessive number of critical life events, the results of this study seem to support its use in anticipating behavioral or reading difficulties for some children. But, because just three of these children had had serious illnesses or been hospitalized during the three-year period prior to their referral its use for making these kinds of forecasts may require further research. However, it is possible that among a larger group of children there would be a greater occurrence of health related problems and stress.

Data from this study are currently being used:

1. to determine the proportion of students referred to the center for reading difficulties who are functioning at or above the point on the SRRQ that predicts a possible serious change in health or behavior.

2. to identify those students whose reading difficulties may be related to increased stress as a result of various negative life events that require them to make excessive social and emotional adjustments. But, most importantly,

3. to identify appropriate methods for helping youngsters to read who have experienced an abundance of stress producing life events that leave them poorly equipped psychologically to cope with their problems in reading.

APPENDIX A
SRRQ—Life Change Unit Values
Elementary school age group

Rank	Life event	Life Change Units
1	Death of a parent	91
2	Divorce of parents	84
3	Marital separation of parents	78
4	Acquiring a visible deformity	69
5	Death of a brother or sister	68
6	Jail sentence of parent for 1 year or more	67
7	Marriage of parent to stepparent	65
8	Serious illness requiring hospitalization of child	62
9	Becoming involved with drugs or alcohol	61
10	Having a visible congenital deformity	60
11	Failure of a grade in school	57
12	Serious illness requiring hospitalization of parent	55
13	Death of a close friend	53
14	Discovery of being an adopted child	52
15	Increase in number of arguments between parents	51
16	Change in child's acceptance by peers (negative)	51
17	Birth of a brother or sister	50
18	Increase in number of arguments with parents	47
19	Move to a new school district	46
20	Beginning school	46
21	Suspension from school	46
22	Change in father's occupation requiring increased absence from home	45
23	Mother beginning to work	44
24	Jail sentence of parent for 30 days or less	44
25	Serious illness requiring hospitalization of brother or sister	41
26	Addition of third adult to family (i.e., grandmother, etc.)	41
*27	Outstanding personal achievement	39
28	Loss of job by a parent	38
29	Death of a grandparent	38
30	Brother or sister leaving home	36
31	Pregnancy in unwed teenage sister	36
32	Change in parents' financial status	29
33	Beginning another school year	27
*34	Decrease in number of arguments with parents	27
*35	Decrease in number of arguments between parents	25
*36	Becoming a full fledged member of a church	25

*omitted for purposes of this study.

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A NATIONAL ASSESSMENT OF UNDERGRADUATE SECONDARY CONTENT AREA READING COURSES: COMPONENTS AND CHARACTERISTICS

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In an attempt to gain current information about the nature and content of undergraduate courses in secondary content area reading for teachers-in-training, we developed a questionnaire, had it scrutinized by objective analysts connected with our Institutional Research Department, and modified it accordingly. The questionnaire was then mailed to persons identified as heads of units in which Reading was located at the 304 institutions in the forty-eight continental United States identified as having graduate programs in reading (Blomenburg, 1981). A total of 130 institutions responded, a return rate of 41%.

Results indicated that 68% of those institutions responding offered one secondary content area reading course; 17% offered more than one course; and 8% included secondary area reading as a component in a course. Indications were that all courses were accorded academic credit, varying in amount, but usually 2 or 3 semester credit hours. Respondents were asked to indicate whether there were state certification requirements requiring content area reading for prospective secondary teachers. Responses from respondents indicated that more than half of the continental United States have some content reading requirement for *all* prospective teachers. Since there were inconsistencies concerning the existence and nature of state certification requirements from respondents within some of the states, a follow-up survey of State Departments of Education is now underway to gain more definite information on current certification requirements.

AREAS OF PROGRAM CONTENT

Results

Respondents were requested to account for 100% of their class time by indicating the percent of course time devoted to each of five program areas and a sixth designated as "Other." Mean percentages, in rank order are:

Improving secondary student content-related vocabulary and comprehension of text materials	39%
Improving secondary student study skills	18%
Other	17%
Assessing secondary student reading skills	13%
Assessing textbooks for readability and related features	11%
Improving reading efficiency of undergraduate college students in respondents' classrooms	5%

Since 17% of the responses were in the "Other" category, an analysis of these responses was conducted and four major categories of responses emerged. The category with the most responses (14) was designated as "conveying knowledge about reading" and included time indicated as devoted to theory, process, background, rationale for content reading, reading programs, causes of reading difficulty, issues in reading, and reading and relevant literature.

The second highest number of "Other" responses (7) dealt with time devoted to motivation for content area reading. The two additional "Other" categories which emerged (6 responses each) were (1) recognizing and meeting individual reading needs of secondary students relevant to their content courses and (2) time devoted to carrying out content area courses or lessons, including the development or modification of materials.

Discussion

Since the major goal of reading secondary content area materials is student comprehension, it is not surprising that respondents reported devoting the highest percent of class time to improving secondary student vocabulary and comprehension of text materials. The relatively high response to time devoted to concerns other than those designated on the questionnaire indicates four additional program areas to which institutions tend to devote a considerable amount of content area reading course time: knowledge about reading, motivation for content reading, individualizing instruction, and implementation of strategies by the teacher-in-training.

COMPONENTS WITHIN COURSE AREAS

In addition to being interested in the percent of institutional class time devoted to the five designated areas, we also wanted

information as to what components and strategies were included in each area.

On the questionnaire, components/strategies were delineated for the five designated areas and respondents were asked to check those included. Opportunity was also given to list other components/strategies not specifically designated. The number of institutions including the various components for each area and observations relative to the results are reported in the sections which follow.

Vocabulary/Comprehension Components

As previously mentioned, vocabulary/comprehension has the highest percent of institutional course time devoted to it. On the questionnaire, the activities included in this area were subdivided into pre-reading, during reading, and post-reading activities.

Pre-Reading Results. The four pre-reading vocabulary/comprehension strategies designated on the questionnaire were: (1) structured overview and/or mapping; (2) word association strategies such as brainstorming or categorizing; (3) direct teaching and reinforcement of vocabulary, and (4) "Other."

The structured overview and/or mapping pre-reading activity was included in the largest number of institutions (81) followed by direct teaching and reinforcing of vocabulary (74) and word association strategies (54).

In the "Other" category for pre-reading, there were two groups of responses.

Eleven respondents mentioned including prediction and motivation strategies such as anticipation guides and attitude inventories in their courses. The second group of 10 responses mentioned using vocabulary or concept strategies to help develop secondary readers' backgrounds.

Pre-Reading Discussion. It is interesting to note that structured overviews and/or mapping outranked the direct teaching of vocabulary in undergraduate content area reading courses. An explanation of this finding might be that through using a structured overview or mapping, secondary teachers are not only teaching the new vocabulary/concepts but they are also teaching the hierarchy or interrelationships among the concepts, whereas when simply teaching vocabulary alone, relationships of a word to others new concepts or ideas may not be brought out. Content teachers may see this type of presentation as more integrated with what they perceive as their central instructional role.

During-Reading Results. The during reading strategies which we listed on the questionnaire included (1) study guides involving group interaction such as 3-level study guides (Herber, 1978), individual reading guides, such as Guide-O-Rama, (Cunningham and Shablak, 1975), (3) traditional directed reading activities (DRA's); (4) modified DRA's emphasizing active student involvement such as the Directed Reading/Thinking Activity (Stauffer, 1969), and an "Other" category.

Results indicated study guides involving group interaction were used in the highest number of institutions (70) followed by the modified directed reading activity (64), the traditional DRA (61), the individual reading guide (57) and the "Other" category included 7 instances of ReQuest (Manzo, 1969) and a 4 citings of a study strategy such as SQ3R (Robinson, 1961) or REAP (Eanet & Manzo, 1976).

During-Reading Discussions. Respondents seem to favor teaching their students to use during-reading strategies that require active involvement by secondary students rather than those which are more teacher directed. It would seem that faculty in the institutions surveyed are aware of the need to encourage secondary students to be active readers and learners.

Post-Reading Results. Post-reading strategies indicated on the questionnaire included (1) mapping, (2) summarizing techniques, (3) enrichment or extension activities, (4) vocabulary manipulation activities such as the post structured overview (Graham & Robinson, 1984), and (5) an "Other category.

Summarizing strategies were most often indicated as included (74 citings), with enrichment or extension following closely with 72 inclusions. Vocabulary manipulation was reported as included in 64 institutions and mapping 63. The "Other" category had 10 citings with a discussion of recitation strategies (4 inclusions) and some type of study guides (3).

Post-Reading Discussion. The post-reading results seemed to indicate that comprehension oriented activities (summarizing and extension) were more often included in content reading courses than more specifically vocabulary oriented activities (manipulation and mapping).

Improving Secondary Student Study Skills

Results. As noted previously, the second highest percent of institutional class time on the questionnaire was 18% devoted to improving secondary student study skills. We further subdivided this area into six components: sensing the author's organization; note-taking; exam preparation and taking; library and dictionary skills; summarizing; and "Other."

Results showed sensing the author's organization with the highest citings (75), followed by a two-way tie between note-taking and summarizing with 66 inclusions each. Exam preparation and taking was third with 58, while library and dictionary skills had 50 inclusions and 13.

The strategy with the highest number of citings in the "Other" category was SQ3R or a similar strategy (7), followed by giving help with graphic aids (5).

Discussion. Sensing the author's organizational patterns seems to be the study skills strategy most frequently included in content courses in responding institutions. These results would agree with the ideas of Robinson (1978) and others that sensing the author's organization is very important for overall reader comprehension. Also, many other authors of college texts on content area reading advocate using pattern study guides based on organizational patterns of material to enable readers to comprehend material (Vacca, 1981; Herber, 1978).

Assessing Secondary Student Reading Skills

Results. On the questionnaire, assessing secondary students reading skills was the fourth place in overall classtime devoted to strategies. This area was subdivided into four components: group informal content reading inventories, cloze procedures, standardized tests, and "Other."

The techniques with the highest number of citings were group informal content reading inventories and cloze procedures with 76 institutions reporting inclusion for each. Next came standardized tests with 51, and "Other" with 20.

The highest citings in the "Other" category include text bas-

ed tests such as the Maze technique (Gutherie, 1974) with 5, with word recognition or assessment tests with 4.

Discussion. As far as assessing secondary student reading skills is concerned, the results of this section of the questionnaire bear out that more of the respondents advocate using teacher-made content area text-based instruments such as the cloze and group informal content reading inventories in content area classroom rather than the results of standardized tests to measure secondary students' reading skills.

Since both the cloze and the reading inventories are based upon content area material that students are using as texts in their secondary classrooms, these instruments should yield an estimate of how hard or how easy reading this material is for pupils. Such information can be very useful to content area teachers, for example giving them an idea of who will need supplementary materials to read, who will need the most readiness or the least, etc.

It seemed somewhat surprising that standardized tests were included as often as they were in content reading courses since they do not give an estimate of how hard or how easy doing the reading in a particular content area will be for students since they're not based on content material as the cloze and the inventory are.

Therefore, respondents seem to favor informal content area based instruments to assess secondary student reading skills, rather than to use the results of standardized tests.

Assessing Textbooks

Results. As far as the overall percent of institutional class time devoted to it, assessing textbooks for readability and related features rated fifth with an average of 11% of class time devoted, as previously mentioned.

On the questionnaire, textbook assessment was broken down into four components: readability formulas; checklists of text traits; analysis of text features; and "Other."

The category with the highest number of citings was readability formulas with 81; followed by analysis of text features (74); then checklist of text traits with 53; and "Other" with 9.

The largest number of citings in the "Other" category with 4 citings each were (1) assessing textbook concept load and (2) assessing student background needs and skills.

Discussion. Despite the controversy over the use of readability formulas to accurately measure textbook difficulty (Cullinan and Fitzgerald, 1984), the results of this section of the questionnaire show their use being advocated since they ranked first in the number of citings. The almost as high inclusion of analysis of text features may indicate an awareness of the limitation of readability formulas used in isolation.

An explanation of these results might be that readability formulas were most often included because many of them are well known and they are fairly easy to compute as compared with text analysis which can be very time consuming because an individual may have to estimate the text's concept load, style, and many other factors, a process that can take hours as opposed to the minutes that a readability formula can take to compute.

Improving Reading Efficiency of Prospective Secondary Teachers

Results. As mentioned previously, improving reading efficiency of prospective secondary teachers had the lowest percent of institutional time devoted to it (5%).

When directly asked on the questionnaire if their programs included such a factor, 75% answered "no" and 25%, "yes." Of the 25% answering "yes," numerical results showed skimming and scanning with the highest number of citings (20); followed by comprehension (19); flexibility (18); vocabulary (16); and "Other" (8).

In the "Other" category there was no consistency in the citings.

Discussion. Since the main thrust of instruction in most undergraduate content area courses or course components would seem to be teaching students how to help their prospective secondary pupils with their content area reading, it certainly isn't surprising that only one fourth of the respondents devote class time to improving their own college students' reading efficiency.

Of those that do devote instructional time to developing reading efficiency, skimming and scanning might have been expected to be first, since learning to use these strategies has been found to lead to efficient reading.

OTHER SURVEY RESULTS

Students Spending Time in Secondary Schools

Results. We were interested in ascertaining if the undergraduates in the course or course component spent time in secondary schools as part of their content reading course requirements. Fifty-two percent of the respondents responded "no" and 48% answered "yes." In responding to more specific items about the type of involvement, 87% of the "yes" respondents reported that their students participated in teaching or assisting with content area reading strategies. Time spent observing school content reading strategies was reported by 81% of the respondents who reported school involvement, and 76% of this group reported that their students tutored secondary students.

Discussion. Since the importance of student practicums or field placements in enhancing students' skills is often emphasized in the literature, the high percentage of respondents reporting prospective teachers spending time in secondary schools is heartening. Also, it is important to note that school involvement more often includes participation rather than just observation.

Thrust of Course or Course Component

Results. Respondents were asked whether the thrust of their course or course component was (1) improving secondary students' text reading and learning or (2) improving their reading skills in general. A category for "Other" was also provided. Textbook reading was indicated as the focus of 75% of the program respondents; 17% reported a reading skills focus, and the 12% checking "Other" indicated a dual thrust.

Discussion. Since many current college texts on content area reading focus on strategies to enhance secondary student comprehension of content area materials, these results might have been expected.

College Content Area Texts

Results. Of the 37 texts that the respondents listed using, the one with the highest percent (27%) was Vacca's *Content Area Reading,* followed by 11% citing Roe, Stoodt, and Burns' *Reading Instruction in the Secondary School.* Of the other 35 texts reported, no one text was listed by more than 5% of the respondents.

SUMMARY AND OBSERVATIONS

From the findings of this survey, a very tentative profile of the "typical" content area reading program for prospective secondary content teachers can be drawn.

1. The "typical program is offered in a course format, separate from general methods courses, devoted entirely to secondary reading, primarily content reading. Credit is given, usually equivalent to two or three semester hours.
2. More than half of the course time in this "typical course" would be devoted to activities closely related to textbook understanding: vocabulary/comprehension and study skills.
3. Strategies included within the comprehension/vocabulary section for pre, during, and post reading component would generally be those that deal with vocabulary and text comprehension in an integrated manner.
4. Time spent on study skills would include attention to the benefits of identifying organizational patterns used by the author.
5. Assessment would rely on informal testing using classroom materials.
6. Readability formulas would be included, but so would other indicators such as analysis of text features and checklists of text traits.

This profile would seem to indicate that content reading teachers are well aware of recent developments emphasizing comprehension and student involvement in reading/learning. Also, they would seem to have some awareness that readability formulas should not be the only means by which textbook assessment is approached.

In interpreting results, however, a number of cautions are in order:

1. The distribution sample used was not a random sample of all institutions but rather the "population" of institutions having graduate programs in reading. The reasons for this choice — availability of names and addresses for contact, local institutional needs favoring information from institutions having graduate programs in reading, the recognition that institutions having reading graduate programs would also be apt to have reading programs for undergraduates, and financial limitations — seemed to justify the decision about the sample. Nonetheless, the results cannot be generalized to the same extent that they could had a random sample been used.
2. Some respondents did not answer all items; therefore, the number of responses varied from section to section.
3. Information about program content was, of course, what respondents reported, rather than based on observation of what really went on in the classrooms.

Despite these limitations, results seem sufficient to indicate that secondary content reading courses throughout the nation have many similar features, perhaps influenced by writers of textbooks being used, but they have some unique features as well.

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COMPREHENDING METAPHOR: FROM TEXTBOOKS TO TRADE BOOKS

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C.S. Lewis has pointed out the need for metaphoric language in speaking of intangibles.

> "...very often when we are talking about something which is not perceptible by the five senses we use words which, in one of their meanings, refer to things or actions that are. When a man says that he grasps as argument he is using a verb (grasp) which literally means to take something in the hands, but he is certainly not thinking that his mind has hands or that an argument can be seized like a gun. To avoid the word *grasp* he may change the form of expression and say, "I see your point," but he does not mean that a pointed object has appeared in his visual field. He may have a third shot and say, "I follow you," but he does not mean that he is walking behind you on a road. Everyone is familiar with this phenomenon and the grammarians call it metaphor...it is a study for a lifetime."
> (Lewis, p. 73-4)

But beyond using figurative language for intangibles, we resort to metaphor very frequently when we want to communicate effectively about things which we *can* see, hear, touch, smell or taste. Figurative speech has at least two functions:

1. it may make something easier to understand or,
2. it may make a perception more vivid.

In the first instance there is probably no need to highlight the metaphor. For example, "as light as a feather" probably is self-explanatory, providing that the reader or listener has had

TABLE 3

Trade Books by Grade and Category

	Realistic Fiction	Exposition	Poetry	Fantasy	Biography	T
3rd grade	4	3	2	5		14
6th grade	7	1	3	1	2	14

TABLE 4

Incidence of Figurative Language by Genre (3rd grade)

	Simile	Metaphor	Hyperbole	Personification	T
Realistic fiction	19	55	18	21	113
Exposition	9	15	5	7	36
Poetry	32	47	45	27	221
Fantasy	37	65	28	27	157
Total	97	182	96	152	527

N pages of text 460 $\overline{X}$ usage figurative language per page 1.15

N paragraphs 1254 $\overline{X}$ usage figurative language per paragraph .42

TABLE 5.

Incidence of figurative Language by Genre (6th grade)

	Simile	Metaphor	Hyperbole	Personification	T
Realistic fiction	62	212	98	48	420
Exposition	3	8	1	1	13
Poetry	102	261	58	192	613
Fantasy	14	52	10	15	91
Biography	19	54	21	2	96
Total	200	587	188	258	1233

N pages of text 447 $\overline{X}$ usage figurative language per page 2.76

N paragraphs 1870 $\overline{X}$ usage figurative language per paragraph .66

REACTION: A NATIONAL ASSESSMENT OF UNDERGRADUATE SECONDARY CONTENT AREA READING COURSES — COMPONENTS AND CHARACTERISTICS

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This paper presents an interesting overview of the current "state of the art" of undergraduate secondary content reading education being taught in U.S. universities with graduate reading programs. The authors point out the difficulty in getting accurate information regarding state certification requirements and the need to do a survey of state departments of education requirements. A similar survey was done by Flippo and Hayes (1984), and information regarding state certification reading requirements is also available from the Interna-

tional Reading Association (1981). The authors might wish to check these sources and the questions used before developing their follow-up survey. It is this author's experience that information is often inconsistent because of the different specificity of requirements/course descriptions from state to state and university to university. For instance, in this paper the authors assessed the content of undergraduate courses in *secondary* content reading. Some state departments of education, and certainly some reading professors, might require/teach undergraduate courses in content reading or in developmental content reading. This difference in course descriptions can cause inconsistencies. For instance, I wonder how I would interpret such a survey when I teach content reading courses with a K-adult emphasis rather than a secondary emphasis? Or, how the state department of education certification clerk, filling out a form, would respond to the question "How many courses (or credit hours) does your state require for secondary content teachers?"; when in this hypotehtical state, they require one for English teachers and none for science teachers and two for K-12 MR teachers? One question/direction/statement that might be addressed to faculty teaching content reading is "How many undergraduate content reading courses are taught at your institution? If more than one is taught, please differentiate titles/descriptions and content for each course separately."

The paper does present very informative and revealing information concerning the content of undergraduate secondary content reading courses. Of particular interest is the "Other" category. If a follow-up study is done by these authors it is recommended that they consider including their four major "emergent" categories (conveying knowledge about reading, motivating for content area reading, recognizing/meeting individual reading needs, practicum lessons/acivities and material development) which resuled from their "Other" category, as additional major category choices on their new survey.

Additionally, even though there was no consistency in the "Other" citings in the "Improving Reading Efficiency of Prospective Secondary Techers," it might be informative to see what was cited. Perhaps the authors would get more information, or additional information, if they called the category "Assessing Reading Efficiency of Prospective Secondary Teachers," or if they added that category in a follow-up study.

Finally, the authors do indicate that professors teaching the undergraduate content reading courses, at the surveyed institutions, appear to be very well informed regarding the latest literature and thinking in content reading. I agree, but of course, I'm not surprised. The survey data is very encouraging. Faculty teaching content reading at universities with graduate reading programs would be very likely to be well-informed. The authors did point out that a major limitation of their survey was that only programs listed in the IRA *Graduate Programs and Faculty in Reading* book (Blomenber, 1981) were sampled. Obviously, this eliminates the vast number of teacher education programs without recognized graduate programs in reading. A study sampling these programs, that teach undergraduate reading, but do not necessarily have a graduate reading faculty might or might not yield very different results. Such a study would certainly be interesting and informative to pursue.

In summary, this is a good paper with very useful information. The authors seem to recognize most of their study's flaws. If a follow-up study is done, and the cited recommendations are considered, these authors will have additional and even more useful information to report in the future.

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SURVEY AND ANALYSES OF ATTITUDES TOWARD USE OF THE COMPUTER

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The potential impact of the Computer Age on education in general and the teaching of reading in particular has been increasingly recognized during the last decade. Refinements in the microcomputer and tremendous growth in the number of corporations marketing the machines for personal use have greatly increased both their availability in the schools and the necessity for making sound education decisions regarding their most effective use. Reese and Gable (1982) emphasize that the prevalence of microcomputers in the schools creates a definite need for the evaluation of student attitudes toward the machines in order to maximize their potential impact on the instructional curriculum. Student attitudes are undeniably influential; however, as with all instructional materials and hardware, the essential key to effective utilization of the computer lies with the teachers in whose classrooms the machines are placed. Mason and Blanchard (1979) point out that when teachers cannot find appropriate ways to incorporate computers into their instruction, they simply "leave the machinery to gather dust (perhaps hiding it in a closet)" (p. 102).

In examinimg the key determinants of teachers' decisions as to whether or not to make use of computers, two primary factors seem to emerge: (1) knowledge of the computer and (2) attitudes toward the computer. If teachers do not understand how computers function, then they may be hesitant or fearful of putting them to use. If teachers' attitudes toward computers are negative and/or irrational, then they are also not likely to use computers as a part of their instruction. In order to make more effective instructional use of computers, it is important to study and understand teachers' attitudes toward them. Such a study would serve to "better understand and correct the fallacious and often *irrational* attitudes toward this integral component of modern life" (Mathews and Wolfe, 1983, p. 4) and would also help to provide a more thorough knowledge base for educating teachers and for changing their attitudes.

The purpose of this study was, therefore, to examine the general attitudes of teachers, future teachers, and students enrolled in computer courses toward use of the computer and to determine the extent to which those attitudes may in fact be influenced by computer literacy. The objectives of the present study were to:

1. Determine the attitudes of reading teachers toward use of the computer.

2. Determine if reading teachers' attitudes toward use of the computer differed significantly from attitudes of undergraduate education students, graduate students enrolled in an educational research course, graduate students enrolled in a computer course, and undergraduate students enrolled in a computer course.

3. Determine if graduate and undergraduate students' attitudes toward the computer improved as a result of having taken a computer course.

4. Determine if undergraduate students' gain scores in attitudes toward the computer significantly related to course achievement in a computer course.

5. Determine if attitude gain scores of graduate and undergraduate students enrolled in a computer course were significantly different from attitude gain scores of graduate and undergraduate students not enrolled in a computer course.

6. Determine if pretest attitudes of students with some computer knowledge were significantly different from attitudes of students with no computer knowledge.

Subjects

A total of 102 subjects participated in the study and were drawn from students enrolled in graduate courses in reading/language arts (N = 12), undergraduate students enrolled in an introduction to education course, an educational psychology course, and a language arts course (N = 33), graduate students enrolled in an educational research course (N = 23), graduate students enrolled in a computer course (N = 16), and undergraduate students enrolled in a computer course (N = 18). For purposes of analysis, subjects were classified as "reading teachers" if on the survey information sheet utilized, they indicated that they currently taught reading. Fifteen subjects were consequently classified as reading teachers. Students were also surveyed to determine those who had prior training in the use of the computer. They were then classified as "computer literate" if their responses indicated that they had either taken a computer course previously or that they had access to and used a computer in their home. Of the students participating in the study, forty-eight were found to be computer literate and fifty-four were determined to be non-computer literate. All subjects were enrolled at North Georgia College during the summer quarter, 1984, and all were willing participants in the study. Subjects were informed of the pre-post test design of the study from its inception and were assured that participation would in no way affect their course grade.

Procedures

The Computer Appreciator-Critic Attitude Scale, designed to measure attitudes toward the computer, was administered to all subjects as a pretest during the first week of classes and as a posttest during the last week of classes. Of the 102 students, 83 students completed both the pretest and the posttest. Students were also surveyed to determine those who would be classified as reading teachers and those who had prior training in or knowledge of the use of the computer. Additionally, course achievement scores were obtained for undergraduate students enrolled in a computer course to ascertain whether or not a relationship existed between course achievement and attitudes toward the computer.

Instrument

Attitude toward the computer was measured by the Computer Appreciator Critic Attitude Scale (CACAS). The CACAS is a 40-item Likert-type scale, designed by Mathews and Wolfe (1981). The validating sample of Mathews and Wolfe consisted of 410 undergraduate students from four universities. The students were enrolled in education, liberal arts, or computer science courses. Results of a principal components analysis yielded two factors: Computer Appreciation and Computer Criticism. Mathews and Wolfe reported Cronbach Alpha coefficients of .88 and .89 for the two factors, indicating a high degree of internal consistency on the two factors.

Typical items from the Computer Appreciation factor are "The world is better because of computers;" "I appreciate computers;" and "Computers simplify life." Items such as "Computers reduce people to numbers;" and "People are becoming too dependent on computers" are from the Critical Attitude factor.

Furr and Davis (1984) reported three validity studies of the CACAS. In the first study the instrument was administered to 420 undergraduate education majors at two universities. Results of a principal components analysis yielded the same factors as those of the Mathews and Wolfe study (1983). In the second study 120 school psychologists responded to the CACAS. Again results of a principal components analysis yielded the same two factors. Finally in the third study the CACAS was administered to 25 educational psychology graduate students prior to and following a six-hour course on the microcomputer. The two sets of data were again factored using a principal components analysis. After the course there was a shift away from the criticism factor and toward the appreciator dimension. As a result of these three studies Furr and Davis concluded, "The instrument appears to be factorialily pure and stable across several populations. It . . . apparently is sensitive to attitude shifts due to instructional treatment" (p. 9).

Analyses

1. To determine whether the attitudes of the reading teachers were positive or negative about the use of the computer, CACAS pretest scores were examined.

2. A one-way analysis of variance was used to determine if the five groups differed significantly on the attitude pretest.

3. A dependent t-test was used to determine if the mean pretest attitude scores of the graduate students enrolled in a computer course was significantly different from the mean posttest attitude scores. A dependent t-test was also used to determine if the mean pretest attitude scores of the undergraduate students enrolled in a computer course was significantly different from the mean posttest attitude scores.

4. A Pearson Product Moment Correlation was used to determine if gain scores in attitude for the computer class undergraduate students was significantly related to their achievement in the course.

5. A one-way analysis of variance was used to determine if mean gain scores in attitude for graduate and undergraduate students enrolled in computer courses were significantly different from graduate and undergraduate students not enrolled in computer courses.

6. An independent t-test was used to determine if the mean pretest attitude scores of the students with computer knowledge were significantly different from the mean pretest attitude scores of students with no computer knowledge.

The level of significance was set at .05 for statistical analyses 2-6 above.

RESULTS

Data from this study indicate that reading teachers have positive attitudes towards computers. The mean score for these 15 subjects on the CACAS was 146.53 out of a possible 200. Scores of the reading teachers ranged from a high score of

164 to a low score of 125. Thus none of the teachers scored below 120, the neutral position on the scale.

It was hypothesized that students enrolled in computer courses would have higher attitudes toward computers than students not enrolled in computer courses. This hypothesis was not supported ($F = 2.29$). There were no significant differences on the average pretest CACAS scores for five groups: reading teachers, undergraduate education students, graduate students enrolled in an educational research course, undergrduate students enrolled in a computer course, and graduate students enrolled in a computer course. Table 1 contains the means, standard deviation, and ranges of the CACAS for the five groups. A summary of the results of the one-way analysis of the variance is presented in Table 2.

It was also hypothesized that both graduate and undergraduates who completed computer courses would have significantly higher attitude scores on the CACAS than they had at the beginning of the course. This hypothesis was supported for the 16 graduate students ($t = 2.14$, $d.f. = 15$, $p < .05$, one tailed test). The average CACAS at the beginning of the course for the graduate students was 152.31, and the average at the end of the course was 157.69. The average gain score was 5.38. The attitudes of the graduate students were apparently improved by having taken the computer course. The hypothesis was not supported for 11 undergraduate students ($t = 0.87$). The average CACAS at the beginning of the course for the undergraduate students was 154.45, and the average at the end of the course was 150.45. The average gain score was -4.00.

Results of correlating the achievement in the computer course for these undergraduate students with their gain CACAS scores yielded a Pearson correlation of -0.04. This correlation was not significant at the .05 level. The average achievement for the students was 75.69.

Table 3 contains means and standard deviation for gain scores on the CACAS for undergraduate and graduate students not enrolled in computer courses and undergraduate and graduate students enrolled in computer courses. A summary of the results of the one-way analysis of variance is presented in Table 4. There were no significant differences in the average gain scores on the CACAS for the four groups ($F = 1.27$).

Finally it was hypothesized that the 48 students who were classified as computer literate would have higher pretest scores on the CACAS than the 54 students who were not computer literate. This hypothesis was supported ($t = 3.29$, $d.f., = 100$, $P < .05$, one tailed test). The average pretest score on the CACAS for the computer literate students was 149.46, and the average pretest score for the students who were not computer literate was 137.41.

Summary

In examining the variables of knowledge of and attitudes toward the computer, the findings of this study supported the assumption that computer literacy is influential in determining attitudes toward computers. Computer literate subject displayed significantly ($p. < .05$(more positive attitudes than did their non-computer literate counterparts. Further, the fact that positive attitudes of graduate students enrolled in a computer course showed significant ($p < .05$) increases after completion of the course lends additional credence to the supposition that computer literacy influences attitudes toward the computer. If it can be assumed that the teacher is indeed one of the primary determining factors in the success of an instructional program, then the results of this study would seem to suggest that providing teachers opportunities to become computer literate may be one of the key variables in the successful implementation of computer assisted instruction in the schools.

While data from this study did inicate that reading teachers have positive attitudes toward computers, it must also be noted that their pretest CACAS scores were not significantly different from other groups. All subjects appeared to hold similar views about the computer initially. Additionally, the assumption that undergraduates' attitudes would increase significantly after completion of a computer course was not supported by the data. This finding tends to suggest that undergrduates' attitudes may have been colored by their lack of experience and their lesser ability to see direct relevance of computer applications in their future. Such a supposition, however, would need to be researched further for substantiation.

Since the availability and use of microcomputers in classrooms across the country is increasing at an almost phenomenal rate, further research into teacher knowledge of and attitudes toward computers is warranted. Future studies might address the atttitudes of teachers not enrolled in college or university courses as well in order to examine those attitudes on a more widespread basis outside an academic setting. Knowledge of teacher attitudes toward computer use should prove to be of benefit to teacher educators and curriculum planners alike as they attempt to implement a more effective program of computer assisted instruction.

TABLE 1

Descriptive Statistics on the CACAS Pretest Scores for Five Groups of Students (N = 98).

Group	n	$\bar{x}$	SD	Range
Reading Teachers	15	146.53	10.58	39
Undergrad. Educ. Students	33	139.30	15.39	64
Grad. Educ. Research Students	16	136.50	21.45	96
Undergrad. Computer Students	18	146.78	23.08	86
Grad. Computer Students	16	152.31	17.70	76

TABLE 2

Significance Test for Differences among Five Groups of Students on the CACAS Pretest Scores

Source	d.f.	M.S.	F
Groups	4	734.75	2.29
Error	93	320.44	

TABLE 3

Descriptive Statistics on the CACAS Gain Scores for Four Groups of Students (N = 83)

Group	n	Mean Gain	SD
Undergrad. Education Students	26	2.58	13.00
Grad. Education Students	30	3.20	12.62
Undergrad. Computer Students	11	-4.00	15.21
Grad. Computer Students	16	5.38	10.03

TABLE 4

Significance Test for Difference among Four Groups of Students on CACAS Gain Scores

Source	d.f	M.S.	F
Groups	3	203.93	1.27
Error	79	160.32	

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BOOK-SHARING AND PARENTAL READING ATTITUDE: COMMUNICATION BETWEEN PARENTS AND CHILDREN

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Reading to pre-school children has long been advocated as a means of enhancing children's language acquisition and pre-reading knowledge (e. g. Larrick, 1982). Recent book-sharing investigations have sought to isolate specific behaviors by parents and their children which may contribute to children's acquisition of language and pre-reading skills.

Several investigations examined the book-sharing behaviors of individual parent-child dyads using one highly-literate parent; they did not compare the diversity of book-sharing styles which exist between parents and children from different backgrounds (Ninio & Bruner, 1978; Snow & Goldfield, 1982; Bagban, 1984). Another group of investigations focused on larger samples of parent-child dyads (Flood, 1977; Guinagh & Jester, 1971) but did not investigate specific types of verbal interactions between parents and their children, nor did they consider the issue of the parental attitude towards reading. Therefore, the objective of the following studies was to examine specific parent-child book-sharing behaviors which may be influenced by the reading attitude of the parent. This was accomplished using two approaches: a statistical approach and a case study approach.

Theoretical Framework

Vygotsky (1978) proposed that children acquire a variety of concepts before formal schooling through proximal development. Proximal development is the distance between the level of the child's ability to solve problems independently and the level of potential for problem solving with the assistance of an adult. Elaborating on Vygotsky's theories, Bruner (1975) proposed that the parent builds a scaffold which provides a means of support to enable the child to learn language. Language development and literacy acquisition is made possible through the presence of an interpreting adult who provides the experience and expands on the child's responses.

The results of recent research yielded many disparate results regarding parent-child book sharing behaviors. Ninio and Bruner (1978) found that book-sharing was governed by an implicit set of rules with regards to turn taking by parents and children. Hogan & Shanahan (1982) found that parents who relate story content to children's experiences can enhance the child's conceptual background and metalinguistic development. Brigg & Elkind (1973) and Hogan & Shanahan (1982) found that the amount of time spent reading to the child was related to the child's linguistic awareness.

Health (1982) proposed that the use of the bedtime story varied between socioeconomic groups. Middle-class parents used question-answer routines which prepared their children for the classroom discussion format used in the school setting. In white working-class homes three and a half year-old children are expected to sit quietly and listen to the story and

not interrupt. Black working class parents seldom if ever read to their children. Therefore, the success of parent-child book-sharing seems to be dependent upon a number of different factors.

Method and Results of the First Study

The population of these studies consisted of 28 parent-child dyads. The children's ages ranged from 41 to 56 months. The children were administered the *Concepts about Print Test* (CAP) (Clay, 1972) and the *PPVT* (Dunn, 1965). These tests were administered in the children's nursery schools.

A modification of the *Estes Attitude Scale* (Estes, 1971) was administered to each parent who would read to the child. Each parent was also interviewed to obtain general and specific information regarding parent-child book-sharing in the home. At this time the parent received two children's books to read to the children: *Pinkerton, Behave* (Kellogg, 1979), and *May I Bring a Friend* (de Ringers, 1964). The parents were instructed to read one book three times to the child. The other book was to be previewed by the parent, but not read to the child. The book order presentation and the amount of exposure were counter-balanced; therefore, there were four treatment groups. Appointments were set for book-sharing observations which took place in the dyad's homes one week after the initial contact with the parent.

The book-sharing observations were tape-recorded and later transcribed. Additionally, the researcher took detailed field notes of the book-sharing sessions and interviewed the parents in depth after the sessions. The transcriptions were analyzed based on an informtion category scheme developed by Snow & Goldfield (1982) for six types of interactions which were related to the structure of the story. They included: item label, item elaboration, event description, motive/cause, evaluation/reaction, and schema related comment. The number of specific interactions, along with the parent's attitude score, the amount of time spent reading to the child, and the number of children's books in the home were entered into two stepwise multiple regressions using the CAP and the PPVT as dependent measures. The results indicated that the parent's reading attitude was the only significant predictor of the child's score on the CAP ($R^2 = .21$, $df = 1,26$, $F = 7.10$, $p < .05$), and the childs score on the PPVT ($R^2 = .43$, df 1,26, $F = 19.75$, $p < .0001$). Therefore, it was concluded that the parent's reading attitude was the best predictor of the child's pre-reading knowledge and receiptive vocabulary for this population and was used as a guide for the second study.

Methods of the Second Study

Three dyads were chosen for detailed analysis based on the parent's reading attitude score. The comparisons which follow will compare the book-sharing sessions from *Pinkerton, Behave* (Kellogg, 1979) in addition to the following data: field notes, interview data not quantified, observed non-verbal behaviors, in addition to the quantified interactions. These data were analyzed in terms of specific behaviors which may have been influenced by parental reading attitude.

Results of the Second Study

The data of each dyad were considered individually. The summaries which follow use psuedonyms rather than the real names of the parents and children.

Nellie and Barbara: Nellie's age was 4 years, 2 months at the time of the recorded book-sharing session. She was the fifth of Barbara's six children. They lived in a working-class neighborhood. Barbara's reading attitude score as measured by the author's modification of the *Estes Attitude Scale* was the lowest of the population of parents in this study. Barbara reported that she was only able to read to Nellie once every two weeks because she frequently had to work overtime.

During the book-sharing session the T.V. was left on although the sound turned off. Nevertheless, Nellie looked at the T.V. three times during the session. The session was also interrupted twice by one of the other children running through the room.

Barbara and Nellie did not verbally interact during the session. Barbara seemed concerned with the accurate reading of the text. Barbara did not ask Nellie questions during the session. The session was also interrupted twice by one of the other children running through the room which in combination with the distraction of the T.V., seemed to limit Nellie's interest in the stories which were read. Barbara reported that Nellie did not have a favorite book. Although there were 50 books in the home, many of them belonged to Nellie's older siblings. According to Babara, she was the only person who read to Nellie.

Frank and Donald: Donald's age was 4 years, 3 months at the time of the recorded book-sharing session and was the youngest of three children. Frank was employed as a Professor of Business at a large University in the Southeastern United States. They lived in an upper-middle class subdivision. Frank's score on the attitude scale was at the mean of the study's population. Frank reported that both parents read to Donald, although he read to Donald more frequently than his wife. A typical book-sharing session lasted between fifteen and twenty minutes and took place in the bedroom. The observed session took place in the living room.

During the reading of *Pinkerton, Behave,* which was being read to Donald for the first time, the following exchange was recorded.

(Note: The text of the book is in quotes).

Frank: "We begin with the simple command. Come. COME! COME! COME!" What does old Pinkerton do this time?

Donald: He jumped out the window.

Frank: Jumped right out the window . . . .

During this sequence Frank read Donald a section of the text and asked Donald a question which Donald answered. Frank supported Donald's answer by repeating Donald's answer.

Later, during the climax of the story the following exchange was observed.

Frank: . . . ."Psssssst! Pinkerton. A Burglar. I warned you lady. Pinkerton, come." Pinkerton picks up the burglar and throws him right out the window. Right? Pinkerton. Did I miss something here? Oh, yeah, I missed a page. Let's go back here. Okay. Missed it. "Pinkerton, Fetch!" And what's he do? Jumps the burglar and gets him down to the ground. There we go. "Pinkerton, Come!" Hauls that guy

right out the window. "Pinkerton, I'm a burglar." What's old Pinkerton do?

Donald: Licks him.

Frank: Right . . . .

In this instance Frank lost his place in the story and demonstrated to Donald an adult problem-solving procedure. However, frank did not ask Donald to help find their place in the story nor did Donald volunteer the information. In terms of book-sharing interactions the following pattern was observed during Frank and Donald's book-sharing: 1) Frank read a section of text and asked Donald a question, 2) Donald answered the question, and 3) Frank supported donald's answer and read on. Frankexplained the action of the story as depicted by the illustrations of the story. Their interactions centered around the action of the story and were coded as event descriptions (Snow & Goldfield, 1982). There was little variation in this routine nor of the information categories pursued. However, in one instance Donald broke the established pattern.

Donald: Why didn't they have to go out?

Frank: Because they weren't bad dogs. Just Pinkerton didn't do what he was told.

This cutting shows Donald initiating a new category of information (motive/cause) when he asks Frank the motive of a character's action in the story. However, usually Frank took the lead during story-sharing and Donald followed. Thus, the above cutting was the only instance in which the above mentioned three-step pattern was broken. Frank's questions are limited to event-description questions which limit the types of response by Donald to the story. Donald was not encouraged or invited to pursue his own hypotheses and conclusions about the story.

When interviewed, Frank reported that Donald usually chose the book to be read. His favorite was *Richard Scarry's Best Book,* which Frank added was "best for teaching principles." He believed that "quality not quantity" was important and added that he preferred to read books which "taught" useful information or concepts. Therefore, while Donald makes the ultimate choice of the book to be read, Frank appears to provide guidance.

Glenda and Megan: Megan's age was 3 years, 8 months at the time of the recorded book-sharing session. Glenda, her divorced mother was completing her undergraduate studies at this time in teacher education. They lived in a middle class neighborhood with Glenda's parents. Glenda's score on the reading attitude scale was the highest of the total population. Glenda reported that there were approximately 100 children's books in the home and that she read to Megan approximately 20 minutes a day.

During the observation, Megan sat in Glenda's lap. Glenda was enthusiastic in her reading to Megan as evidenced by Glenda's smooth reading style, and her facial and vocal expressions. Book sharing seemed to be a time for her to interact and exchange ideas with Megan. This is illustrated in the following sequence from *Pinkerton, Behave,* which was being read to Megan for the first time.

Glenda: Do you know what a burglar is?

Megan: Uh huh.

Glenda: A burglar's someone who sneaks in your house and takes all your toys and stuff like that and runs away with 'em.

Megan: Comes with a mask on.

Glenda: Yeah, comes with a mask on. We've seen them on TV sometimes.

Glenda took this opportunity to reinforce and extend a label or concept which Megan had some knowledge of. She used examples which were part of Megan's prior knowledge ("takes all your toys", "we've seen them on TV"), and supported Megan's contribution ("comes with a mask on"), through her agreement and restatement of Megan's contribution. Megan's hypothesis was supported and she was shown that her contribution was important, resulting in Megan's further assimilation of the concept "burglar".

Later, their conversation centered on the action of the story.

Glenda: "COME! COME! COME!" What did Pinkerton do?

Megan: He jumped out.

Glenda: Yeah, he did, didn't he? He didn't come.

Megan: Why?

Glenda: I don't know. What do you think?

Megan: Cause he didn't want to.

Glenda initiated this event description through her question. After Megan answered, Glenda supported Megan's response and expanded it. Megan then responded by initiating a new information category, motive/cause (Snow & Goldfield, 1982), when she questioned Pinkerton's motives for not coming. Instead of directly answering Megan's question, Glenda encouraged Megan to hypothesize and draw her own conclusion. Thus, Megan is a full partner in this story-sharing episode, rather than being a passive observer on the process.

Glenda also referred to Megan's prior knowledge by comparing the character Pinkerton with other dogs Megan knew of. During one sequence, Glenda compared Pinkerton to the family dog "Betsy" along with other large dogs in the neighborhood. Megan used that information in the following cutting:

Glenda: Who are they acting like?

Megan: I don't know . . . Betsy?

Glenda: (Laughs, seems surprised) They're acting like Betsy.

As shown here, it seems that Glenda expected Megan to compare the other dogs in the story to Pinkerton. Instead, Megan compared them to Betsy, the family dog. Glenda accepted this as a reasonable answer.

Finally, during the climax of *Pinkerton, Behave* the following dialogue transpired between Glenda and Megan.

Glenda: "Psst, Pinkerton a burglar".

Megan: (whispered) Stealin'!

Glenda: He's stealin', yeah. And the burglar says, "I warned you lady." And what's Pinkerton doin' to the burglar?

Megan: Gettin', licken 'im.

Glenda: Lickin' him? Is that doin' any good?

Megan: (Shakes head no)

Glenda: No. She told him to get the burglar and he jumps up and down and starts lickin' him.

Megan: (laughs) Yeah, he doesn't know any better.

Megan initiated the event-description "stealin". Her whisper seemed to imply involvement with the suspense of the story

or a negative value judgment toward the burglar. Again, Glenda supported Megan's statement and followed with another question which Megan answered and Glenda supported. Then, Glenda asked Megan to make another judgment ("Is that doin' any good?") to which Megan responded minimally with a shake of the head. Glenda's support and elaboration for Megan's response encouraged Megan to extend her judgment of Pinkerton's actions ("Yeah, he doesn't know any better").

These examples illustrate the partnership which exists during book-sharing episodes between Glenda and Megan. Glenda encouraged Megan's participation through leading questions, warm support, and elaboration. At times, Glenda took the lead and asked Megan leading questions which allowed Megan to make hypotheses about the action of the story. On the other hand, Megan sometimes took the lead in making hypotehses about the story ("stealin' "). Glenda, in conjunction with Megan, took time to explore and explicate the action of the story. Book-sharing was used to reinforce and extend Megan's conceptual knowledge through examples which were related to Megan's prior knowledge, in addition to confirming and extending Megan's hypotheses. Glenda encouraged Megan to contribute her own ideas and predictions to the story. Both Megan and Glenda seemed to enjoy this particular book-sharing experience as evidenced by their frequent laughing and giggling.

During the post observation interview, Glenda reported that Megan likes many books, but has no particular favorite. In addition to reading children's books, they often read the comics in the newspaper. Glenda added that Megan will correct her if she misses a comic frame. Glenda also reported that Megan was able to read road signs such as "STOP" and could also read "Food Giant" in newspaper advertisements. Therefore, Megan's print awareness extends beyond story-books and into the rich environment of print encountered in daily living.

Book-sharing as a Social Event, Proximal Development, and Parental Reading Attitude

The preceeding case summaries illustrate the variety of parent-child book sharing behaviors. Barbara did not interact with Nellie. She seemed to be concerned with reading accuracy, rather than telling a story and interacting with her child. While it is possible that the prospect of being observed caused anxiety, another plausible explanation is that she is not an able oral reader. In addition, Barbara has a low attitude toward reading. Also, her time is limited in that she worked and had five other children to tend to. Therefore, book-sharing is a low priority in their home. The presence of frequent distractions (the T.V. and interrupting children) may also explain why book-shring is not an important activity in their busy home. The home-literacy environment in this home appears to be somewhat akin to that of the working-class community reported by Heath (1982) since Barbara and Nellie did not interact with the text and each other.

Frank and Donald pursued the events of *Pinkerton, Behave,* through Donald's answering questions about the events of the story and Frank's description of the illustrated action. Glenda interacted extensively with Megan, allowing for a full exploration of the stories which were read. Both of the above dyads are somewhat similar to the middle—class parents of Heath (1982).

Although both Glenda and Frank interact with their children during book-sharing, the types of interactions differ. The book-sharing of Frank and Donald was characterized by a read-question-answer-read pattern. Unlike Glenda and Megan, Frank and Donald did not seem to fully explore the possibilities of the text. A possible explanation is that in terms of reading attitude Glenda fully appreciated the interactive nature of reading which was reflected in her book-sharing with Megan. Book-sharing was a time of interpretation and exploration. In contrast, Frank read the words and his interacitons with Donald were characterized by literal questions on the content of the book.

In terms of proximal development, it seems as though Glenda invited Megan to hypothesize and draw conclusions which challenged Megan to use her prior knowledge and knowledge of story structure. Megan is asked to make predictions which she could not make on her own—extending the limits of her knowledge of the story. In contrast, Frank only asked Donald questions which can be answered using the spoken text and the illustrations. When questioned by Donald, Frank provided the answer. In contrast, Glenda sometimes challenges Megan to supply the answers to her own questions.

Another difference between Glenda and Megan and Frank and Donald seems to be in the literature which is read. Megan liked many books but she had no special favorite. Also, Glenda reported that she frequently read the comic section of the newspaper to Megan. As a result, she experienced a variety of literature and genres. Frank and Donald's book-sharing seems to be restricted to books selected by Donald, with Frank serving as a guide. From this interview data it can be inferred that: 1) Megan is exposed to a wider variety of literature than Donald and 2) book-sharing for Glenda and Megan transcends the traditional bedtime story.

Book-sharing is a social event built around a text and the speech which surrounds the event. The child as well as the adult is an active participant in the process (Teale, 1984). In these cases, it can be argued that Megan is more actively involved in the process than Donald, who is more actively involved than Nellie. However, it is difficult to determine which variable most influenced the outcomes of these events—the text, the parent, the child, or the setting of the book-sharing event.

As a result, some interesting questions can be raised. Do some parents have an intuitive sense of the distance between their children's range of proximal development thereby challenging their children through more difficult questions? Or, do the responses of the child dictate the types of questions and interactions?

Given the nature of these studies, it is difficult to make firm conclusions. Although the reading attitude of the parent was a significant predictor of the child's pre-reading knowledge and receptive vocabulary, it must be cautioned that the small population prohibits firm conclusions. However, it is hypothesized that parental attitude towards reading influenced the book-sharing behaviors of the parents in the case summaries, although alternative possibilities exist.

Taken together, the results of the two studies, seem to support Bruner's extension of Vygotsky's theory of proximal development, with one qualification. The process seems to be dependent upon the attitude of the parent towards reading.

The findings of this study have practical implications along with the previously mentioned theoretical implications. For parent educators, the book-sharing techniques of dyads such as Glenda and Megan can serve as a guide for instructing parents who are interested in improving their book-sharing techniques, although it must be cautioned that book-sharing is dependent upon social context and the reading attitude of the parent. Early childhood educators should note that children have divergent backgrounds in terms of their conceptual backgrounds and experiences with literacy. Therefore, it may be necessary for early childhood educators to provide appropriate book-sharing experiences for children such as Nellie.

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DO TEACHERS TEACH AS THEY ARE TAUGHT TO TEACH?

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When prospective teachers enter colleges and universities to begin teacher education programs, most of them come prepared with a common sense knowledge of what it means to teach. Some of them have already had experience as teachers or tutors or more indirect teaching experiences as caregivers or volunteers for service organizations. But even more important, all of the prospective teachers have had many years of experience as students in classrooms and as learners outside of classrooms. The influence of past experiences on teacher's instructional behavior is described by some researchers as influential enough to override the effects of teacher education programs and has lead to a cliche frequently used to describe what supposedly happens during teacher education: prospective teachers teach as they were taught not as they were taught to teach.

The expectation of prospective teachers is, however, that completion of a teacher education program at colleges or universities will indeed transform them into effective teachers. To accomplish the goal of preparing effective teachers universities and colleges have traditionally separated teacher education into two categories: (a) educational and foundation courses, and (2) field experiences. This practice of separating university coursework from field experiences in schools has contributed to a widely held notion that a similar split exists between theory and practice in teacher education. Theory, the main substantive contingent of methods courses, and practice, the *real* teaching carried out in *real* classrooms are distinct, and are viewed as unrelated to one another. The separation of university coursework from the field experiences may contribute to the many reasons cited (See Kaths & Batz, 1982) for the perceived lack of impact of teacher training.

Without explicit instruction to integrate theory and practice, the argument goes, pre-service teachers are left to their own devices and quite naturally rely on their previous experiences as students to play and carry out instruction.

The observation (Goodlad, 1982) that teachers teach as they were taught, not as they were taught to teach, suggests that despite the benefits of existing research on teacher training, preservice education has little effect on teachers' ultimate performance in schools.

Fuller and Brown (1975) discuss the need for theory building and a conceptualization of the processes of change which occur in teacher preparation. They state that adequate theories describing teacher development have not been available because too little is known about what transpires during teacher education. More than ten years later, Zeichner (in

press) states that numerous studies on teacher education have been conducted; the studies have generally provided little information beyond course descriptions and distributions of credits. None of the studies have contributed to a realistic description of how preservice education influences teaching behavior. In fact, the related literature on the development of teacher perspectives conveys an implicit criticism of preservice education and its impact on teachers' performances (Feiman-Nemser, 1983; Fuller & Brown, 1972). The criticisms may be without foundation, however, Zeichner (in press) argues that description of preservice education are needed "to provide information about how knowledge and skills provided in college courses are communicated to prospective teachers and how this information is translated into perspectives (actions and conceptions) by preservice teachers" (p. 11). The impact of formal education courses must be assessed by examining the university experience in conjunction with the practicum experience. In short, the actual conduct of preservice education remains an issue.

Although research related to reading has not directly contributed to a description of the pre-service phase of teachers' formal preparation, instructional research in reading convincingly demonstrates that commercially made materials, particularly the basal reader, significantly influences the quality of reading instruction in American schools (Duffy & Mc Intyre, 1980; Artley, 1980). No particular sequence of instruction is evident, explicit purposes for instruction are not stated, and strategies for comprehension are not developed.

Shannon (1984) describes elementary teachers' behavior during reading instruction as "the application of commercially made materials" (p. 69). He states that the overreliance on commercial materials is unfortunate for three reasons: "it precludes attention to students' individual needs (Austin & Morrison, 1963; Goodlad, 1970); it stymies attempts at instructional innovation (Chall, 1967; Rosecky, 1978; Singer, 1977); and it predetermines teachers' instructional decisions (Duffy & McIntyre, 1980)" (p. 69). Furthermore, an unintended effect of the overreliance of commercial materials is that teachers and students view the act of reading as merely the teaching and completion of commercially made materials (Shannon, 1984); Fuller & Brown, 1973).

In order to understand how preservice education influences the development of teacher persepctives regarding the use of basal readers for elementary reading instruction, "thick" descriptions of preservice reading education are necessary. Detailed descriptions may yield insights and suggest hypotheses concerning the influence of a university reading methods class on instructional behavior in the elementary classroom. The study proposed here will contribute one such "thick"description of preservice education.

Description of Study

The study will extend the research on teacher education by identifying and describing matches and mismatches between reading methodology presented in a university class and observations of preservice teachers' instructional behavior during a reading practicum. The description will focus on, but not be limited to, the matches between course content and practice teaching regarding the use of basal readers to teach strategies for comprehending text. More specifically, the study will describe and examine both the development of teacher perspectives (beliefs and actions) regarding basal reader programs as influenced by university course content, and the interactions among preservice teachers, cooperating teachers, university supervisors and the university lecturer.

The study will be guided by one general research question:

To what extent does the content of reading methodology course influence the planning and implementation of a reading lesson?

Of particular concern is the extent to which preservice teachers' instructional decision-making includes a consideration of four issues presented in a reading methodology class: (a) selection of materials, (b) a plan for instruction, (c) stated purpose for instruction, and (d) strategy development.

The investigation is designed to yield a description of what actually happens when preservice teachers begin to learn about and to provide reading instruction in elementary classrooms.

Methodology

Preservice teachers enrolled in one section of an undergraduate reading methods course, "Teaching Reading in the Elementary School", and a related practicum will be asked to volunteer for the study. From the pool of volunteers, four students will be chosen as subjects for case studies based on two criteria: diversity among school placements and diversity of responses to the Conceptions of Reading Propositional Inventory (Duffy & Anderson, 1982).

"Teaching Reading in the Elementary School" is a beginning course in reading methodology. It is intended to be an introduction to reading theory and practice. The course has two major foci: the reading process and the process of teaching reading. To address these major processes the course is organized around five topics: Introduction to Reading, Word Level Comprehension, Text Level Comprehension, The Reader and Classroom Practices. The lecturer will draw upon findings from research areas such as developmental psychology, information processing, schema theory and classroom research. The goal is to integrate research findings with the practical aspects of teaching reading. Readings, lectures, discussions, workshops assignments and exams are directed to this end. The investigator of the study will be the instructor for the course.

The field research will take place over a semester's time (3-4 month period) in order to document any development of change in pre-service teachers' instructional behavior during the practicum period. Although this research will rely heavily on observation and interview, a variety of techniques are proposed. These techniques will provide depth to the data gathered and will serve as a cross check on data and interpretations. Denzin's (1978) notion of "triangulation"—the collection of multiple data sources to cross check the validity of casual propositions and developing hypotheses—serves as both a rationale for identifying various data sources and a method for interpreting information from those sources. Data gathering procedures will include audiotapes of lessons, observations, interviews, document collection, and the completion of several instruments designed to establish: (1) preservice teachers' comprehension of university course content, and (2) preservice teacher behavior before, during, and after the execution of a reading lesson.

The interview questions and records of behavior protocols are derived from areas of concern which relate to the general research question: materials selection, strategy, plan of instruction, and explicit purpose for instruction. Interview responses, behavior protocol and assessment of course content will be compared in order to determine the degree to which beliefs about reading instruction are supported or contradicted by instructional behavior. Additional notes and audiotapes of classroom observations and university lectures will help to supplement and support inferences regarding the influences of university course content on preservice teachers planning and implementation of a reading lesson.

Collection and analysis of data on the match and mismatches be- tween university teaching and practicum behavior may shed light on ways to more adequately prepare preservice teachers to provide instruction for elementary school children.

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TWO MODELS OF DEVELOPMENTAL READING INSTRUCTION—FUSED OR PAIRED

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INTRODUCTION

Many university students scheduled for developmental reading courses need help not only in reading, but in all communication skills: listening, speaking, reading, and writing. Chaplin (1977) explains the need for teaching higher cognitive skills in university reading courses by stating that success in college depends upon the ability to interpret, analyze, and synthesize the thoughts of authors with one's own ideas. This task proves difficult for many students and national assessments indicate that the ability of America's youth to read and think critically has declined in recent years.

The National Assessment of Educational Progress (1980) reported that the ability of 17 year-old students to interpret decreased from 51 percent in 1970-71 to 41 percent in 1979-80. The 1980 group encountered difficulty in problem solving, critical thinking, and formulating a coherent defense in support of an opinion.

As the birth rate declines, universities will have to compete with other institutions and employers for students. It is safe to assume that as enrollment declines, institutions will depend more heavily upon developmental educators to stabilize enrollment by increasing retention and graduation rates.

The purpose of this descriptive study was to examine data collected from developmental reading models which used course content to improve reading and study skills of university freshmen.

The objectives of this study were threefold:

1. To initiate a study comparing the reading skill gains of students participating in content fused instruction with reading gains of students participating in content paired instruction.
2. To develop a profile of high risk students from Millersville University and University of Cincinnati.
3. To compare the retention rates of high risk students from both institutions who received paried and fused reading instruction.

Fusing Skills with Content

RATIONALE

During the 1981 summer session, Millersville University combined two developmental course, Reading—Communication and Study Skills (Ed 090) and Developmental Biology (Bio 020) into a nine-week course for underprepared freshmen. The purpose of this experimental class was to upgrade reading, critical thinking, and communication skills by using these abilities to build a background of biological concepts.

This course was provided for students specially admitted to the Program for the Advancement of Compensatory Education (PACE). PACE students were identified as high risk by Admissions personnel on the basis of academic and/or financial disadvantage.

The subject of biology was selected as the content to which the communication and cognitive skills would be applied because PACE students had a history of performing poorly in Biology 100. From 1976 to the spring semester of 1981, 284 PACE students took Biology 100. At the university all students must complete a science course with an attached lab. Biology 100 is the course that is chosen most frequently to fulfill this requirement. When the Biology 100 grades were examined, the majority of PACE students earned grades in the D or F range. One percent of the 284 students achieved A; four percent a B; nineteen percent a C; thirty-two percent a D; and forty-four an F. Since it was not possible to determine the number of credits completed by each student prior to scheduling Biology 100, it must be assumed that some of the PACE students were upperclassmen and some may have repeated the course. The grades tabulated represented the final assessment which appeared on the students' transcripts.

DESIGN

Subjects:

PACE students scheduled for the fused reading and biology course during the 1981 summer session were freshmen with the lowest verbal SAT scores. The following table compares the SAT scores of the Millersville University freshmen with national norms.

MEAN SAT SCORES OF 1981 MILLERSVILLE UNIVERSITY ADMITS COMPARED WITH NATIONAL NORMS

$\bar{X}$ SAT Scores	National Norms	MU Regularly Admitted Freshmen	Total PACE Admits	PACE Students Scheduled For Fused Instruction
Verbal	424	459	330	280
Math	466	502	370	386
Combined	890	961	700	666

Method

The fused course consisted of nine weeks on instruction. During the first five weeks, the reading professor taught units of vocabulary development, test-taking, time management, outlining, paraphasing, and listening. These techniques were then applied to biology content in the four weeks that followed. A biology professor taught concepts in ten chapters of *An Invitation To Biology* (Curtis) and was supported in the classroom by the reading professor and a tutor. Pre and post reading and biology tests were administered to assess student progress over the summer session. The Nelson Denny Reading Test was used to evaluate reading ability; an examination constructed by members of the Biology Department assessed understanding of biological concepts. Students who were judged to have made the most progress during the summer session were scheduled for the Biology 100 course the following fall semester.

In the spring of 1984, the records of the 23 students who completed the fused course were examined. The purpose of this review was to determine the success rate of students hwo completed the developmental course.

FINDINGS

The performance of the 23 students who participated in the fused reading/biology course was tracked from the 1981 summer session to the fall 1984 term to determine if the fused approach was a viable teaching alternative for upgrading the skills of underprepared university freshmen.

Reading and Biology Gains—June, 1984—August, 1981

At the completion of the fused course, pre and post reading and biology test scores were compared to measure achievement during the nine-week summer session. The following table indicates the progress made by PACE students.

	Pre-Test	Post Test	T-Value
Nelson Denny Reading Test	$\bar{x}$ 283 SD 4.5	$\bar{x}$ 292 SD 5.3	$t(20) = 9.09, p < .05$
Biology	$\bar{x}$ 32 SD 6	$\bar{x}$ 49 SD 11	$t(21) = 708, p < .05$

Gains in reading and biology were significant.

Performance Review—Fall, 1981

After completing summer courses, PACE students are scheduled for traditional college courses. Nine of the students taking the fused summer course were scheduled for Biology 100 during the fall term. A profile was developed which included SAT scores, pre and post reading/biology test scores, Ed 090 grade, Bio 020 grade, Bio 100 grade, summer cumulative grade point average, fall cumulative grade point average and tutorial hours. At the completion of the fall term, these conclusions were drawn from information collected on the profile:

1. Of the nine students scheduled for Bio 100, 22 percent earned a B; 45 percent earned a C; 22 percent earned a D; 11 percent earned an F.
2. Reading and biology grades appeared to be stable when students participated in fall tutoring. Grades dropped when no tutoring was evidenced.
3. Not all students who made passing grades in Bio 100 participated in tutoring, but students receiving a D or an F grade rejected tutoring.
4. Students who had tutors in biology during the fall term also had tutors in other subjects.

Performance Review—Spring, 1984

At the completion of the Spring, 1984 semester, data was collected from the records of a target group. The following tables report the retention rate, grade point averages, and Bio 100 grades of the students tracked.

RETENTION RATE OF MILLERSVILLE UNIVERSITY STUDENTS — 1981-1984

1981 Freshmen	Original Enrollment	$\bar{x}$ SAT Scores			Enrolled 1984
		Verbal	Math	Number	Retention Rate
Regularly Admitted	944	459	502	578	61%
All PACE	98	330	370	42	43%
PACE Students Receiving Fused Instruction	23	280	386	20	44%
PACE Students Not Receiving Fused Instruction	75	367	372	32	43%

The retention rate of PACE students receiving the fused instruction is lower than the regularly admitted population and slightly higher than other PACE students, however, it must be remembered that students were placed into the fused course on the basis of SAT scores. The SAT scores of the target group were 34 points less than other PACE freshmen and 295 points less than the regularly admitted group.

GRADE POINT AVERAGE OF PACE STUDENTS 1981—1984

1981 PACE Admits	Still Enrolled Spring 1984	$\bar{x}$ Credits Earned	$\bar{x}$ GPA
Total Pace	42	82.2	2.19
Received Fused Instruction	10	85.7	2.31
Did Not Receive Fused Instruction	32	81.0	2.15

Students receiving fused instruction earned more credits and had a higher grade point average than other PACE students.

BIO 100 GRADE DISTRIBUTION FOR PACE STUDENTS

PACE	Number of PACE Students	A	B	C	D	F
1976 - Spring 1981	284	1%	4%	19%	32%	44%
Receiving Fused Instruction	14	-	47%	15%	23%	15%

When the Bio 100 grades of students receiving fused instruction were compared to PACE students completing the course in previous semesters, the results are striking. Only 56 percent of the 284 PACE students passed Bio 100 from 1976-1981. Fourteen students took the fused instruction and completed Bio 100. Of this group, 85 percent were able to pass the 100 level biology course.

Pairing Skills with Content

RATIONALE

Most college students who enter an open admissions college like University College — University of Cincinnati need help with reading and study skills. To this end we have been pairing one section of an Introduction to Psychology class with an Effective Reading and Study Course for the past three years. Specifically, students placed in this paired course arrangement are reading at or below the 12th grade level based on the Degrees of Reading Power Test. Students with these low reading test scores are advised by either their counselor or advisor to take the paired courses.

A psychology professor in the University College — University of Cincinnati noted that many students lacked the essential reading and study skills necessary to do the required work in his course. Therefore, he began to upgrade his course syllabus to include the SQ3R technique and several other study skills. He soon realized that it would take a greater effort so this psychology professor explored the possibility of pairing his Introduction to Psychology class with an Effective Reading course. The biggest problem was how to solve the logistics of getting students signed up for the correct classes. This was finally solved by giving the paired courses their own course numbers.

Paired students are freshmen who need to take the Introduction Psychology class as part of the requirements for their program of studies. In fact, 16 out of 21 programs in University College require Introduction to Psychology. Since fully one-third of the entering freshmen class are reading at or below the 12th grade level, this makes it an ideal class for pairing.

DESIGN

Subjects

The subjects are students who took the paired reading and psychology course during the 1983—1984 academic year. These students were directed into the paired courses by either their counselor or academic advisor because of their low test scores on the Degrees of Reading Power Test.

Method

The paired course consisted of 10 weeks of instruction. The Introduction to Psychology class is a large lecture class (approximately 50 to 60 students) that meets three times a week for 10 weeks. The Paired Reading Class breaks the large lecture class into three sections that also meets three times a week. The Psychology course used the text *Introduction to Psychology,* 2nd Edition, by Linda Davidoff, while the Paired Effective Reading and Study course used *The Houghton Mifflin Study Skills Handbook* by James Shepherd. This current year the Psychology class is using *Fundamentals of Psychology,* 3rd Edition, by Audrey Haber and Richard Rungon and the Paired Reading course is using *Study for Success* by Meredith and Joyce Call.

FINDINGS

TABLE I - N = 26

CONTROL GROUP'S DEGREES OF READING POWER TEST

Mean Scores—Fall, 1983

Total Raw Scores		Test Part I/Items 1-50		Test Part II/Items 51-98	
Pre	Post	Pre	Post	Pre	Post
1,894	2,033	1,209	1,226	775	897
Score Gain +39		Score Gain +17		Score Gain +122	

TABLE II - N = 23

EXPERIMENTAL GROUP'S DEGREES OF READING POWER TEST

Mean Scores—Fall, 1983

Total Raw Scores		Test Part I/Items 1-50		Test Part II/Items 51-98	
Pre	Post	Pre	Post	Pre	Post
1,267	1,269	934	9609	331	307
Score Gain + 2		Score Gain + 15		Score Gain -24	

Tables I and II suggest that the experimental group did not make the test score gains made by the control group. Two important factors must be noted in interpreting these results: (1) the experimental group had 15 minutes less test taking time on the post test administration of the Degrees of Reading Power; and (2) the experimental group's average pre-test score was 20 points lower than the control group's pre-test on the Degrees of Reading Power.

TABLE III

PAIRED PSYCHOLOGY AND READING COURSE ATTITUDE SURVEY RESPONSES OF EXPERIMENTAL (PAIRED) AND CONTROL (NON-PAIRED) STUDENTS

	N = 23 Paired Students		N = 26 Non-Paired Students	
	YES	NO	YES	NO
I. SKILLS				
Question Number				
1) Lecture Notes	78%	22%	62%	38%
2) Note Taking	70%	30%	69%	31%
3) Underlining	87%	13%	73%	27%
4) Review Strategies	96%	4%	77%	27%
5) Textbook Aids	87%	13%	92%	8%
6) New Vocabulary Method	96%	4%	69%	31%
7) List Vocabulary Words for Each Chapter	91%	9%	54%	46%
8) Techniques Used Most Often	SQ3R 54%		Outlining 60%	
	Notetaking 44%		Notetaking 38%	
	Underlining 2%		Study Aids 2%	
II. TIME				
1. Percentage of students who set aside specific time	62%		27%	
Who do not set aside time each week for studying psy- chology	38%		73%	
2. Number of hours spent studying psychology each week	1 — 3 hours 32%		1 — 3 hours 60%	
	4 — 6 hours 38%		4 — 6 hours 35%	
	7 — 9 hours 26%		7 — 9 hours 5%	
	More 4%		More 0%	

The attitude survey produced interesting results. First, the experimental group (paired) used study skills such as review strategies and vocabulary strategies much more frequently than their control group (non-paired) counterparts. The only exception was textbook aids. Second, 62 percent of the experimental (paired) group set aside specific time each week for studying psychology while only 27% of the control (non-paired) group set aside specific time for studying psychology. Third, the experimental (paired) group spent more hours each week studying than the control (non-paired) group.

TABLE IV

RETENTION DATA PERCENTAGES FROM FRESHMAN TO SOPHOMORE YEARS FOR COMPARISON OF PAIRED, NON-PAIRED, UNIVERSITY COLLEGE, AND UNIVERSITY OF CINCINNATI

	University of Cincinnati	University College	Non-Paired Control	Paired Experimental
Retention	70%	59% (683)	N.A.*	66% (42)
Non-Retention	30%	41% (482)	N.A.*	34% (22)

*Data Not Available

Table Four indicates that retention rates are higher - 66 percent - for the experimental (paired group) than it is for the University College, - 59 percent - and slightly less than the University wide retention of 70 percent. (Control group data is not available at this time.)

FINDINGS

Increasing the retention and graduation rates of university students will become more important as sources of revenue decline. This descriptive study examined data from two content based reading programs so that recommendations could be made to other developmental educators.

It would seem that teaching reading and study skills through course content is a method that warrants further study. Even though the population was small and the students participating in the instruction were academically weaker than other freshmen, gains were evidenced:

1. Gains in reading and biology scores were significant at the completion of the nine-week fused course at Millersville University.
2. Students who participated in the fused instruction earned higher grades in the 100-level biology course than high risk students who did not take the fused course.
3. Students participating in the paired course at the University of Cincinnati had better attitudes about using reading skills and study time than their non-paired counterparts.
4. Paired students did not make significant gains from the pre-test to the post-test on the Degrees of Reading Power. However, paired students had 15 minutes less time for the post-test.
5. Retention rate from freshmen to sophomore year was 66 percent for paired students at the University of Cincinnati. The Millersville University students were tracked from freshmen to junior year. The retention rate at the end of the junior year was 44 percent.

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THE RCMP
A READING COMPREHENSION MEDIATION PROCESSES TEST: CONSTRUCTION AND VALIDITY

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While a vast amount of research has been conducted in the area of reading comprehension, there appears to be an unexplained gap between the theories dealing with reading as a linguistic process, stressing morphophonological requirements and the metacognitive and/or schema theories, concerned with the manipulation of complex organizational structure. The question then may be; what are the processes by which linguistically accessed materials move to schematic organizations? The Reading Comprehension Mediating Processes Test (RCMP) endeavors to measure the separate basic mental processes which are used in reading comprehension, rather than the reading process as a totality. By exploring directly strengths and weaknesses in these underlying mediating processes we are able to assess the processing skill levels of the reader which may cause poor overall comprehension. This assessment of processing skill levels may in fact fill the above described gap.

In designing the RCMP two basic assumptions were made. The first assumption being that the reading comprehension process is not a "magical" process. That is, nothing occurs in this process that cannot be explained. Secondly, while the processes applied in the comprehension of continuous text are greater in number, more varied in order, and produce a more complex result than are the processes involved in the comprehension of a single word, they are the same. All of the processes evaluated by the RCMP are therefore ascertainable by the examination of responses to words.

The criteria for selection of the word processes to be examined are as follows:

1. The process must have been experimentally demonstrated by more than one investigator. Thus, a sound empirical base for each process is established.
2. The process must vary systematically within the population. That is, if there is a process which everyone does equally well, it will not afford any differentiation between individuals on the basis of their reading comprehension or on the basis of any other criterion variable.
3. The measurement of the process must be reliable.
4. Performance of the individual on each of the process variables should relate in some degree to conventional measures of reading comprehension such as reading selection-question measures or cloze procedure methods.

5. The process should be such that performance would be modifiable by an appropriate procedure. This, of course, is not essential in that there may be some processes which we would find related to reading which in fact are not modifiable by teaching procedures or by other means available at the present point. These processes would serve a descriptive function only.

This leads us to a somewhat alternate definition of reading comprehension from the one which is normally used. In our terms, reading comprehension is the result of the application of a number or series of mental operations or processes which are performed thorugh the lexical access of a word stimulus or a string of words which result in the ability to repeat and to relate this information to materials already in memory. In effect, these are processes which may be involved in converting inner speech to meaning.

Categories of Reading Comprehension Processes

Examination of the literature relating to word processing seems to indicate four general cognitive processing functions or areas for investigation.

The first of these processes is imagry or the ability to generate a picture of mental image of the word or of ideas. The word or the meaning of the word is stored in the mind as a picture and a retrieval system would involve recoding the picture into a set of verbal signals. There is considerable interest in imagry as a reading process at present, although experimental results have been varied.

The second process which appears to be common is free association for the connection between items in memory. Exactly how this process occurs is not yet known, however, several hypotheses have been made. These hypotheses have involved the examination of: similarities between stimuli in terms of meaning, the occurrence of two stimuli in time and space (continuity), and paired associate learning. Free association is also affected by conditions of the individual such as anxiety, various neurotic and psychotic states, and other sources of individual variance.

The third method by which an individual may process words is on the basis of connotative meaning or the emotion ascribed to the meaning of the word. Such things as whether the word is positive or negative, strong or weak, and/or the affect generated by the sound of the word itself fall into this particular category.

The fourth area is what might be termed a word descriptor category, wherein individuals will vary in their sensitivity to the frequency or familarity of the word or will vary in their sensitivity to the number of meanings or multiordinality of the word.

These categorizations allowed us to develop 11 exploratory variables, which was reduced to nine subsequent to the initial trail of the total test. Tests for each of these eleven variables were constructed separately over a 5 year period and the resultant tests were combined into the present form of the RCMP.

The general procedure was the same for each text except free association. An initial form of about 250 items was prepared and administered to 35-50 graduate students. Items with high discrimination indices (i.e., greater than .5) moderate difficulty indices between .3 and .7 and relatively high item to total correlation (greater than .3) were selected and a second form, which varied between 80 and 127 items was developed.

This second form was administered to another group of 35-50 graduate students and using the above criteria a third form of 40 items (80 items in the imagry test) was developed selecting the best items from the second form.

The third form was then administered to another population of 35-50 graduate students and internal consistency reliabilities were developed.

The following are definitions of the eleven tests included in the initial RCMP.

Test 1: *Imagry:* Given single word stimuli the testee will be able to determine if this word commonly produces images for most people (reliability = .98).

Test 2: *Imagry Discrimination:* Given two word stimuli the testee will be able to designate the word which produces the strongest image (reliability = .92).

Test 3: *Multiordinality:* Given a two word stimulus the testee will be able to designate the word with the greatest number of meanings (reliability = .92).

Test 4A. *Word Association:* Given a one word stimulus for one minute the testee will be able to produce from long term store a number of related words (reliability = .92).

Test 4B: *Emotional Ratio:* Given a negative emotional word stimulus for one minute the testee will produce from long term store approximately 70-80 percent of the words producing a neutral word association (reliability = .96).

Test 5: *Connotative Meaning (Strong/Weak):* Given a two word stimulus the testee will be able to designate the word with the greatest emotional strength (reliability = .87).

Test 6: *Connotative Meaning (Active/Passive):* Given a two word stimulus the testee will be able to designate the word with the most active connotative meaning (reliability = .91).

Test 7: *Sonic Affect:* Given 2 CVC stimuli the testee will be able to designate the CVC which has the most positive sound (reliability = .92).

Test 8: *Connotative Mediation:* Given a two word adjective—noun stimulus the testee will be able to judge accurately on a five point scale the relative positiveness or negativeness of the combination of stimuli (reliability = .93).

Test 9: *Concept Synthesis:* Given the four words most commonly associated with a word stimulus, the testee will be able to give the initial stimulus word (reliability = .94).

**Test 10:* *Connotative Meaning (Positive/Negative):* Given two stimulus words the testee will be able to designate the word with the most positive connotative meaning (reliability = .84).

**Test 11:* *Word Familiarity:* Given two stimulus words the testee will be able to designate the word with the greatest frequency of occurence (reliability = .84).

*Note test 10 and 11 have been removed from the present form in an attempt to decrease the test length, they are used in the

inital validity study reported here.

As it is constructed any subtest of the RCMP may be aministered separately and in any order. Since the test assumes functional lexical access, it is designated for grade 4 pupils and above. Although some of the tests function at grade 3.

The assumption of lexical access as a precondition also allows the test to be administered orally. With the caution that the administrator produce the stimuli in a flat even voice to prevent cueing answers by inflection or intonation.

RCMP Validity Study

The following study compares results of the RCMP with the comprehensive test of basic skills for an elementary school population.

Sample: The present preliminary validity study uses the total population of grades 3 (N = 41) and grades 5 (N = 51) in a school located in a small city in Connecticut. The students were administered the Comprehensive Test of Basic Skills (CTBS) in October and the RCMP in February.

Results: Table 1 presents the means, standard deviations and reliabilities for the total sample computed with Kuder-Richardson Formula-21. In general, these reliabilities are relatively satisfactory for individual prediction and are similar to the reliabilities obtained during test construction with graduate student populations.

TABEL 1. MEANS & STANDARD DEVIATIONS & RELIABILITIES OF RCMP

Subtests for Grades 3 and 5 (N = 92)

	X	S.D.	KR-21 Reliability
Positive/Negative	32.52	5.08	.97
Strong/Weak	28.12	5.09	.89
Active/Passive	30.03	5.08	.64
Sonic Affect	16.78	5.08	.65
Image 1	28.41	7.11	.86
Image 2	26.47	5.30	.86
Familarity	26.43	7.00	.84
Multi Ordinality	24.61	5.54	.84
Imagry Discrimination	30.77	8.71	.93
Connotative Mediation	15.50	8.72	.89
Association Mean	5.40	3.20	.94
Imagry Total	54.88	11.64	.90
Concept Synthesis	14.65	12.19	.96

Table 2 presents the correlations of the RCMP variables with the CTBS criterion variables and with age. In general, correlations of the RCMP variables with age, language IQ, nonlanguage IQ and language mechanics are lower than the correlations of RCMP variables with vocabulary reading,language expression and language total as would be predicted from the basic design of the RCMP to reflect mediating processes in language comprehension.

TABEL 2. RCMP - PRELIMINARY VALIDITY STUDY, CORRELATIONS OF RCMP WITH CTBS CRITERION VARIABLE (N = 92*).

NAME	AGE	Language I.Q.	Non-Language I.Q.	Vocabu-lary	Read Comp	Lang. Total	Lang. Mech.	Express	Lang. Spell	Total
Positive/Negative	-.22	.48	.35	.30	.32	.32	.25	.26	.21	.26
Strong/Weak	.15	.23	.26	.32	.37	.38	.23	.32	.27	.32
Active/Passive	.17	.41	.39	.63	.59	.63	.44	.62	.47	.57
Sonic Affect	-.18	-.18	-.31	-.32	-.26	-.29	-.33	-.34	-.28	-.32
Imagry Total	.41	-.00	.15	.41	.38	.41	.19.	.40	.34	.38
Familarity	.11	.12	.16	.29.	.15	.23	.24	.27	.16	.25
Multi Ordinality	.06	.13	.30	.24	.27	.26	.40	.25	.18	.27
Imagry Disc.	.15.	.36	.22	.42	.45	.46	.30	.22	.37	.42
Association	.29	.29	.20	.42	.38	.41	.05	.42	.39	.33
Emot. Anger	.08	-.06	.05	-.15	-.10	-.12	-.18	-.13	-.27	-.24
Consynth	.42	.43	.34	.70	.72	.73	.49	.74	.58	.70

r.05 = .159

r.01 = .208

This position is confirmed by the use of multiple regression to predict CTBS scores. The RCMP variables produced multiple R's of .80, .81 and .83 for reading comprehension, vocabulary and total reading, respectively accounting for 64, 65 and 69 percent of the variance. Similarly, the multiple R's for two other criterion measures, language expression and total language, were .84 and .83 respectively. The CMP accounted for 70 and 68 percent of the respective variance. It is clear that mediating processing variables can account for a large portion of the variance in reading and language measures.

By the same token we would expect that spelling and language mechanics would be somewhat less influencd by comprehension processing variable in that these tests are considerably less influenced by comprehension. This expectation is confirmed by Mult R's of .73 for spelling and for language mechanics accounting for 53% of the variance. More than 20 percent less than for the comprehension related test scores.

There has been some concern as to whether IQ and reading comprehension are the same. If IQ and reading comprehension are different, one would expect lower relationships between RCMP and IQ variables than with reading comprehension and language variables. Further non-language IQ should be less related than language IQ to RCMP variables. These expectations are also confirmecd with Multiple R's of .69 and .64 for language and nonlanguage IQ scores with the RCMP. The RCMP accounts for some 27% more variance in reading comprehension than does intelligence.

There was a general pattern to the regression equations for language and reading comprehension related variables that was different from the pattern for IQ. With all the language comprehension dependent variables, concept synthesis entered the equation first and acounted for approximately 50% of the variance. One of the connotative meaning variables entered second accounting for 8-10% of the variance, the third variable was generally one of the imagry variables accounting for 2 to 4% of the remaining variance.

This pattern for the IQ dependent measures was somewhat different. For language IQ, a connotative meaning variable accounted for about 23% of the variance and concept synthesis entered second with about 10% of the variance and three imagry scores accounted for most of the remaining variances.

The equation for non-language IQ shows three connotative meaning variables entering first and concept synthesis entered last.

Conclusion

Results of this present preliminary study are very encouraging. It appears that these measurements of the mediating cognitive processing variables are able to explain a good portion of the variance in reading comprehension and may allow us to investigate further the reading process by being able to examine its component processes. With further study and analysis, it appears feasible to construct a functional model of reading comprehension which would explain the "Black Box" of reading comprehension as well as provide a tool for diagnosis and a guide to treatment of reading difficulties.

Preliminary results of other studies with the RCMP are equally encouraging. The test is able to discriminate students in remedial services from pupils in regular classes with 84% accuracy, and to discriminate good readers from poor readers with 81% accuracy. Multiple regression with the Iowa test of Basic Skills, and the Gates McGinitie are at the same level as those in the present study and hierarchieal analysis indicates that the RCMP accounts for 37% additional variance over the variables: letter knowledge, phonics knowledge, blending, visual short term memory, and seriation.

In summary, the RCMP appears to have considerable potential as a theoretical research tool as well as application to the practice of diagnosing and teaching reading.

THE DEVELOPMENT OF A SCALE FOR ASSESSING THE ATTITUDE OF PRESERVICE ELEMENTARY EDUCATION MAJORS TOWARD READING

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When one attempts to measure reading attitudes of college students, several questions come to mind. Are there any instruments available? How reliable are the choices marked by college students on a given inventory? Is the instrument valid? Would information on the subscale groupings such as school related reading, recreational reading and general reading be useful in diagnosing a student's attitude toward reading? Would this information assist an instructor in making decisions about the learner in the teaching-learning process? These questions were used as a basis for the following study.

A review of the research revealed a paucity of research available on the attitude of college students toward reading. Although research has been completed at the elementary and secondary levels on the effects of attitude and achievement and attitude and self-concept, the research revealed only one assessment scale available for college students (Moore and Lemons, 1982).

According to Zirkel and Green (1976) and Tullock-Rhody and Alexander (1980), the attitudes that students have in regard to reading are closely related to reading achievement at both the elementary and secondary levels. There also appears to be a relationship between reading and self-concept and motivation. Several self-report instruments have been previously designed and published at the elementary and secondary levels Askov (1971); Estes (1971); Rowell (1972); Alexander and Filler (1976); Tullock-Rhody and Alexander (1980). Although studies have been conducted on the reading habits of adults and/or college students, a review of the literature revealed little research as 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, 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 preservice elementary education majors toward reading and to recommend specific uses of the scale. Additional data were gathered to determine the reliability of three subscale groupings and the intercor-

relations among the three subscales.

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.

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 expeditious for use in the college classroom.

Selection of Population

The population used in this study was preservice elementary education majors, sophomore through senior level students enrolled in a state-owned and a state-related university in Pennsylvania. In the data analysis, no attempt was made to identify the number of male and female participants nor to classify students by years in school. The majority of students were female. The students were almost equal across grade levels from sophomores through seniors.

Development of Statements

Approximately 50 sophomore through senior level elementary education majors were asked to write four to 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

The investigator chose the areas of school related reading, recreational reading and general reading as subscale groupings. The attitude statements were grouped into predetermined clusters of statements and were later subjected to factor analysis to confirm the classification and the reliability of the factors. As an aid in developing the groupings, the following operational definitions were used for each type of reading:

School related reading — reading to acquire knowledge about a content area, correct use of language or grammar

Recreational reading — reading done for pleasure and enjoyment, a leisure time activity.

General reading — reading for the purpose of personal growth and self-fulfillment.

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 four colleagues and having 40 preservice elementary education majors at Indiana University of Pennsylvania complete the questionnaire. The data were analyzed and the items were revised. The final scale consists of 32 items and takes approximately twenty minutes to administer. School related reading items represent 25% or 8 items; Recreational reading items represent 44% of 14 items; and General reading represents 31% or 10 items.

All items were randomly assigned for their appearance on the scale.

Administration of the Scale for Reliability and Validity Measure

The final questionnaire was then administered to 86 sophomore through senior elementary education majors at The Pennsylvania State University and 50 sophomore through senior elementary education majors at Indiana University of Pennsylvania. The data from the 136 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 r obtained on 50 items being 0.92. Likewise, on 32 items the r was 0.90. Even with decreasing the items to 17, the r was 0.80.

Downie and Heath (1970) suggest ranges between .40 and .60 are accepted as valid 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 32 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.

The predetermined subscales of the attitude scale showed that factor 1, School related reading contributed 22.3% of the variance. Factor 2, Recreational reading, accounted for 10.6% of the variance. Factor 3, General reading, accounted for 10.9% of the variance. The factor analysis of the items using the three predetermined subscales accounted for almost 44% of the total variance. In the original data collection of the fifty statements, if a factor showed a low or negative correlation then that item was dropped from the scale. Although factors 2 and 3 seem to be related, when one looks at the specific items, they are measuring different things.

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 adminsitered to college Freshman and correlated with their Scholastic Aptitude Test Scores and then correlated with their achievement after four years of college.

Questions for Further Research

What would the data reveal as to the reliability and validity if this scale were administered to students across academic disciplines? What is the relationship between college students and reading achievement? Can we change the attitude of college students? Do elementary education majors model their instructors in class as they role-model their cooperating teachers? Would a student's attitude be different if he were to evaluate his feelings toward content in areas of his interest?

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COMPUTER AND VIDEO GAME USE AND READING ACHIEVEMENT OF HIGH SCHOOL STUDENTS

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With increased acceptance of computers in our society, examination of high school students' use of computers becomes increasingly important. Many school districts have purchased computers and established courses in computer literacy. More than 40 pecent of the high schools in the nation have micro-computers (Computers in the Schools, 1982). As many as 62 percent of secondary schools report computer use (Beck, 1982). Still, little is known about how students use computers, or even to what extent they use computers. Computers may be little used, as Carpenter, Corbitt, Kepner, Lindquist, and Reys (1980) described, "A large majority of . . . (13 and 17 year olds) had neither used a computer nor written a computer program to perform tasks such as solving a linear regression problem, playing games, or analyzing statistical data" (p. 671). Or computer use may be limited to a few subject areas (Maughan, 1982) such as mathematics, science, and business.

While video game playing can be considered to be simply one type of computer use, it is treated here as a separate category to avoid confusion over whether to consider all types of video game use as computer use. In addition, video game use is treated separately because it has been criticized as antithetical to learning. In at least one instance a town ordinance was passed to ban video game playing during school hours (This Town Said No, 1984).

Studies of the usage of computers typically have focused on one part of computer use, instructional computer use.

These studies have indicated that teachers use computers for instructional purposes (Maughan, 1982), that teachers and others thought instructional computer use was a good idea (Computers? You Bet, 1982), and that teachers planned to use computers in their instruction (Trice, 1979). But these studies have not looked at the uses that students make of computers, both in and out of school.

Studies of the relationships between electronic media use and reading achievement have not focused on computers or video games. Instead they have studied the relationships between television viewing and reading achievement (Neuman, 1980) or between use of a wider variety of electronic media (radio, records, and tapes) and reading achievement (Telfer and Kann, 1984). An examination of the relationship between computer use and video game use and reading achievement may be fruitful because of the increasing use of computers and the differences between computers and video games and other electronic media. Computers and video games differ from other electronic media because computers and video games require active physical involvement while television, radio, records and tapes do not. Furthermore, computers require reading. In order to use a computer a student must have reasonably well developed reading skills.

The purpose of this study was to determine the extent and nature of computer and video game use among high school students and to examine the relationship between reading achievement and the use of computers and video games.

Procedures

A survey of computer and video game use was used to determine the habits of 157 11th grade students in a small midwestern town. The survey was administered in English classes by the regular instructors. The survey asked whether students used computers and video games, where they used them, how often they use them, and how much time they spent using them. In addition, those who used computers were asked additional questions about the uses they had for the computers. Responses to the surveys were then tabulated and correlations with reading scores were figured.

Results

The first question asked whether students used computers for purposes other than playing video games. Sixty-three of the students (40.1 percent) said they used computers. These 63 were asked to identify the locations where they used the computers. These responses are shown in Table 1. Students were also asked whether they used video games. One hundred eleven students (70.7 percent) said they used video games and were asked to identify the locations of those video games (Table 2).

Table 1

Numbers and Percentages of Students Using Computers at Various Locations

	Total	At Home	At School	At Work	Other
Number	63	28	37	7	7
Percentage		44.4	58.7	11.1	11.1
Mean Reading Score	21.9	21.9	22.4	21.0	22.0

Table 2

Numbers and Percentages of Students Using Video Games at Various Locations

	Total	At Home	At School	At An Arcade	Other
Number	111	62	3	79	19
Percentage		55.9	2.7	71.2	17.1
Mean Reading Score	21.3	21.2	23.0	20.94	21.63

Additional questions asked students to estimate the number of times per month they used computers and video games and the number of hours they spent each week using computers and video games. The mean responses for these questions are shown in Table 3.

Table 3

Mean Number of Uses and Mean Amount of Time Spent

	Times Used Last Month	Standard Deviation	Hours Used Each Week	Standard Deviation
Computer Users	13.89	10.69	4.52	3.62
Video Game Users	4.52	7.96	1.38	2.28

While the percentage of computer use is considerably lower than the percentage of video game use, the average number of times a computer was used and the average amount of time spent on computers are higher than the average number of times video games were used and the average amount of time video games were used. It must also be noted that the standard deviations are very large, indicating in this case that there were a number of very high scores. Some students indicated that they used computers as many as 50 times a month and for as many as 50 hours.

Students' reading achievement as measured on the reading portion of the district-administered Michigan Educational Assessment Program was correlated with number of times using computers, numbers of hours using computers, numbers of times using video games, and numbers of hours spent using video games. These correlations are shown in Table 4.

Table 4

Correlations Between Reading Achievement and Times and Hours of Computer and Video Game Use

	Times Using Computer	Hours Using Computer	Times Using Video Games	Hours Using Video Games
Correlation with Reading Achievement	.16	.14	-.30*	-.28*

* $p < .05$

The correlations between computer use, both number of times and hours spent, and reading achievement are positive, but statistically nonsignificant. Correlations between reading achievement and video game use, though, are statistically significant, but the association is negative. Reading achievement test scores go down as time spent using video games goes up.

Further analysis was done by assigning each student to one of three groups based on computer use (non-users, light users, and heavy users) and to one of three groups based on video game use (non-users, light users, and heavy users). This placed the students in nine groups based on a combination of computer use and video game use. Mean scores were then figured for each of the nine groups. These mean scores are shown in Table 5.

Table 5

Mean Reading Achievement Test Scores for Three Computer Use Groups Crossed with Three Video-Game Groups

	Computer (Non-Users)	Computer (Light Users) (1-10/month)	Computer (Heavy Users) (10/month)	Total
Video Games (Non-Users)	21.37 (n = 51)	22.44 (n = 9)	22.19 (n = 16)	21.67 (n = 76)
Video Games (Light Users) (1-4/month	21.65 (n = 34)	20.67 (n = 6)	23.25 (n = 12)	21.90 (n = 52)
Video Games (Heavy Users) (▵ 4/month)	18.54 (n = 12)	18.13 (n = 8)	22.44 (n = 9)	19.66 (n = 29)
Total	21.12 (n = 97)	20.48 (n = 23)	22.59 (n = 37)	21.32 (n = 157)

As was indicated by the correlations in Table 4, there seems to be a pattern of decreased reading achievement scores as video game use increases. This shows quite clearly among computer non-users and light users. This pattern does not hold for heavy computer users; instead, heavy computer users seem to be on the average skilled readers. It is also interesting to note that the mean reading achievement scores of students who use neither computers nor video games are almost identical to the scores of those who do (21.37 for non-users, 21.30 for users).

Students who used computers were asked additional questions about how they used them. Five categories of use were identified and students were asked to indicate whether they used computers for schoolwork, job-related activities, word processing, programming, and communicating with others. They were to identify any uses they had. Table 6 contains the numbers and percentages of computer users who checked each category.

Table 6

Numbers and Percentages of Users and Mean Reading Scores for Five Types of Computer Use

	Schoolwork	Job-Related Activities	Word Processing	Programming	Communicating
Number of Users	30	14	14	43	6
Percentage of Users	47.6	22.2	22.2	68.3	9.5
Mean Reading Score	22.13	21.79	22.14	22.09	20.17

Students who indicated that they used computers for the purposes listed in Table 6 also identified the specific uses they had within each category. Table 7 shows the numbers of students checking each specific use and the average amount of time those students spent weekly with each activity.

Table 7

Numbers of Students Checking Each Use and Mean Hours Spent With Each Use

Use	Number of Students	Mean Hours Spent
Schoolwork	30	
Word Processing	13	1.4
Programming for Computer Class	15	2.8
Mathematical Calculations	15	1.9
Practice Exercises	6	3.8
Other Schoolwork	4	2.3
Job-Related Activities	14	
Teaching Someone Else	3	.7
Working as a Clerk	7	5.1
Other	11	4.3
Word Processing	14	
Writing Papers	13	2.2
Writing Letters	8	1.5
Word Processing		

for Others	3	2.7
Learning Word Processing	8	1.1
Programming	43	
Learning to Program	34	2.1
Programming Games	17	1.2
Mathematical Programs	7	1.4
Educational Programs	7	2.9
Learning Languages Other than BASIC	5	.7
Communicating with Others	6	
With Other Computer Users	6	.7

Discussion

The results of this study suggest that computer use and video game use are common among these 11th grade students. Although video game use is more widespread among the students, video games tend to be used differently than computers. Video games tend to be used by more students, but less often and for shorter periods of time.

Heavy computer use is relatively common. Among those who use computers, more than half use computers every third day or more often. And these uses tend to be outside of school as well as in school, most commonly at home or at a friend's house. Computer use at work is relatively unusual among these students.

Although the relationship between computer use and reading achievement suggests a positive association, with reading achievement increasing as computer use increases, the correlations ae nonsignificant. This finding may indicate that computer users span a wide range of ability groups, rather than being primarily among the most academically able students.

As a contrast, the relationship between video game use and reading achievement is statistically significant, though modest, and negative. Reading achievement decreases as video game use increases. Possibly the types of high school students who use video games frequently may be students with lower ability levels or lower motivation levels. Or it may be that video games take time away from academic activities.

The relationship, however, between video game use and reading achievement seems to be different for heavy computer users, suggesting that the heavy computer users may be quite different from the other students. There seems to be little relationship between video game use and reading achievement for heavy computer users.

Finally, the major categories of computer use are programming, word processing mathematical calculations, writing papers, and writing letters. Emphasis on these categories seems to suggest that computers are indeed most often used in a relatively few subject areas, but that the uses are broader than just computer class and math class. Also, computer use is clearly not limited to school time. As an example, nearly two-thirds of those who use computers for programming do it outside of school.

Implications

Implications from this study can be drawn in two areas, recommendations based on these results and suggestions for future research. Recommendations based on this study must be viewed with caution because the study looks at just one grade level at one school. Still, the results suggest that video game playing is a factor associated with lowered reading achievement scores. Perhaps students should be encouraged to limit video game playing.

Suggestions for further research are several. First, the survey can be expanded to look at a larger sample, perhaps examining the computer and video game use habits of randomly or systematically selected schools with a state or region. Second, the study could be made to look longitudianlly at computer and video game use and reading achievement. The question of whether changes in computer or video game use are reflected in changes in reading achievement could be examined. Finally, older and younger students' computer and video game use habits could be examined, to see if there tend to be age-related differences in those habits.

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COMMUNICATING IN THE CLASSROOM: WHAT MAKES A DISCUSSION HAPPEN?

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Within the past year, two reports on the status of American education — *A Nation at Risk* (1983) and Goodlad's (1983) *A Place Called School* — have recommended increasing the ratio of student talk to teacher talk at the secondary level. This call for action should ideally meet with little resistance. In a recent survey of methods texts and journals, Gallagher and LaZansky (1983) found that educators generally hold fast to the assumption that discussion plays an important role in helping students comprehend what they read. As a topic of empirical investigation, however, discussion has received little attention since Taba's (1967) seminal work in elementary social studies. In fact, Tierney and Cunningham's (1984) review of the research on teaching comprehension since 1970 listed only four studies directly related to classroom discussion.

Given the generally accepted notion that discussion is a worthwhile classroom activity, what accounts for the relatively few studies in this area? Several ideas exist, but perhaps the most likely one is that everyone takes discussion for granted, believing perhaps that class discussions "just happen" naturally, without much forethought or planning. For the past year and a half we have been investigating what teachers mean when they say they're holding a discussion over a previously assigned segment of the required text. While we have reported elsewhere (see Alvermann, O'Brien, Dillon, & Smith, 1984) how teachers operationalized the term "discussion," we have yet to describe how different social and communicative demands made on students within various classroom settings affect the tone of a discussion. Such is the purpose of this paper. Specifically, it chronicles how four teachers, who share the common goal of conducting a class discussion over text they have previously assigned, differentially affect their students' responses.

METHOD

The Setting and the Participants

The information reported here is derived from a broader ethnographic study (Alvermann, O'Brien, Dillon, & Smith, 1984) that included a descriptive analysis of the socio-communicative patterns identified during videotaped discussions in 24 different teachers' classrooms. All but one participant in that study taught 7th- and 8th-grade students; the one exception taught a group of gifted 6th-graders. The teachers and students represented a mix of socio-economic levels within rural, suburban, and urban areas of four county school districts in Georgia. Classes included a variety of subject areas (social studies, science, literature, spelling/grammar, health, human development, reading) and ability levels (gifted, average, remedial, and disabled.) Participants in the current study were members of four of those classes and represented the following content areas: social studies, human development, literature, and health.

Materials/Equipment

Required classroom texts and related study guides, worksheets, or other printed resources normally used by the teachers and students comprised the instructional materials in this study. Equipment consisted of a Panasonic VHS and a Sony reel-to-reel videorecorder. Several microphones connected to an audio mixer were positioned at various locations in a room to ensure adequate retrieval of all teacher-student and student-student interactions.

Data Collection

Securing volunteers for the study varied from site to site. Typically, the senior researcher and one research assistant visited with school district personnel to determine if sufficient interest existed among administrators, faculty, and students to warrant further investigation of the school as a research site. Once a preliminary commitment had been obtained, the researcher presented a formal plan of study to the entire faculty. At this time the researcher also explained that teachers would be required to do nothing special in preparation for the videotaped lesson, other than to ensure that they had assigned their students a portion of the text to read the evening prior to the taping. Sometimes as many as three follow-up visits were necessary to talk individually with teachers who had expressed an interest in participating in the study. Once initial approval was obtained, phone calls and letters were used to arrange mutually convenient visitation schedules.

One day prior to the actual videotaping, the researcher and one assistant visited a classroom to set up the video and audio recording equipment. This trial run provided an opportunity for participants to ask questions about the equipment, to become somewhat accustomed to strangers in the room, and for the researchers to become familiar with the general activity flow of a particular class.

On the day of the actual videotaping, the assistant operated the camera while the researcher kept a written record of classroom activities. This log was later used to supplement information from the transcribed videotapes. In addition, approximately one-third of the teachers participated in post study viewing sessions. During these viewing sessions, teachers were asked to 1) analyze their own tapes as they watched a playback of their class discussion, and 2) respond to the researcher's questions in an open ended interview (see Davies, 1978; Mehan, Hertweck, Combs, & Flynn, 1982). Information obtained from these sessions was used primarily to validate our interpretations of the observed teacher—student interactions.

Data Analysis

Data obtained from the transcriptions of the videotapes and from the accompanying field notes (log) were simultaneously

analyzed and reduced into categories and properties using the constant comparative methodology of Glaser and Strauss (1967). For a full description of the main study's analysis, as well as attention to validity and reliability issues, see Alvermann, O'Brien, Dillon, and Smith (1984). For purposes of the current paper, the transcripts of all 24 participating classes were searched for instances in which teachers differed widely in the communicative demands they made on their students. The four classrooms selected represent a range in student responses to those demands and in a sense portray what made a discussion happen or fail to happen in particular settings.

RESULTS

Classroom #1

In this 7th-grade social studies class the students had been discussing religious freedom and the right of individuals to display the nativity scene on public property. Somewhere in the course of the discussion their talk had strayed to devil worship. The segment of the transcript that follows reflects the teacher's high regard for her students' opinions. Note particularly how she encourages Scott to pursue the argument further by her last statement.

Teacher. What do you think about that? Are they free to practice that religion?

Several Voices. Uh-uh; no; uh-uh.

Teacher. What about freedom of religion there?

Scott. They shouldn't even have that religion.

Teacher. What, Scott?

Scott. I said they shouldn't even have that religion—what with killin' people.

Teacher. But if they really believe that—and that's their religion—they should be free to practice it.

Classroom #2

Unlike the teacher in the first classroom, the human development teacher made few attempts to enlist his students' participation in a discussion on male and female chromosomes. In fact, when Ellis in the following example raised his hand to *ask* a question rather than to *answer* the teacher's question, the communicative demand was clearly one of "let the authority figure speak first."

Ellis. Uh, uh, I was gonna ask you a question.

Teacher. Okay, hold on. First, let's answer this and then I'll get your question. What's gonna form? I want you to answer this question anyway. The male releases a Y sperm and it unites with the female's ovum. What type of baby will be born?

Ellis. A male?

Teacher. Okay, a male. All right, what's your question?

Ellis. (clearing throat) So it looks like, when the male—the male's sperm has a lot to do with the decision—cuz the X chromosome is the female and the Y chromosome is the male; so the male really controls the sex of the child . . . .

Classroom #3

In the following segment of a discussion on *Odysseus* an 8th-grade literature teacher continually interrupts Michael's attempts to summarize what he has read. That Michael interpreted these interruptions to be part of the teacher's playful style and not singularly critical of him is evident from his perseverance and his willingness to play the straight man. The communicative demands made by this teacher were twofold: on the surface she appeared to want only the right answer, and a very literal one at that; implicitly, however, her intonation and playful style indicated that she wanted to keep the students involved by catching them off guard.

Michael. Well, um, they was sailin' on a ship and they came, um, to this island, he had a cave, um . . . .

Teacher. (interrupting) *Who* did?

Michael. O . . . Ossissius.

Teacher. *Odysseus* had a cave?

Michael. No, Cyclops.

Teacher. What was Cyclops' name; anybody know?

(No one answers—long pause)

Teacher. Boy, I'll tell you, I probably ask the Cyclops' name was Ulysses, or um Inhuman, or Noman, or . . . .

Michael. Noman!

(Class and teacher break out laughing)

Teacher. No, uh uh . . . Um, Polyphemous, uh . . . .

Jody. It was Polyphemous.

Teacher. You sure?

Jody. I think so. Somethin' like that. (Laughter) It was one of those funny soundin' names.

Teacher. Okay, one of those funny soundin' names, go on. Mr. Funny Soundin' name did what?

Michael. Well, uh, he . . . Ossissius came to . . . .

Classroom #4

The communicative demands made on 8th-grade students in the health teacher's class were the least ambiguous of all. As suggested in the following excerpt from a class discussion on first aid, the rhythmic pattern of questioning and answering made the discussion take on the tone of a litany. Whether this exchange of ideas really qualifies as a discussion is open to debate. However, in terms of the teacher's perceptions, it did.

Teacher. All right, the second one; Vanessa, would you try to identify the poison for *all* victims or only the ones that are conscious?)

Vanessa. *All* victims.

Teacher. All victims, good. Russell? Would you call the poison center for *all* victims or only the ones that are conscious?

Russell. All of them.

Teacher. All of them, good. Lance? Would you treat for shock only those victims who are conscious or *all* victims?

Lance. All victims?

Teacher. All victims, good. Would you watch to be sure that the victim keeps breathing, James, on all victims or only the conscious ones?

James. All.

DISCUSSION

Until recently, most classroom reading activities, including reading one's textbook for class discussion, would have been viewed primarily as cognitive-linquistic activities (Bloome and Green, 1982). However, evidence is accumulating which suggests that the communicative demands made on students within various instructional settings (Au, 1980; Green, 1977) more realistically define reading as a cognitive-linguistic process *embedded within a social and communicative framework.* But with the exception of Bloome's (1981) ethnography of a single textbook-discussion-test event which involved a small number of junior high school students, the study of textbook reading as a social and communicative process has been limited largely to the primary grades (DeStefano, Pepinsky, and Sanders, 1982; Eder, 1982). The present study, therefore, with its focus on middle school teachers and students involved in post-reading discussions of regularly assigned subject matter texts, adds information to the socio-communicative literature beyond the primary grade level.

The context of the classroom as a speech community (Hymes, 1971) typically governed by the teacher, sets what behavior is permissible during a discussion. What Bloome and Green (1984, p. 400) refer to as communicative "rights, obligations and demands"—i.e., who gets to talk and under what circumstances—is an unstated "rulebook" which supersedes other rule systems. For example, the notion of linguistic competence and performance is interesting as a descriptive system to account for what possible behaviors are actually exhibited in discussions; however, the types of behaviors actually exhibted may be related to communicative demands that don't fully exploit the competencies participants possess.

Communicative contexts are bound by constraints which, according to the current investigation, are largely a function of an individual teacher's perceptions of how smoothly the classroom is operating overall. This implies, or course, that a teacher's definitions of what a discussion *should be* will influence what it *is.* Frequently, however, a teacher's definition of the "ideal" discussion fails to match the reality of the classroom discussion. For example, we rarely observed the "free and open interchange of ideas between students and teachers" that graduates and undergraduates enrolled in reading methods courses envisioned (see Alvermann, 1983). Perhaps this is due, in part, to the nature of the instructional materials education majors are exposed to. For instance, almost all teachers' manuals direct the teacher to discuss certain topics with the class; however, we have found that these same manuals rarely, if ever, explain *how* to conduct a discussion.

IMPLICATIONS FOR FUTURE RESEARCH

What is lacking in the present study's findings is the students' perspective on what a discussion should encompass. Nor do we know whether they perceived the communicative demands of their teachers in the same way that we interpreted those demands. Future researchers should take this limitation into account by building into their designs a component for examining student perceptions of the discussion task.

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THE USE OF COGNITIVE SELF-INSTRUCTION AS AN INTERVENTION FOR METACOGNITIVE FAILURE

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The ability to monitor what is being understood is a major component of the comprehension process. Deliberate cognitive skills are required for comprehending discourse. The reader must coordinate a varying amount of information concerning the reading task and appropriate strategies for attacking the task. Brown (1982) and Flavell (1976) call this general knowledge that guides the selection and implementation of appropriate strategies "metacognition".

When considering the poor reader, there is evidence in the research that supports the view that poor readers have many strategy deficiencies and that their failure to respond to important informational units in discourse suggests a metacognitive failure. According to Rickards and Hatcher (1978), poor readers do not impose organization upon the text but rather require that some organization be provided for them. They fail to take advantage of the contextual and grammatical cues in written discourse as witnessed by their "piecemeal" and word-by-word style of processing (Garner, 1974). They appear to not expect the reading material to make sense and are therefore reluctant to make predictions from context (Smith, 1975). Essentially, to poor readers, written discourse is constructed from a series of isolated elements from which they may or may not extract meaning.

There have been attempts to help the poor reader apply strategies which are essential for comprehension monitoring, such as the appliction of self-questioning techniques which are intended to help the reader become more aware of comprehension failures (Andre and Anderson, 1978-79). A demonsration method was propsoed by Collins and Smith (1980) which required the teacher to model questions which the student should ask before or during a reading task. Overall, comprehension monitoring strategies remain in a formative stage (Baker, 1979; Pace, 1980).

In recent years there has been an increasing interest in the area of cognitive psychology in the possible application of cognitive behavior therapy (Meichenbaum, 1974; Mahoney & Arnkoff, 1979) to academic tasks including mathematics and reading (Egeland, 1974; Ryan, 1980). It has been demonstrated that the academic and social behaviors of school-age children can be effectively modified by using a variety of behavior modification programs (Drabman, 1976). Typically, behavioral contingencies have been administered or applied by external agents such as parents, teachers or therapists with teachers generally evaluating a child's performance in the classroom and administering appropriate consequences (Lovitt, 1973). Kazdin (1975) has acknowledged several disadvantages associated with complete alliance on external agents to administer classroom contingencies: 1) the external agent may not notice many behaviors; 2) as with operant conditioning, the external agent may become paired with cues for the target behavior encouraging the behavior to occur only in the presence of those cues; and 3) there may be problems with generalizing to external situations.

Considering these disadvantages, several researchers have emphasized the potential of self-control theories of behavior modification to help children to evaluate their own performances and apply appropriate contingencies. These researchers feel that self-control procedures can enable children to develop their own academic and social skills (Mahoney & Thoresen, 1974; Monahan & O'Leary, 1971; O'Leary & Dubey, 1979; Palkes, Stewart, & Freedman, 1972; Rosenbaum & Drabman, 1979).

A potentially important method for developing self-control in children is through self-instructional training, a form of cognitive restructuring, in which individuals are taught to make suggestions to themselves in order to guide their behavior. The important role of "talking to oneself" has been emphasized by many researchers (Meichenbaum & Cameron, 1974; Meichenbaum & Goodman, 1971; O'Leary & Dubey, 1979), and several researchers have successfully used self-instruction to alter children's performances on a variety of tasks (Bem, 1967; Meichenbaum & Goodman, 1971; Robin, Arnal & O'Leary, 1975).

Meichenbaum (1974) is one of the forerunners and primary advocates of the cognitive self-instruction technique. He suggests that the maladaptive behavior of problem children is a reflection of the use of poorly organized cognitions (thoughts, subvocal speech) and that cognitive training implements a task-analytic approach so that the child may be taught appropriate cognitions or "cognitive strategies" to act as mediating variables. In the area of reading, although the research is limited, cognitive training has shown positive findings for improved reading comprehension (Egeland, 1974; Ryan, 1981).

Since poor readers often lack the metacognitive knowledge necessary to monitor reading strategies conducive to comprehension, it was hypothesized that training poor readers to use cognitive self-instruction might provide a viable tool for implementing metacognitive strategies necessary for improved comprehension and independent functioning in reading situations.

METHODOLOGY

Subjects

The subjects were selected from the 1982-83 fourth, fifth and sixth grade populations of one elementary school in State College, Pa. Considering the experimental nature of this study, only five subjects were selected; one had to be dropped from the study due to illness. All subjects, two boys and two girls, were diagnosed as reading disabled and evidenced difficulty with comprehension monitoring rather than with word recognition. Determinations of reading disability were made on the basis of the results of the reading comprehension subtests of the *California Achievement Tests*, the *State College Informal Reading Inventory* and on the *State College Criterion Referenced Test*. All four subjects met the criteria for enrollment in the school district's Chapter One reading program. They alll also fell within the average range of intelligence as assessed by the *Otis-Lennon Test of School Ability*.

Procedures

Twenty individual sessions per subject were planned over a ten week period just prior to the end of the school year. This timetable required the experimenter to meet with each subject twice a week for ten weeks, generally on a Monday and a Friday for approximately thirty to forty-five minutes per session. The sessions were held in various quiet areas in the school with most sessions being conducted in a small trailer attached to the school's main building. During the sessions, each subject read aloud one short selection chosen from a SRA reading lab; several different labs were available to assure that each subject read a new selection rather than rereading a previous one. Most selections were expository in style. If the subject was totally unfamiliar with a selection's topic, the experimenter provided a brief explanation of any pertinent terms in order to acquaint the reader with the topic; the actual selection was not discussed. The selected stories were matched to each subject's instructional reading level. Both Terri and Karen were reading instructionally at a low to mid third-grade level; Terri's SRA selections ranged in readability from 3.0 to 3.5, while Karen's selections ranged from 3.3 to 3.5. Kurt was reading instructionally at a mid to high fifth-grade level; his SRA selections were rated at a readability of 5.5. Bob was reading instructionally at a low fifth-grade level; his SRA selections ranged in readability from 4.6 to 5.0. Each selection was also transcribed into a worksheet format for the purpose of coding miscues.

The *Reading Miscue Inventory* (Goodman & Burke, 1972) was used for coding miscues in order to obtain a reader profile for each selection (see Appendix). Since 25 miscues were required to complete one coding sheet, only the first 25 miscues were selected from each protocal (SRA selection). Each miscue which varied from the actual text was judged according to criteria which determined how it affected the syntactic, semantic, and graphic properties of the text. Analysis of the miscues was based on the following four questions taken from the *Reading Miscue Inventory:* 1) Is the miscue corrected?; 2) Does the miscue result in a grammatical structure which is acceptable within the dialect of the reader?; 3) Does the miscue result in a meaning which is acceptable within the dialect of the reader?; and 4) Does the miscue result in a change of meaning? A final score on the coding sheet provided information about the patterns of grammatical relationships and comprehension miscues. Grammatical relationships were determined according to the patterns of responses obtained for columns #6 (correction), #7 (grammatical acceptability), and #8 (semantic acceptability) on the coding sheet. Quality of comprehension miscues was determined according to the patterns of responses obtained for columns #6 (correction), #8 (semantic acceptability), and #9 (meaning change) on the coding sheet. The following information from the *Reading Miscue Inventory* coding sheet was graphed for visual inspection: out of 25 miscues per story, those miscues which represented a strength, partial strength, or weakness in the category of Grammatical Relationships; and out of the same 25 miscues per story, those miscues which represented a no loss, partial loss, or loss in the category of Comprehension.

It was hypothesized that after the introduction of the intervention, cognitive self-instruction, each subject's protocal would contain higher quality miscues (as compared to miscues from baseline protocals). Higher quality miscues would be reflected by an increase in miscues in the areas of strength or partial strength and a decrease in miscues in the area of weakness in the category of Grammatical Relationships and by an increase in the miscues in the area of no loss or partial loss and a decrease in the miscues in the area of loss in the category of Comprehension.

The intervention, cognitive self-instruction, was introduced in three phases, each one fading progressively from an overt model to a semi-overt model and, finally, to a covert model.

Experimental Design

The design was a multiple baseline across individuals (Kazdin, 1982). After recording baseline data for all four subjects for five sessions, the first phase of the intervention (overt self-instruction) was introduced to one randomly selected subject only; baseline data continued to be recorded for the other three subjects. At the end of the fifth week, four sessions later, the second phase of the intervention (semi-overt self-instruction was introduced to the first subject while the first phase of the intervention was introduced to a second randomly selected subject; baseline data continued to be recorded for the remaining two subjects. At the end of the seventh week, four more sessions later, the final phase of the intervention (covert self-instruction) was introduced to the first subject, the second phase of the intervention was introduced to the second subject and the first phase of the intervention was introduced to the third randomly selected subject; baseline data continued to be recorded for the fourth subject. At the end of the ninth week, four sessions later, the first phase of the intervention was introduced to the final subject while the third subject was introduced to the second phase of the intervention and the second subject was introduced to the third phase of the intervention. Because of the time constraints of the school year, the first two subjects received all three phases of the intervention training; the third subject received two phases of training, and the fourth subject received only three sessions of the first phase of training.

The four experimental conditions will be described: baseline, overt self-instruction, semi-overt self-instruction, and covert self-instruction.

Baseline

During the baseline condition, each subject read aloud one selection taken from the SRA labs. It was necessary for each subject to make at least twenty-five miscues per selection in order to fulfill the coding criteria for the *Reading Miscue Inventory*. Since the selections were matched to each subject's instructional level they were generally long enough to provide the necessary 25 miscues. Only on one or two occasions did a subject have to read more than one selection.

The experimenter recorded the oral miscues on a worksheet replicating each story. No prompts or interruptions occurred.

Intervention

Overt Self-Instruction. During each session of the first phase of the intervention the experimenter read aloud one of the SRA selections previously read by the subject during the baseline phase; the experimenter reiterated not only the subject's same miscues but also applied appropriate correction strategies using self-instruction. After the correction strategies were modeled, the experimenter helped the subject progress through another baseline selection by pointing out miscues and encouraging self-instruction. The final step of this phase required the subject to apply self-instruction alone without the experimenter's aid. A miscue analysis was conducted only on this final step for the purpose of data collection.

The self-instruction correction strategies modeled for each subject contained elements which characterized metacognitive processes (Flavell, 1976) and Meichenbaum's self-instruction criteria. Variations of the following self-instructional statements were modeled: (1) "I am using self-instruction to help me better understand what I am reading."; (2) "I don't know this word. I'll skip it and read to the end of the sentence and then I'll come back to see if I can figure it out."; (3) "Now, let's see. I read the whole sentence, but I don't know this word. It starts with a 'br'. I know the sound a 'br' makes. What word will make sense?"; (4) "I just read a sentence. Did it make sense? If it didn't I'll go back and see if I can find my mistake so that it will make sense."; (5) "I just finished a paragraph. What did I find out? Did it make sense?"

Semi-Overt Self-Instruction. During the second phase of the self-instruction model, the experimenter again modeled the self-instruction procedure, although in a semi-overt manner (whispering); the subject practiced the procedures and finally performed the semi-overt self-instruction without the aid of the experimenter. As in phase one, the miscue analysis was only conducted on this final step.

Covert Self-Instruction. The final phase culminated the self-instruction procedure by fading it to a covert (silent) stage. This step was necessary if self-instruction was to have any utility in the classroom. The experimenter modeled the procedures, which were identical to the previous procedures, except that the self-instructions were to be "thought" rather than uttered aloud. The subject practiced covert self-instruction and then, while reading an SRA selection aloud, applied covert self-instruction without the aid of the experimenter. As in the previous steps, a miscue analysis was only conducted on this final step.

Interobserver Agreement

To assess the reliability of the miscue recording procedure, a point-by-point agreement ratio (Kazdin, 1982) was calculated. Five raters, four certified reading specialists and one graduate student who had received training in diagnostic testing procedures, volunteered to score five protocals which were randomly selected from a total of eighty protocals. Each rater scored the same five protocals. In a two hour training session, all the raters were instructed in the application of Goodman and Burke's miscue analysis criteria. Reliability was computed by comparing each protocal scored by an observer with the matching protocal scored by the experimenter. The miscues on the protocals were compared for agreements and disagreements in the categories of Grammatical Relationships and Comprehension. The total number of miscue agreements in both categories on all the protocals were then divided by the total number of miscue agreements plus disagreements. The interobserver reliability for the category of Grammatical Relationships was 79% and for Comprehension was 80%.

RESULTS

Figures 1 and 2 illustrate the results of introducing the three phases of the intervention, cognitive self-instruction, in multiple baseline fashion across the four subjects. In both Figures 1 (Grammatical Relationships) and 2 (Comprehension) the number of miscues for Terri, Kurt, and Karen in the areas of Strength and Weakness and the areas of No Loss and Loss show a successive level change in the hypothesized direction at the point when the intervention was as introduced (when the experimenter introduced overt self-instruction to each subject).

The mean baseline number of Strength miscues varied from a low of 12.6 for Karen to a high of 16.0 for Terri. The mean number of Weakness miscues varied from a low of 6.0 for both Kurt and Bob to a high of 7.9 for Karen. The mean number of Partial Strength miscues varied from a low of 2.2 for Terri to a high of 4.8 for Bob.

An immediate increase in Strength miscues occurred for Terri, Kurt, and Karen when the intervention was introduced. Mean number of Strength miscues after the completion of the intervention varied from a low of 16.0 for Bob to a high of 20.6 for Karen.

An immediate decrease in Weakness miscues occurred for Terri and Karen when the intervention was introduced. Mean number of Weakness miscues after the completion of the intervention varied from a low of 1.6 for Karen to a high of 4.7 for Bob.

For all the subjects, except Kurt, there did not appear to be any major changes in level for the Partial Strength miscues when the intervention was introduced. Mean number of Partial Strength miscues after the completion of the intervention varied from a low of 2.1 for Terri to a high of 4.3 for Bob.

The mean baseline number of No Loss miscues varied from a low of 9.3 for Karen to a high of 13.6 for Terri. The mean number of Loss miscues varied for a low of 7.0 for Terri to a high of 9.1 for Karen. The mean number of Partial Loss

miscues varied from a low of 3.9 for Kurt to a high of 6.2 for Karen.

When the intervention was introduced there was an immediate increase in No Loss miscues for Terri, Kurt, and Karen. Mean number of No Loss miscues varied at the completion of intervention from a low of 13.7 for Bob to a high of 19.1 for Karen.

An immediate decrease in Loss miscues occurred at the point of intervention for Terri, Kurt, and Karen. Mean number of miscues at the completion of intervention varied from a low of 1.8 for Terri to a high of 8.0 for Bob.

For all subjects, except Bob, there did not appear to be any major change in level for Partial Loss miscues at the point of intervention. Mean number of Partial Loss miscues at the completion of intervention varied from a low of 3.3 for Bob to a high of 5.3 for Kurt.

Table 1
Mean Number of Miscues in each area of Grammatical Relationships during Baseline and after Total Intervention

	Strength		Partial Strength		Weakness	
Subject	B	I	B	I	B	I
Terri	16.0	20.2	2.2	2.1	6.8	2.7
Kurt	14.7	18.9	4.3	2.4	6.0	3.7
Karen	12.6	20.6	4.5	2.8	7.9	1.6
Bob	14.2	16.0	4.8	4.3	6.0	4.7

B = Baseline
I = Intervention

Table 2
Mean Number of Miscues in each area of Comprehension during Baseline and after Total Intervention

	No Loss		Partial Loss		Loss	
Subject	B	I	B	I	B	I
Terri	13.6	18.4	4.4	4.8	7.0	1.8
Kurt	12.9	16.3	3.9	5.3	8.2	3.5
Karen	9.3	19.1	6.5	3.6	9.1	2.3
Bob	11.7	13.7	4.9	3.3	8.4	8.0

B = Baseline
I = Intervention

Tables 1 and 2 illustrate each subject's mean change in number of miscues in the categories of Grammatical Relationships and Comprehension from baseline to the completion of intervention. In Table 1, mean improvements occurred for all four subjects in the areas of Strength and Weakness miscues, with Karen showing the greatest mean change in both areas. In Table 2, again mean improvements occurred for all four subjects in the areas of No Loss and Loss, with Karen showing the greatest mean change in both areas.

In examining individual data for both Grammatical Relationships and Comprehension clear treatment effects are evident in Terri's, Karen's, and Kurt's data, although of the three, Kurt's is least clear. For Karen, both Figures 1 and 2, baseline is stable with no upward trend in the data and at the point of intervention show a dramatic change in level. Terri's data also show a fairly stable baseline with no discernible trend change and a notable shift in level at the point of intervention. Over all three phases of the intervention no major changes in trend occur, except during the Covert stage of self-instruction for Comprehension when there is a slight upward trend for Partial Loss miscues. For Kurt, baseline data show no major trend changes and at the point of intervention there is an observable shift in level, most notably for Strength miscues in Grammatical Relationships. Bob's data show no major trend changes during baseline and no major shifts in level at the point of intervention.

CONCLUSIONS AND IMPLICATIONS

This study implemented an innovative procedure for addressing comprehension monitoring failure in poor readers, namely the use of cognitive self-instruction. It was hypothesized that if poor readers were trained to apply self-instruction to their reading that they would be more likely to monitor their understanding and, therefore, have better comprehension of discourse.

There are several interesting implications to be drawn from the results of this study. First, using each subject's baseline as a control, it is apparent that there was a definite treatment effect for three of the subjects, with Karen's and Terri's results being the most dramatic. After the training in self-instruction, Karen, Terri, and Kurt all applied self-instruction and were able to shift the quality of their miscues to a higher-quality level, suggesting that they were monitoring their comprehension at a more efficient level than prior to learning self-instruction.

A question could be posed as to why there were rather dramatic changes from baseline to intervention for Karen and Terri, a less potent change for Kurt, and no clear change for Bob.

One explanation may be the variation in the instructional reading levels of the subjects. Both Karen and Terri were reading instructionally on a low-mid third-grade level. Story construction of the SRA selections at this level were represented by shorter, less complex sentences, less conceptually difficult vocabulary, and shorter paragraphs. This type of discourse lent itself more readily to stopping, asking a question, and returning to the point of comprehension failure without losing an understanding of the sentence or paragraph. Kurt and Bob were reading instructionally on a fifth-grade level. The SRA stories at this level tended to contain compound and complex sentences which made it difficult to apply several of the self-instruction statements, such as to skip a word, read to the end of the sentence and then return to apply other word-recognition strategies. Both Kurt and Bob also tended to be much more fluent in their oral reading than either Karen or Terri, which seemed to make stopping at the end of sentences an unnatural place to pause; stopping at the end of paragraphs seemed more comfortable.

Another explanation may have been freedom of verbal expression. It was apparent to the experimenter that Karen and Terri were much more willing to interact verbally with the experimenter than either Kurt or Bob. When it was time for the oert self-instruction training, both Karen and Terri became involved and willingly modeled the experimenter's self-

instructions. Kurt appeared to be a shy and rather quiet child; when it was time to be trained in overt self-instruction, he resisted the training finding it embarrassing to talk to himself out loud. The procedures were slightly modified so that he would attempt to apply them. Bob was also rather nonverbal and had a difficult time adjusting to talking out loud to himself. Part of this problem may have been that Bob was used to repeating the same baseline procedure over a long period of time, and when it was time for the self-instruction training, he had a difficult time adjusting to the new procedure. The last three sessions also fell in the last two weeks of the school year, which may have made it difficult to attend to such a new and unusual procedure.

Although one of the major limitations in a study having such a small population is generalization, there appears to be some efficacy for training a child who has comprehension monitoring difficulties to use cognitive self-instruction. The previously mentioned limitations should be considered, such as instructional reading level, type of material, how freely the child expresses him or herself, and fluency of reading. The procedures for teaching a child self-instruction are not complex but require individual instruction. This may limit its practical value for the classroom but for clinical situations, if working with a child with severe comprehension monitoring difficulties, it could prove invaluable.

This research was conducted as a pilot study. The results of the study indicate that further research in the application of cognitive self-instruction as a plausible treatment for metacognitive failure is warranted. Certainly there should be continued adjustments and modifications to the self-instruction procedures. Continued use of a single-subject design may also prove useful if individual versus group effects are desired.

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REACTION: THE USE OF COGNITIVE SELF-INSTRUCTION AS AN INTERVENTION FOR METACOGNITIVE FAILURE

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Sarah D. Weidler's paper presents an alternative means of studying children's reading. By using a single-subject design with multiple base-lines, she was able to study the effect of her intervention treatment, cognitive self-instruction. A large-scale study with many subjects responding to a standardized reading achievement test would not be sensitive to the effects upon individuals. The fact that her treatment worked more effectively with some of the children than with others showed up with this type of design. The reasons for this differential effect can be determined only by studying the individual children.

In selecting children who might receive this type of treatment in a clinic setting, it would be important to consider the child's stage of reading development (Chall, 1983). The child should be in Stage 2, "Confirmaton, Fluency, Ungluing from Print" which the average child goes through in grades 2-3 or at ages 7-8. At this stage the child nedds to read to develop fluency, reading widely in familiar materials. S/He is not reading to learn new content, but simply to confirm what is already known. The child's sight vocabulary expands and s/he practices application of various word attack skills. Hence, the selection of reading material is important since at this stage the child should be using the familiar, not the new.

During this stage the child gradually begins to focus on meaning. Congnitive self-instruction might indeed help the child who seems to be "stuck" in Stage 2—the child who can decode adequately at his/her instructional level but who does not attend to the meaning. The technique would probably be of little value to a child in Stage 1 where the focus is upon decoding or learning he letter-sound correspondences.

Weidler attributes some of the differential effect of her treatment to the grade level at which the children in her study functioned. Cognitive self-instruction seemed to work better with those children reading at lower levels. In addition to the factor of shorter, less complex sentences, which Weidler suggests, one wonders whether the lower-level selections are of more familiar content, as in a basal reader series. Although most SRA kit selections present expository writing, those at lower levels might be about more familiar subjects. A follow-up study should control for the effect of familiarity of content.

Instructionally, the technique of cognitive self-instruction appears to be effective in a clinic setting. It would be difficult to adapt the technique to a group setting since the teacher models the correction process for individual's miscues. Selection of appropriate children as well as use of familiar reading materials at an instructional level are important considerations. Instructionally, this technique should be combined with eliciting prior knowledge about the topic from the child so that the content of the passage can be tied to existing schemata (Schallert, 1982).

Weidler's study suggests a direction for further research in the application of cognitive self-instruction to develop metacognitive processes. Further investigations into the factors that make the technique more effective with some children than with others are necessary. Research using a single-subject design holds promise of sorting out these factors.

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A QUALITATIVE INVESTIGATION OF MAINSTREAMING WITHIN THE CONTEXT OF READING INSTRUCTION

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The child with exceptional needs is usually considered either a challenge or a burden by general and special educators. In compliance with P.L. 94-142, which mandates that children with exceptional needs must be educated in the least restrictive enviroment, increasing numbers of special education pupils are being assigned to regular classrooms, mainstreamed, for at least a portion of each school day, wherever and whenever possible. The mainstreaming process has come to be of particular concern to individuals responsible for or concerned about reading education, since reading achievement is a critical factor in overall academic achievement and the ability to cope with everyday life. Educators have become acutely concerned about the extent to which mainstreaming can meet the conditions of equal educational opportunity, for all children, in a manner which approximates normality, and, more specifically, how the process of mainstreaming affects the teaching and learning of reading.

Until recently, research related to reading, which has taken account of various exceptional needs, has failed to provide

much descriptive information that might assist educators in understanding how mainstreaming evolves—what actually goes on in the process of mainstreaming. Rhodes and Spencer (1971), Rapier (1972), Johnston (1972), Brafield, et al (1973), and Schloss and Miller (1982) have examined the status of the child with exceptional needs in relation to peers, teachers and environment. Hallahan, et al (1978), Chapman and Boersma (1979), and Perl and Bryan (1980) have assessed the exceptional child in terms of self-concept/achievement as a function of perceived locus of control. These studies, however, have explored 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 provide enough descriptive data to offer a perspective of the entire social context of children, teachers, and other support persons involved in the phenomenon of mainstreaming.

Quantitative and/or causalistic - deterministic investigation alone does not lend to a thorough disclosure of the characteristics of mainstreaming conditions as they exist, as they are shared, and as they develop within the social context. Qualitative investigation is necessary for developing a realistic depiction of the social context. In reference to teaching strategies, both structural and interactional, Marshall and Weinstein (1984) indicate that: although critical to consider, this assessment of implementation is in and of itself not enough. The entire classroom context in which these implemented variables operate and influence each other must also be taken into account (p. 305). In their examination of student's self-evaluations, Marshall and Weinstein adhere to a model which integrates the elements of classroom organizational structure and interactions with the quality of relationships.

The quality of relationships that evolve from the conditions of mainstreaming within the context of reading instruction can be defined by the triadic interactions of student, teacher and support persons. An investigation of the perspectives of each of these members of the triad leads to a comprehensive view of the social context in question.

Purpose of the Study

The specific objectives of the study were: a) to deliver a realistic description of social interaction between teacher and children with regular and exceptional educational needs (EEN) within one classroom during reading instruction, b) to identify the teacher's, children's, and support person's perceptions of their roles, of each other, and of the materials and curriculum, and c) to determine the extent to which patterns and contradictions in behavior existed, and ways in which interaction might be improved in relation to these findings.

Data Source, Instruments, and Time Frame

The data source for the study was a middle school reading class of 24 students—17 regular and 7 mainstreamed EEN children, one regular teacher, and seven support persons including a science teacher/block leader, social studies teacher, English teacher, teacher of the Trainable Mentally Retarded (TMR), resource room teacher, reading consultant, and a classroom aide who attended to two trainable mentally retarded (TMR) students included in the EEN child count. Daily observations, interviews, audiotaping, behavior frequency recordings, notetaking, and administration of the Nowicki-Strickland Internal-External Scale (NSIES) were used to collect data. Data collection was conducted over a three month period.

Procedures

Observation of behaviors of the pupils, teacher, and support personnel were conducted and recorded on a frequency basis and accompanied by descriptive note-taking. The behavior protocol has been derived from the question categories of the interview questionnaire. Interview responses (expressed views) and recorded behaviors were compared in order to ascertain whether personal behaviors support personally expressed meanings (views) or contradict them.

The interview questionnaire consisted of a series of corresponding questions which were asked of the regular classroom teacher, the exceptional and non-exceptional pupils, and the support personnel. The questions were derived from two sources: Flanders' theory of dominant/integrative classroom interaction, with regard to teacher influence, student dependence, and learning goals; and the critical areas of concern of the study—*self-concept* and *perception of roles* and *responsibilities, interaction* between *teachers, pupils,* and *support personnel,* and *teaching/learning styles.* These areas were examined in order to determine the ways in which understandings are perceived and shared.

Daily notes and audiotapes were used to supplement and verify the findings of the interviews and the observations of behavior. The notes and tapes also provided much of the information included in a "thick description" of the social context in question. Interactional diagrams were also used to delineate relationships within the social context of the classroom.

The appropriate Nowicki-Strickland Internal-External Scale (1973) was administered to the exceptional and non-exceptional children, the teachers, the reading specialist/coordinator, and the classroom aide. This scale has been designed for the purpose of determining an individual's orientation (internal-external) in relation to generalized expectancies. Comparisons were made between interview responses, recorded behaviors, and orientation, in order to determine whether there are relationships among these characteristics which indicate particular patters of interaction between children and adults involved in the process of mainstreaming during reading instruction. Student's t-test was applied to several variables—to expressed views, observed behaviors and other recorded characteristics—to determine significant differences between regular and exceptional and internally or externally oriented students. A significance level of $p < .10$ was chosen due to the small number of individuals involved.

FINDINGS

Student Characteristics and Perceptions

The class consisted of a combination of sixth and seventh graders, 11 females and 13 males. Of the total class, there were

seven EEN students — five females and two males. It should be noted that, from the EEN group, two females were trainable mentally retarded. (This was of particular significance at this school since it was the first time that TMR students were mainstreamed into a reading class.)

All of the students were said to be reading below and up to the fifth grade reading level. The diversity of particular strengths and weaknesses was not readily apparent, since there were no skills or ability level groupings within the class. The class was generally referred to by the teacher as the "low" or "slow" group.

Among the EEN members of the class there was a great variety of physiological and personality types. One student who had recently been identified as EEN was on the cheerleading squad and another had been absent from class for approximately two weeks while undergoing tests and related services at a detoxification clinic. One of the TMR students showed no physical manifestations of her handicap, while the other TMR student bore physical features common to Down's Syndrome. In terms of discipline, both of the TMR students were among those who were consistently least disruptive.

After several days of observation, it was still possible for the observer to pick out all of the EEN students on the basis of behavior, appearance, class participation or social interaction. (The observer had initially requested of faculty/staff members only to be told how many EEN students were present in the teacher's class and not to be informed of who they were.) Some of the mainstreamed students exhibited no peculiar idiosyncracies, were as much like their classmates in appearance, and engaged in verbal class participation as well as social interaction with their peers. During turn-taking for oral reading, distinctions between EEN and regular students were not evident, since reading performance varied across the entire class. Some of the mainstreamed students read just as well as the regular students in terms of pronunciation, intonation, and fluency.

The seating arrangement gave no evidence of a distinction between mainstreamed students and regular students, save for one exception. Most of the mainstreamed students were interspersed among the regular students, since the seating was designated according to alphabetical order by last name. However, the two TMR students were placed on an end row, out of alphabetical order, as the only students in this row.

In an effort to identify and describe each of the students, in terms of factors relevant to the social context of the reading class and socio-cultural attributes related to reading, various characteristics were monitored and recorded. The selected characteristics which combine to create each "student's profile" are: public library membership, number of types of books borrowed from the school IMC and Reading Room, classroom activity preference, rank in off-task behavior, number of times called on to participate, number of times unprepared for class, number of times absent, EEN or regular status, and internal or external orientation (as indicated by Locus of Control Scale).

Although public library membership and the number and types of books borrowed from the IMC and Reading Room are external to the social context of the classroom, they are factors indicative of reading attitudes and behavior which, to some degree, reflect the extent to which the social context of classroom learning is generalizable or the extent to which exploration beyond the introduction of concepts in the classroom is pursued. If one of the goals of mainstreaming is to help EEN students manifest behaviors and characteristics which are as culturally normative as possible, then individual interest or initiative in reading activity, outside of the classroom, is a significant indicator of whether EEN students are as much a part of the mainstream as their regular counterparts — whether they approximate the cultural norm.

All of the characteristics presented in the students' profile are personal attributes with the exception of two—number of times called on to participate and absence. Although the teacher was ultimately in control of how often individuals are called upon to read or to answer questions, and such instances are not reflective of the students' personalities in and of themselves, these instances do illustrate, to some degree, the amount of social entree extended to various individuals. Absence from the reading class, or from school in general, may be due to a variety of factors such as uncontrollable illness, family circumstances, or participation in some other form of instruction within the school building, and therefore is not reflective of the students' personalities in and of themselves. However, both number of times called upon and absence from class are influential in the way individuals are perceived by their classmates and/or the teacher and are, therefore, reflective of social status within the group. If we compare selected social characteristics of both EEN students and regular students, then we can make some determination of the extent to which the mainstreamed EEN students approximate cultural norms in such aspects.

Among the students of the integrated reading class, expressed views reflecting significant differences in relation to regular and exceptional or internally oriented and externally oriented students are both worth consideration, since the students did not readily identify themselves by these imposed, etic, categories and were often implicating themselves in attribute associations instead of being associated with certain characteristics by someone else. (It is interesting to note that the students categorized themselves only as boys vs. girls or sixth graders vs. seventh graders—the emic viewpoint.)

With regard to regular vs. exceptional status, characteristics which might cause procedural conflicts within the context of the integrated class—"last finisher," "problems with work," and "different from most others"—were significantly more often associated with exceptional students. Personal characteristics reflecting significant differences between regulars and exceptionals seem to indicate that it is most advantageous, from a social viewpoint to be a regular—internally oriented student. However, from an academic viewpoint, regular students were significantly more often associated with off-task behavior—perhaps indicating that, within the culture of the integrated class, regular students are generally more popular and pay less attention to tasks, while exceptional students must be more attentive to succeed but rank low in popularity.

In terms of the value system upon which the students based their ideas of *roles* and *responsibilities* among themselves, the teacher, and support persons, as many students in the teacher's reading class indicated that they preferred having

a choice of assignments as those who preferred being told exactly what to do. More students relied on personal (metacognitive) indicators to determine whether they were doing a "good" or "not so good" job with their work than relied on the teacher to tell them so, and a majority of students indicated that they raised their hand for help when they didn't understand assignments.

Fewer students perceived themselves as help-givers, and of those who did, most of them were internally oriented, but two EEN students (one internal and one external) were included. Most of the students indicated that they liked participating in class and few said that the teacher expected them to do better than they could do. Most students indicated a preference for a longer introduction to individual seatwork and said that the teacher did do extra things to help them understand. A majority of the class characterized the teacher as friendly or both strict and friendly and indicated that he disciplined the class often.

Although half of the students said that no one helped them improve or become interested in reading, outside of the reading class, the majority of students who did give credits referred to support personnel—the reading room staff, first, and then the English teacher, Social Studies teacher, and counselor, second, as well as parents, siblings or friends.

Additional opinions of the students about *themselves* and their peers provide a closer look at their ideas of the premises upon which they operated within the sub-culture of the integrated class. Most individuals in the teacher's reading class cited EEN students as classmates who usually needed extra time to complete work, had more problems with the work, and were different from most others in the class. Many of the students were perceived by their classmates as being different from most of their peers in the reading class. Consequently, some regular students were cited as often as EEN students—for positive or negative reasons. A majority of those perceived as different, both by peers and by teachers, were externally oriented. Almost all of the students indicated that those who were "different" still belonged in the class—because of their reading level. Students did not differentiate themselves as regular and exceptional, but rather as girls and boys or sixth and seventh graders.

Almost all of the students stated very positively that they could do well in the teacher's class—including most of the EEN students. A majority stated that no one received extra attention from the teacher; but a majority of the EEN students were named, along with regulars, by those who felt that some peers did get extra attention. As many students were perceived as receivers of extra attention for disruptive behavior as those who needed help with the work. When students did express the opinion that they might learn more if others were not in the reading class, they cited such individuals for disruptive behavior—a minority of the EEN students.

Most of the students indicated that they liked the activities in the reading class. Aside from free time, a majority indicated high priority for class discussion, working alone or reviewing work, while listening to the teacher and giving a report were of low priority. A majority of externally oriented students placed reviewing work in high priority, as opposed to a majority of internally oriented students who placed working alone in high priority. The *skillsbook* activities were preferred by most of the students, including a majority of the EEN students, primarily attributing their preference to the idea that the skillsbook was easy.

The following behaviors reflect or contradict some of the students' expressed opinions. Some students who stated that they liked to participate in class actually did not participate very often, as compared to peers, particularly some of the EEN students. However, in relation to attributes such as working non-stop or taking breaks, being "cued" for discipline, and getting attention from the teacher, students indications were reasonably accurate, as reflected in frequency recordings of off-task behavior, reprimands, and being called on. One EEN student who was cited by several peers as being different from most of his classmates named himself as different, and his explanation of why—that he thought differently and had different tastes—was substantiated by the fact that one of his peers considered him different for the very same reason.

The following *general statements* seem warranted by the *student's* expressed *views* and *behaviors*.

- — EEN and regular students reflected positive and independent attitudes about themselves and their peers.
- — EEN students' views and behaviors reflected as much of a range in attitudes and patterns as the views and behaviors of regular students in a majority of instances.
- — There were more notable differences in views and behaviors between regular and exceptional individuals than differences between internally and externally oriented students, but students did not refer to each other on the basis of these categories.
- — A majority of the class, including the EEN students, expressed positive opinions of the reading teacher.
- — Support persons were considered instrumental in providing additional help or encouragement in relation to reading.
- — A majority of regular and EEN students indicated that they preferred using their basal skillsbook.
- — The students' expressed views of themselves and their peers, as well as their actual behaviors, reflected patterns of classroom characteristics unconsciously associated with internally or externally oriented individuals.

Teacher Characteristics and Perceptions

Some of the most salient findings reflect the teacher's ideas of his professional *roles* and *responsibilities*, and the roles he ascribed to the students. The teacher said that the placements of all of the EEN students in his class were based upon their general abilities to function in the regular classroom setting. All of the students in the fourth period class were referred to by him as the "low or slow" group. He was consistent in indicating that he was not aware of any student's diagnostic category (label), but was also non-specific about their individual needs in reading. In relation to their potential capabilities, EEN students were referred to solely in terms of their classroom performance.

The teacher indicated that he was confident about working with the EEN students, and attributed this confidence to personal characteristics such as experience, skills, and an "inward perception of the children." He indicated that the ex-

change between regular and special education persons had decreased, in his estimation, since there was no longer a classroom aide for all of the EEN students. The teacher's discussion of collaboration with support personnel referred to a counselor, who assisted him with behavioral problems, and the TMR teacher and the aide, who were considered helpful because they attended his class to take notes and reinforce his lessons by using his books in their TMR room.

In reference to the *children*, the teacher did not address the potential for including EEN students in small group activity. He indicated that he did not conduct small group activity because of dissatisfaction with previous experience of this nature—scores dropped—and apprehensions about disciplinary problems with specific students in the current class. The teacher was not consistent in his optimistic references to specific EEN students like LANA (E) whom he indicated was one of those students most willing to conform to his requirements, able to perform effectively in situations of choice, enthusiastic about class participation, competitive with regular peers in relation to a variety of positive attributes, and also regarded as one of the most devoted students to five out of six classroom activities. The teacher was less optimistic in his references to EEN students like DENNIS (E) whom he said he viewed as needing to have choices made for him, being indifferent to classwork and/or peers, calling on the teacher for assistance during seatwork, and frequently needing extra clarification about steps in completing a task. There was little evidence of optimism in his references to MARGARET (E), one of the TMR students. He indicated that the regular students demonstrated impatience with her and that she spent most of her time preoccupied with preparation of her materials.

As for *materials* and *techniques*, the teacher regarded the basal reader series (Houghton - Mifflin, 1979) as most effective with both the regular and EEN children. He emphasized his opinion that the constant use of drill and repetition was important to the reinforcement of concepts presented in the reading class. He also indicated that he did not find it necessary to alter written assignments in reading instruction for any of the EEN students and that they did not cause any extra responsibilities for him except the writing of IEPs. He made no reference to mutual exchange of methods or techniques with support persons but did indicate that they were the most important resource in helping him to accommodate the mainstreamed students because "they tell us the students' needs and problems . . . including problems at home."

The following *general statements* seem warranted by the *teachers'* expressed *views* and *behaviors*.

- The reading teacher expressed awareness of and concern for students' task related scores and behavior within the parameters of classroom performance.
- Mainstreamed EEN students were said to create no extra responsibilities except the completion of IEPs.
- The teacher's attitude toward mainstreaming of EEN students ranged from optimism to pessimism depending upon the particular student. For example, LANA'S (E) weaknesses were not mentioned.
- Adjustments to or provision of a variety of materials or techniques was not considered necessary for EEN students because they were on the same level as the rest of the group.
- Collaboration with support personnel concerning EEN students in the mainstream setting was limited to behavioral matters.
- The teacher's expressed views did reflect patterns of classroom characteristics unconsciously associated with either internally or externally oriented students.

Support Personnel Characteristics and Perceptions

Regarding *roles* and *responsibilities*, most support personnel described EEN students according to specific individual needs and were either unaware of or chose not to discuss categorical labels. They expressed opinions about EEN students' potential for future employment, survival skills (lifestyle), and social adjustment. They expressed the opinion that appearance was an influential factor in other individuals' acceptance of or estimation of the EEN student—in essence, the roles that others would ascribe to the EEN student. (One TMR student was said to *look* like she knew more than another TMR student, who manifested features of Down's Syndrome, although she did not actually function on a superior cognitive level.)

All of the support personnel indicated that they were confident about working with the EEN students, and they attributed this increase in confidence to an increase in experience and/or collaboration with other support persons. On the other hand, support persons indicated that there was less exchange between EEN and regular teachers; regular teachers said that visits and assistance by EEN personnel in previous years had since been discontinued. References to existing collaboration indicated that most mutual exchange took place between the reading consultant and the content area teachers.

In reference to the *children*, very few support persons said that they perceived any difficulties in including EEN students in small group activities. The majority indicated that they viewed most EEN as willing to conform to the teachers' and peers' social agenda. They viewed EEN students as capable of performing in a situation of choice as well as a situation where the choice was made for them, enthusiastic about class participation in most instances, and competitive with regular peers in relation to a majority of positive attributes. Support persons also indicated, however, that EEN students were often unrealistic about their weaknesses, even when they were actually aware of them.

As for *materials* and *techniques*, there was no consensus about any single resource (material or individual) as being most helpful in the process of delivering reading instruction to EEN students. Some credited no specific resource, while others gave credit to parents' reinforcement at home, to other support persons' classroom reinforcement and professional exchange, or to special materials in their personal collections—not available schoolwide. The English teacher, for example, indicated that he used a variety of materials, with a wide range of grade levels, that he had gathered from his own collection, the special education teachers, or other teachers in the district. There was very little reference to mutual exchange of methods or techniques between the regular *teacher* and the support personnel, although one support person perceived the reading teacher as contributing "practical" input about students' achievement on mastery tests in reading.

Observed *behaviors* among the teacher and students served to reflect many of the values expressed by support persons, in relation to their views on roles and responsibilities and opinions about the children, materials, and the reading teacher. In some instances observed behaviors also reflected contradictions to the views expressed by support personnel.

A majority of students, both regular and EEN who were said to be most in need of cues for acceptable behavior, assistance with seat work, or extra clarification about what steps to take in completing a task, were the same students who actually asked for or received help from the teachers most often. On the other hand, a majority of students named by support personnel as most willing to conform to the direction of support persons were also the ones who were least often reprimanded by the teacher; however, he named only one of them when asked about students' conformity in his classroom.

As another example, the English teacher, stated that he perceived no extra responsibilities to EEN students and indicated that the work was the same for everyone, even though his expectations were different for each student. It is noteworthy, however, that one of his lessons was conducted such that every student was called on, in turn, from row to row, but anyone who had difficulty was individually taken through the same item several times and engaged in a physical demonstration of the concept, if necessary, until (s)he understood. For example, a student would be told to act out how (s)he "quicklys" or how (s)he "sofas" if (s)he identified these words as verbs, or the student would be told to act out a verb and asked to supply the appropriate ending, "-ing" while acting or "ed" after completing the act.

Support persons' views of specific students indicated significant differences between regular and exceptional students in terms of "seeming indifferent," "responding favorably to reprimands," "indicating difficulty in completing work," "responding favorably to directions," and "needing direct statements" (predominately exceptional students), while the differences between internally and externally oriented students were reflected in terms of "seeming indifferent," "needing extra clarification," "not being able to complete work" (predominately externally oriented) and "being most capable of performing without immediate reinforcement" (predominately internally oriented).

The following *general statements* seem warranted by the *support persons'* expressed *views* and *behaviors.*

- Support persons expressed awareness of and concern for individuals academic needs as well as students' capabilities in terms of non-academic skills—even when they said that they held no extra responsibilities to EEN children.
- Mainstreaming of EEN students was, for the most part, viewed optimistically.
- There was no consensus about materials or methods of delivering reading instruction to EEN students.
- There was limited professional collaboration concerning EEN students in the mainstream setting.
- Support persons' expressed views reflected patterns of classroom characteristics associated with internal or external orientation despite the fact that the support persons were unaware of the formal distinction.

Interaction of the Triad

In terms of *roles* and *responsibilities,* the support persons, reading teacher, and students did not share exactly the same views of individual needs. The support persons seemed most aware of the specific needs of individual students in terms of social and academic skills as well as cognitive deficits and associated diagnostic labels. The reading teacher chose not to focus on categorical labels; but, at the same time, he did not express awareness of individuals deficits and needs in any specifics. The students only demonstrated awareness of deficits in themselves or classmates in a global sense—that of being slow, needing more practice, or having a low reading level.

Perceptions of the extent to which EEN students would function like their regular peers were not expressed on the same basis as expressed by the teacher. Support persons considered social and occupational possibilities as well as academic potential, and they expressed the opinion that all of the EEN students would achieve at least reasonably close to normal functioning in terms of employment—but perhaps exhibit some deficiencies in social adjustment and age-grade academic achievement. The reading teacher expressed his opinions of future capabilities of EEN students solely on the basis of academic achievement and classroom functioning. Although the students were not questioned about what they thought they might be doing in the future, their expressed opinions of how well they could function in the immediate context of the reading class were positive.

The support persons and the reading teacher expressed confidence in working with the EEN and regular students, but their reasons varied somehwat. Both support persons and the reading teacher attributed their confidence partly to experience, but they differed in that support persons indicated collaboration with colleagues as an additional factor, while the reading teacher did not account for collaboration and, instead, referred to his "inward perception of the children."

A closer look at the *students', teacher's* and *support personnel's view of each other and the materials* that they used for teaching and learning reading also reflect similarities and differences. Support persons indicated little difficulty in including EEN students in small group activities (some of them did conduct small group work occasionally) or classwork in general. The reading teacher indicated that there were some difficulties in including one of the TMR students and that he conducted no small group activities due to doubts about the benefits of the approach and apprehensions of disruptive behavior. A majority of the students, however, indicated that they would like participating in small groups.

Support persons in the content areas made references to mutual exchange with the reading consultant concerning delivery of reading instruction to EEN and other students more often than they made references to the reading teacher or EEN personnel. The reading consultant's references to mutual exchange reflected the same trend—sharing with support persons from the content areas. The reading teacher indicated that mutual exchange occurred more between himself and the EEN counselor/liaison, concerning disciplinary matters. (Other EEN personnel, the teacher and the aide, were viewed as helpers.) The students credited the reading teacher for doing extra things to help them understand and referred to the

content teachers and reading room staff as people who also helped them with reading.

Although some support personnel did not indicate that they used any special or different reading materials for EEN students, others indicated that they did individualize and used a variety of materials to accommodate EEN and regular students. The reading teacher did not individualize or use varied material and the children did not express dislike for the basal materials but often indicated that they were easy.

The following *general statements* seemed warranted by expressed *views* and *behaviors* of the members of the *triad:*

- In terms of strengths and/or weaknesses, students' roles were expressed differently by each set of individuals.
- Support persons' views of EEN students' ability to function extended beyond the classroom to real life situations; whereas, the teachers' view was limited to the classroom.
- The three sets of individuals expressed the opinion that they were confident in working with each other, although the reasons varied.
- Small group activities were not equally valued by all parties involved in the teaching/learning of reading.
- Statistically significant differences between ratings of classroom characteristics of regular vs. exceptional and internally vs. externally oriented students reflect patterns which lead to implications for practice in the context of the integrated reading class.

IMPLICATIONS FOR PRACTICE

Information obtained from observations, interviews, and administration of the Nowicki - Strickland Locus of Control Scale was used to render a detailed description of the views and behaviors of the teacher, support persons, and students involved in a social context of mainstreaming. This information is also a basis for suggestions for meeting the needs of exceptional and non-exceptional children in the integrated reading class.

In view of the fact that many individuals have preconceived notions reflecting lack of faith in their ability to accommodate the mainstreamed child in the regular classroom and lack of faith in the child's ability to cope, much of the data presented in this study should serve to eliminate these attitudes. The majority of the EEN students perceived themselves as able to do well in the reading class, indicated that they liked participating in the class, and generally felt good about being in the class. (When asked how she felt about being in the reading class, the TMR student, considered to be one of the most severely handicapped participants, responded that she felt "happy.") Some EEN students were perceived by their regular peers as helpers, as getting extra attention at independent seatwork, and as those who got along well with other regular peers. They were often perceived by the support persons and/or the reading teacher as easy to include in small group activities and willing to conform to the teacher's requirements or the demands of peers (the general social agenda) and were also less frequently found off task. For these reasons, practitioners should continue to make efforts to encourage mainstreamed students to participate in class and to feel as though they are integral members of the class.

As for the possibility of negative effects upon regular students—due to the presence of or interaction with exceptional students—there appeared to be very few if any. Exceptional students were not cited by their regular peers for getting extra attention any more often than other regular students who were named; they were not referred to by regular peers as disruptive as often as some of the regular students were named; there were no complaints from regular students referring exclusively to EEN students; and EEN students were not perceived by peers as individuals who didn't belong in the class—even when they were considered somewhat different from most other classmates. The exceptional student received no special individualized assignments and received individual attention no more than any of the regular students. Although regular students were described by the teacher as impatient when EEN students were called upon, regular students did not appear any more impatient with any particular EEN student than with any of their other classmates; and, in instances where parts of a lesson were slowed down or repeated, one of the support persons (the English teacher) indicated that these situations provided beneficial reinforcement of concepts for regular as well as exceptional students. The TMR teacher also expressed the opinion that the presence of EEN students in the regular class was beneficial to the rest of the students because it caused the teacher to "break down" lesson presentations more carefully. Since regular children are given group counseling about mainstreamed students, it would seem to follow, then, that regular students should not be "indoctrinated" into believing that EEN students will always require extra attention or cause additional problems in the classroom.

Comparisons of the interview responses and observed behaviors of students, teacher and support personnel, in relation to the internal or external orientation of students, revealed a number of instances of significant differences. These instances relate to activity preferences. Externally oriented students placed reviewing work in high priority and internally oriented students placed working alone (seatwork) in high priority. Since a majority of EEN students in the reading classroom were found to be externally oriented, efforts to incorporate such students in the mainstream context should include review of work on a regular basis, and efforts to help improve independent work habits should also be considered.

Finally, the improvement of articulation between support personnel and the classroom teacher toward the accommodation of exceptional students might be accomplished in a variety of ways. Some of the following suggestions have been generated solely on the basis of the observer's perspective of the context in question, while others reflect the opinions of those involved:

1. Exchange perspectives on the potential of individual EEN students in terms of employment and survival skills as well as academic possibilities.
2. Arrange regular meetings for "pairs only" of members of the multi-disciplinary and/or block team, in lieu of some of the team meetings, on a rotational basis, such that all members meet with each other on a one-to-one basis as many times as possible and are considered subcommittees to the team.
3. Set the agenda for team meetings in advance and choose

a specific focus requiring input from each member.

4. Arrange mutual observations of all team members delivering instructional services.

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PERCEPTIONS OF READING COMPETENCIES IN CONTENT AREAS HELD BY EDUCATORS IN EUROPEAN AND AMERICAN SCHOOLS

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Criticisms regarding reading limitations among American students, with a companion implication that European schools produce more successful readers, sparked the desire to look at schools in other countries. Educators should seek to find the kind of programs that lead toward maximum success. A review of publications about European schools, expecially those related to reading in content areas, uncovered a 1979 survey of schools in England by Her Majesty's Inspectors which noted that

> "The picture in the majority of schools was (not) encouraging. Whatever enthusiasm for reading might have developed in the earlier years, the survey revealed a narrowing in the scope and quality of reading by most pupils . . . in nearly all schools there were some subjects in which books played scarcely any part. It was frequently taken for granted that pupils could develop without help their skills of reading for different purposes . . ."

Their statement seems to echo some familiar descriptions leveled at reading in subject areas in the U.S.A. A decision was made to find out how educators in various European countries perceived their students with regard to reading and comprehending printed material.

An opportunity to observe schools and interview personnel in England and Scotland emerged when as assignment was made to accompany Ball State Ex El-Overseas Teacher Education group studying in England.

The decision was made to visit several countries and to observe one or two schools in each. This allowed for a composite concept of schools in Europe rather than a more intensive examination of education and reading in a particular country.

Data Collection

Schools in *England* and *Scotland* were visited initially while Ball State students were participating in British schools. Visits were then arranged to observe and interview educators in secondary schools in Finland, Sweden, Denmark, West Germany, Austria, Switzerland, Italy, Greece, Spain, Portugal, Ireland, Belgium and Luxembourg.

In the U.S. visits included high schools, community colleges and technical vocational schools in California, Arizona, Texas, Colorado, Indiana, Illinois, Pennsylvania, Louisiana and Georgia.

Findings

Data from 18 schools in 15 European countries and 18 schools in this country are included in this report. Responses regarding perceptions of student reading in literature, science, social studies, mathematics, homemaking and industrial arts were summarized for 86 educators in Europe and 96 in the U.S.A.

I. The form outlining the information secured is similar to the form for recording the raw responses. When educators were asked to report perceptions of student status in reading and comprehension of material, they were asked to respond to the three questions:
   a. What proportion of your students read and comprehend most assignments with no difficulty?
      — The range of responses was extremely wide, from none to all.
      — The mean proportion perceived as experiencing no difficulty was .36 in Europe and .37 in U.S.A.
      — Although the range was extensive most responses clustered between .05 and .30 with about 60% of all responses at these levels.
   b. What proportion experience some difficulty?
      — The mean proportion perceived as having some difficulty, but able to cope, was .48 among Euro-

pean educators and .47 among Americans.
— Responses here clustered between .40 and .70.

c. What propostion encounter extreme difficulty?
— The range here went from none ot half of the class.
— The mean proportion of those perceived as having severe limitations in reading was .16 for both European and American settings — specifically .16426829 for Europe and .16358695 for the U.S.A.
— Majority of responses clustered between .05 — .20.

Teachers and administration at all levels interviewed expressed a genuine concern regarding students encountering "extreme" difficulty as well as those experiencing "some" difficulty.

II. Practices in schools for improving reading and comprehension reported most frequently included:
a. scheduling students into specific class sections
b. reduction in the amount of reading required in courses
c. employment of teachers to help students, most often providing instruction in study strategies
d. introduction of new, specialized vocabulary by content teachers; and less often
e. adapting assignments and required reading demands in terms of recognized compentencies or limitations in reading with the goal of fostering learning growth.

III. Recommendations

The suggestions made by those interviewed for improving the reading situation included:

a. more effective reading instruction prior to entry into the advanced educational levels
b. more stringent criteria for entry into the secondary school — This recommendation was heard from those teaching in the highly selective European gymnasium as well as those involve din technical-vocational programs in the U.S. and
c. employment of personnel specifically trained to assist learners with limitations in reading or study strategies, or skill in mathematics.

A few voices suggested that teachers migh carefully examine ways of helping mature learners read better and thereby learn more effectively.

Teachers of content areas indicate that they do not feel prepared to help students in strenghtening their reading skills. Direct assistance needs to be provided in this area so that the development of competency in reading can be moven into the learning of social studies, math, science and other content areas. As learners progress in school the demands of subject matter impose the necessity of applying those reading and study skills already mastered. There is also a need to sharpen reading skills not previously used and for learning new techniques. The specialized reading materials used in advanced subjects demand growing competencies in reading and comprehending.

Carefully designed teaching objectives are needed to guide students toward increase fluency, flexibility and accuracy as well as skill in critical and creative reading. Achieving this goal will require fusing learning experiences which can strengthen reading with those aimed at increasing knowledge of the content being studied.

Looking specifically at the similarity in findings of this study when comparing perceptions of reading by European and American edutors, there may be need to promote awareness of this evidence. The public and the press should be realistic in recognizing how reading is viewed. Seeking ways to improve can emerge from assessing limitations and needs in reading, but misdirected criticism could interfere with effective utilization of data on perceptions. It appears that accurate perceptions held by reading personnel and by teachers of content areas at all levels provide the greatest promise for fostering continuous development in those reading and study skills needed for success in the various subjects they are pursuing as well as in application to the needs of living in the world as citizens of today and tomorrow.

The evidence strongly suggests a similarity of perceptions among educators (teachers and administrators) in 15 European countries and in the selected American schools. Proportions of students perceived as reading with ease, those who need to work diligently, and those who encounter extreme difficulty are essentially the same. Shall this be viewed as an important finding and evidence that perceptions held by faculty in elitist schools do not differ significantly from those in schools which educate a much larger proportion of the population?

Standard and widely-accepted views can become traditional and be presented as expected norms. Should the role of education today be the maintenance of traditional viewpoints and perceptions, especially those that seem to be rather universally accepted? Or should education look for a new vision, a new perception, a new reality for the future? In looking at "Reading for Adults" and exploring "Avenues for Growth," are there some folklore, views, or myths that need to be avoided? Can educators maintain the strengths of tradition while gaining a vision of new realities?

What new perceptions would one like to see replacing some of the folklore that seems to have been accepted?

1. One proverbial piece of folklore taken from popular economics declares that "The Poor are always with you." Translated to education this suggests the "Poor students are always found in classes." And the research findings suggest that many teachers believe this, even when their school population has been carefully selected to screen out those poor students!

   Do some students show limitations in learning because teachers have not sought ways to capture their interests, promote their personal concerns, and utilize learning avenues that can result in success?

   Can a new perception capture the concept that some poor learners are "denied learners," individuals that have been denied opportunities to use their own compentencies, their own language patterns, their own potential to achieve goals that would hold meaning and values for them? Can learners with limitations be seen as a source for creativity — for teaching so effectively that they will learn some of the things teachers want them to learn as well as much of personal or potential value to them?
2. A second area of concern would be related to equal opportunity within a pluralistic society. The traditional educational claim asserts that every individual had the

same oportunity to learn — and some did, while others did not. The same perception might hold that a welcoming community is characterized by the invitation "join us" and "do it our way."

Can this myth be replaced with a plan of cooperation, a mutuality in effort which recognizes that equality in opportunity takes into account factors such as background of information, learning style or modality preference, perhaps hemispheric dominance and other elements in order to provide a truly eqalitarian setting? There may be a need to formulate provisional classroom procedures and climate allowing those who believe and respond in different ways to join together.

3. A third focus of folklore has been Technology. The old view has been that technical knowledge and development will solve all problems. But a new, and more realistic, perception should recognize that for every positive advance in technology there may be accompanying limitations. Current interest and concern in computers sometimes take on overtones of a panacea . . . But regularly it is possible to hear teachers who say, "I have one, and it doesn't work!" Admittedly, this can involve either the technology or the ability of the user to apply or utilize it effectively to achieve desired purposes. Certainly, a realistic view of technology, as well as other educational practices, would recognize that strengths hold companion limiations with which one must deal.
4. Relationships carry an untold number of folk legends involving the position and authority of the teacher. Much seems to be based on the "might makes right" concept of ancient vintage.

Can a concept evolve of teachers as nurturers, as caretakers who relate to students as persons? Can schools plan ways to strengthen self-concept of learners? Can educators, as enablers, provide impetus for action by those who think carefully and plan appropriate activities?

Data have been reviewed on the teacher perceptions of reading competencies manifested by secondary students in various subject areas. Also reviewed were some of the traditional perceptions held in educational folklore related to four areas:

1. Range of student competencies
2. Equality of opportunity
3. Technological advances
4. Teacher-learner relationships

In conjunction with the traditional views, ways have been suggested in which distortions can be modified and positive elements amplified to effect renewal and more positive results that may promote nurturance and cognitive caring.

It is believed that through exploration, through sharing insights and information gained, through study, through writing and reading and interacting it is possible to evolve new insights, introduce new dimensions and open new avenues of growth toward a liberating literacy for adults and, indeed, for all learners.

DIFFERENTIATING READING PRACTICE: A METHODOLOGICAL COMPARISON OF MICROCOMPUTERS AND STUDENT SELECTED READING

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As various segments of American society have become increasingly aware of the numerous virtues of microcomputers, there seem to have been some pressures exterted on the educational sector to make extensive instructional applications of computers in classrooms. Whether these pressures have been self-imposed or externally generated, it appears safe to conclude that the microcomputer craze is beginning to trickle down to the classroom level. In fact, the flow of computers into classrooms has picked up momentum. Duffelmeyer (1983) reported that microcomputers were gradually becoming "standard equipment," while Simon (1983) indicated that schools are purchasing computers at a rate " . . . faster than we can keep count." (pg. 17). In the same vein, Bork (1984) gauged the number of computers in schools to have doubled each year for the past few years. More specifically, he estimated that in April, 1984 there was an average of 4 computers per school across the United States.

While the computer impact on education has commenced, the seemingly liberal and more frequent applications of these instructional tools does not enjoy widespread empirical verification at this time. Perhaps the eager acceptance and use of computers in the classroom can be attributed to the recent

proliferation of commercially available, colorfully advertised soft-ware programs that are vying for teachers' attention. While it is obvious that some of these programs are more worthwhile than others, it is equally apparent that no program should be regarded as a panacea. This is especially true in light of an apparent consensus among experts with regards to the low quality of educational software. For example, Komoski (1984) reported that the Educational Products Information Exchange (EPIE) could *not* recommend purchasing 60% of the software evaluated over a two year period. Further, EPIE placed only 5% of the hundreds of programs evaluated into a "highly recommended" category. In addition to the general lack of quality among commercially prepared software programs, the nature of the vast majority of programs appears to be little more than a transformation of "hard copy" workbook pages into visual images projected on to a cathode ray video display tube.

Many educators are encouraging teachers to make fuller use of computers by employing word processing and simulation programs during computer assisted instruction in reading and language arts. While these may be virtuous applications of computers, educators should not forget that reinforcement and drill are still necessary to develop automaticity in learners' reading performances.

Computers can be advantageous in accomplishing reinforcement and practice of reading skills. In addition to being infinitely more patient than humans, they provide immediate and consistent feedback. Further, there is very little ego involvement on the part of learners when they are being corrected at a terminal (Balajthy, 1984). However, in light of the overriding concern with the quality of educational software, teachers cannot assume that the practice is appropriate and advantageous to the development of reading skills. In fact, the computers could have a deleterious influence on the reading performances of individuals.

The basic concerns with the low quality of computer software, along with the lack of existing empirical support for computer assisted practice and reinforcement of reading, support the need for investigations in this area. Reading educators need to know whether practice by way of computers will actually make a difference in the reading achievement levels of learners. Further, teachers should try to determine whether the apparent motiviation and enthusiasm reflected by students while they read at the computer terminal influences their attitudes toward reading and reading instruction in general.

METHODS

Subjects and Sampling Procedures. Twenty-eight students from two sixth grade classrooms were randomly selected to participate in this study. While equal numbers of students from both classrooms were placed into each treatment condition, the assignment to treatment groups was *not* totally random because of extenuating logistical factors such as pre-existing class schedules that could not be altered. *Data Collection Procedures.* The *Metropolitan Reading Achievement Test, (Reading Comprehension Sub-test), Intermediate, Form JS* (1978) and the *Heathington Intermediate Scale* (1976) were administered to all subjects as pre-tests. In an effort to control for the lack of total randomization in the assignment of subjects, these pre-test results were used as covariates in the analyses of the dependent measures which were administered at the conclusion of the instructional treatments.

Treatment Schedule. This classroom study was conducted during a three month period. This classroom study was conducted during a three 36 sessions which lasted approximately 25-30 minutes each and occurred three times per week.

Treatment Procedures. Within both classrooms, each treatment was regarded as a supplement to the basal program. The specific materials employed in each of the treatments were selected because they incorporated similar lesson components into their respective programs. Both sets of materials were designed for students to use in a self-pacing manner. In addition, they possessed associated record keeping/assessment systems, and subscribed to a similar comprehension skill and taxonomic orientation. The biggest difference between the two treatments was the medium through which the instructional activities were delivered. That is, a commercially prepared computer software program involving short stories comprised one treatment condition, while hard covered story books were employed in the other. Within both treatment conditions teachers limited their roles to that of monitoring student progress.

Subjects assigned to the computer treatment condition were placed in the *Comprehension Power Program, Levels 1-12,* developed by Instructional/Communications Technology, Inc. (1982). Each session consisted of learning key vocabulary words and previewing the reading selection prior to the actual reading of the story. Once the selection was started, questions were answered following various segments of each story. These interspersed questions were designed to stimulate the reader's comprehension at the literal, interpretive, analytic, evaluative, and appreciation levels.

Subjects in the student selected readings group chose books from the *Random House Reading Program, Blue and Green levels,* (1977). Within this treatment, subjects used the survey cards, vocabulary cards, detail cards, and comprehension cards that accompanied each story. All subjects maintained a record of their responses on each portion of the program. The teacher then prescribed the appropriate skill pacer instruction and practice cards.

RESULTS

An analysis of covariance procedure was employed in an effort to analyze the post-treatment performances of subjects on the *Metropolitan Achievement Test, (Reading Comprehension Subtest), Intermediate, Form JS* (1978) and the *Heathington Intermediate Scale* (1976). On the Metropolitan Achievement Tests the mean score of the computer treatment group was 42.93 (S.D. = 10.69), while the mean score attained by the student selected book group was 39.36 (S.D. = 11.48). The results of the ANCOVA approached significance ($F_{1,,17}$ = 3.59, p. < .069).

The mean scores on the Heathington Intermediate Scale were 86.43 (S.D. = 14.34) for the computer treatment group and 82.50 (S.D. = 21.31) for the student selected book reading group. The results of this ANCOVA were not significant ($F_{1,}$ $_{17}$ = 1.59, p. < .216).

DISCUSSION

The data seem to indicate that drill and practice of reading

comprehension skills delivered through applying a specific microcomputer program did not have a deleterious effect on reading achievement test performance. The trend, as reflected by the marginal significance of the ANCOVA would tend to reflect some *possible* benefits of using microcomputers for the purpose of providing practice in comprehension skill development.

With regards to reading attitudes, the subject's enthusiasm which was frequently observed during the computer treatment condition, did not appear to carry over to other types of reading instruction or reading in general (at least according to the attitude scale used in this study).

While the results of the current investigation are far from conclusive, implications for further study are evident. Research is needed with larger samples from larger schools. In this way, a control group could be employed. In the current study, which compared two supplemental treatments, one can conclude that the effects of both interventions were relatively equal. A pure control group, however, would shed more light on whether the supplemental programs were actually better than no supplemental treatment.

Additional, naturalistic investigations involving other computer instructional programs need to be conducted because the current results have limited external validity or generalizability. That is, they should not be generalized to other commercial software programs or different instructional kits designed for individualizing students' reading. In addition, future studies should implement longer treatment schedules involving more frequent treatment sessions so that possible treatment effects have more opportunity to accrue.

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MICROCOMPUTERS FOR ELEMENTARY TEACHERS

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The objective of this paper is to 1) present a model for teaching computers to elementary teachers and 2) present a survey given to the first year students enrolled in the beginning course concerning the course and their perceptions.

Computer Courses

During the 1982-83 year Ball State University instigated the establishment of computer courses for elementary teachers. The Elementary Education Department collaborated with the Computer Science Department to form courses that would lead to computer endorsements for teachers in Indiana. (18 quarter hours.) The courses consisted of the following:

1. EDEL 598 Microcomputer Workshop
   A six week, 2 hour quarter course, to introduce microcomputers to teachers.
2. CS 503 Microcomputer Programming
   CS504
   A 4 hour quarter course, which meets 11 weeks. The emphasis is on BASIC programming. Students produce one program.
3. EDEL 560 Microcomputers in the Classroom
   An eleven week, 4 quarter hour course. Teachers develop three programs they can use in their classroom. They also design a computer curriculum for their grade level, and introduce software to the class that they consider outstanding.
4. CS 505 Advanced Programming
   An eleven week, 4 quarter hour course. Teachers learn more advanced programming and develop one long program. Also several small (4) programs are developed.
5. EDEL 590 Practicum
   Teachers prepare an 11 week curriculum utilizing the computers with students. The class meets three to four times during the quarter. The instructor visits the classrooms.

The course lectures consisted of an introduction to computers (types, components, computer terms), the history of computers, instructional use of computers in the classroom, computer language, criteria for judging software, and management uses of computers in the schools. During the two and half hours of class, one hour was used for lecture and 1½ hours for direct computer usage.

Approximately 300 students have enrolled and finished EDEL 598 as of November 16, 1984. There have been 60 who have finished all five courses.

Survey

The author began teaching the beginning courses during the winter and spring of 1983. At that time a survey was taken among the 95 teachers to determine if the course was acceptable by them, and if the teachers were changing their attitudes about computers by enrolling in the class. From the survey we could also determine if the course was meeting the needs

of the teachers.

The following survey was developed with teachers enrolled in the EDEL 598 classes of January (winter quarter), and April (spring quarter), 1983. There were 95 teachers who completed the formulative/narrative survey.

1. Are the objectives of this course as stated in realistic terms?

Very Much				Not At ALL
78%	16%	6%		

Comments:

2. As a teacher, rate your knowledge (when you began the course) of microcomputers.

Knowledge complete				No knowledge
	7%	8%	21%	64%

Comments:

3. Did you have programming skills with microcomputers before this class?

Very good skills				None at all
		3%	13%	80%

Comments:

4. Did you know how to lead programs into the computer with cassettes or discs before this class?

Could do with ease		Might be able to		Not at all
14%	7%	10%	16%	53%

Comments:

5. Did you enroll in this course with a bit of apprehension?

Completely				Not at all
32%	20%	26%	14%	8%

Comments:

6. Did you develop some ideas of using the computer in the classroom as a result of this class?

Very much				Not at all
53%	27%	18%	2%	

Comments:

7. Would you recommend this course to other elementary teachers?

Completely				Not at all
72%	22%	5%	1%	

Comments:

8. Have the "hands on" practice work of this course been suitable for elementary teachers?

Completely				Not at all
73%	22%	5%	1%	

Comments:

9. My general attitude toward this class is:

Positive			Negative
72%	27%	1%	

Comments:

10. What is there about this class is *least* appealing and rewarding to you?

Testing (35); Not enough time (10); Programming (3); Filmstrips (1)

11. What about this class is *most* appealing and rewarding to you?

Learning BASIC programming (20; "hands on" format work (34); Enthusiastic patient professor (23); Course content (3); Gaining confidence (3); Ideal pace (6); No pressure (1); Learning commands and what they mean (1)

12. What changes would you suggest?

More class sessions (8); More software (6); Practice with discs (5); No tests (3); Have a textbook (3); Homework assignments (2); More programming (4)

From the survey it was found that the teachers did enjoy the course (99%), and would recommend it to other teachers (94%). They liked the lesson "hands-on" work (94%) and did develop some ideas of how to use the computer in the classroom (80%). Few came to the course with microcomputer background (80%), while only a few were apprehensive about taking the course (52%). Overall the survey results were positive concerning the perceptions of teachers toward the EDEL 598 course.

SCHEMA THEORY, READER/TEXT INTERACTION, TEXT ANALYSIS AND METACOGNITION: OVERVIEW AND EDUCATIONAL IMPLICATIONS

RHONDA HOLT ATKINSON

DEBBIE GUICE LONGMAN

TIM PARRISH

Durkin's (1978) study of reading instruction in elementary classrooms found that teachers spent less than one percent of instructional time teaching comprehension. In 1981, Durkin followed-up this study by examining the teachers' manuals of six basal reader series for evidence of specific comprehension instruction suggestions; she found that the manuals emphasized assessment and practice rather than explicit instruction. Furthermore, she found that "children receiving the instruction never do see the relationship between what is done with reading in school and what they should do when they read on their own" and noted the absence of "attempts to explain what it means to answer to question, and, second, what the possible strategies are for getting it answered." In a study of basal readers, Johnson and Byrd (1983) assessed five basal series for comprehension instruction that included the following four elements: goals, structure, causal relationship between strategy and comprehension improvement, and evaluation. They found no instruction which included all of these components.

Thus, it appears, for the most part, good readers are not taught how to be good readers by classroom teachers nor do they learn these skills from their basal readers. In addition, as teachers of developmental students, our experience has been that texts do not go beyond merely defining reading skills and providing practice. Too many times "remediating the skill" is synonymous with giving students additional skill practice, not teaching or re-teaching the skill. These instructional techniques did not work in elementary and high school and will not work in the post-secondary developmental class.

How, then, do good readers acquire the skills which make them good readers? Gambrell and Heathington (1981) assessed good and poor adult readers' awareness of task and strategy variables which influence reading. They found that, in general, adult poor readers are not as aware of strategy variables or their role in facilitating comprehension as better readers. It appears that good readers have internalized some system or process, which they learned intuitively, for comprehending text. This process, subconscious in the good reader, is one in which the reader has some concept about what should be understood from expository text. The good reader determines which information s/he needs to understand by using his/her background knowledge and information provided by the text. The good reader seems to know when reading purposes are met and adds what is learned to past learning. When reading expectations are not met, the good reader seems to have a system for coping with the discrepancies.

If good readers possess this process, then it must be possible to conceptualize the process. And if we can conceptualize the process, we can teach it. Collins and Smith (1980) agree that the cognitive approach to education assumes that if the

explicit processes which underlie reading comprehension can be specified in enough detail, we can find methods to teach this process to students. Since the developmental reader does not subconsciously internalize the process, we must explicitly teach a method of controlling the reading process.

Models of Reading

Metacognition is the conscious control of reading and is the framework which embodies text and reader variables. Kleuwe conceptualized the relationships between these variables and the metacognitive framework, and Buschel (1982) further developed this relationship. These models of Kleuwe and Buschel combine Flavell's (1979) variables of person, task, and strategy variables with Brown and Smiley's (1978) directive and evaluative variables of executive control. Because these models are complex and are written with a research perspective, they are not suitable for instructing developmental students.

We need to develop an instructional model of the reading process which is theoretically based and which developmental students can understand and learn is needed.

An Instructional Model of Reading

Our instructional model, like the models developed by Buchel, is based on a combination of metaknowledge and executive control factors and is composed of several factors which constantly interact with each other as reading takes place. The reader should always be able to know his/her location on the model and where s/he is going. This knowledge will enable the reader to be more informed and active about the process of reading as it takes place.

Two sources supply information to be processed. The first and most obvious source is the text itself. The text brings information to the reader. This information consists of words (vocabulary) and meaning (content) presented in an organized text structure. The second source of information is less obvious to the reader and is often not even considered as part of the reading process by the reader. This source is the reader. The reader contributes background knowledge and knowledge-related concepts to the text information. The reader is also responsible for knowing what s/he wants to get out of the text and how that information will be acquired.

The interaction between these two sources of information determines the quality of the reading process. The reader uses background knowledge along with a survey of what the text contains to make predictions about what s/he plans to derive from the text. This aspect of the process is indirectly related to the evaluation component of the process in that the reader must know what s/he wants to get out of the text in order to know if s/he was successful. The reader uses pre-set standards of evaluation to decide if s/he was successful in accomplishing reading goals. If the reader is successful, s/he adds the new information to old information and begins the process again. If the reader is not successful, s/he has preplanned strategies to resolve problem areas. These strategies are used to help the reader meet reading goals. The procedure is then repeated.

Text

Although understanding of written discourse takes places in the reader's mind, the readability of the text exists independent of the reader (Moe, 1979). In this instructional model of reading, the degrees of understanding within the text basically consist of three aspects: structure, context and vocabulary.

In the past readability formulas have dealt mostly with the number of syllables in words and the length of the sentences within a passage, both of which are surface features of text. This shallow examination of text omits, to a large extent, consideration of content and structure and thereby falls short of a thorough understanding of text needed to evaluate a developmental reader's difficulty in processing text.

Kintsch and Vipond (1979) have developed a more complete model of text which takes into account all three elements of text (structure, content and vocabulary) and which provides a method of determining readability which considers the text's concept load and the way the text conveys these concepts to the reader. They propose that readability might be better determined in terms of concepts drawn from Kintsch's model, such as how often a reader must search long term memory in order to make a connection between present and past input and the number of bridging inferences that must be made. The more inferences the text requires, the more difficult the test for the reader.

Using text analysis instructors can better understand their texts and thereby "prepare comprehension lessons that emphasize processes (both top-down and bottom-up) as well as products. Such lessons provide students with tools for comprehension which can be implied independently in later reading" (Richgels, 1984). Richgels lists four areas in which teachers may improve classroom instruction:

1. Meaning vocabulary and paraphrasing. Teachers can help readers to better comprehend by developing their repetoires of known concepts and their ability to paraphrase sentences. By doing so teachers increase students' potential for . . . understanding the smallest elements of the text, the words.

2. Main idea. Identifying the main idea . . . is usually approached in terms of identifying the topic of a selection, which in turn is picked out on the basis of which is the most frequently mentioned concept. Teachers should help students distill the gist of a selection in a manner that parallels Kintsch's chunking and consolidating cycles.

3. Inferring. Inferring is a natural and pervasive part of comprehension (Schallert, 1982). Kintsch shows where gaps in a text's conherence graph require that inferences be made. Otto, et. al. (1981) and Richgels and Hansen (1984) have described a procedure, glossing, for writing marginal notations which facilitate readers' understanding.

4. Prior knowledge. All teachers know that it is easier for their students to comprehend a passage when its subject is familiar to then. Good teachers provide background information before assiging reading on unfamiliar topics.

METACOMPREHENSION

Readers use metacognitive knowledge, control of text and reader variables to develop goals and establish criteria for comprehension success. Goals and evaluation standards, in turn, are used to select processing strategies for comprehension. If the criteria for comprehension success are met, new information is added to the schema of the reader; if the criteria are not met, resolution strategies are selected by the reader. Goal-setting, processing, monitoring, and resolving comprise the basis of metacomprehension (Davey and Porter, 1982).

In the instructional model of reading, comprehension processing stratgegies include identifying text structure, finding main ideas and supporting details, drawing conclusions, and perceiving relationships.

We can teach the structure of expository text through the use of signal words and relationship between content area and structure patterns. Knowledge of these structures aids the reader in setting appropriate goals for understanding. The reader can identify the type of information needed by examining the questioning words used to set purposes for reading.

Teaching readers to find main ideas and supporting details, to draw conclusions, and to perceive relationships can be accomplished through direct and explicit instruction of these skills. Since direct instruction assumes that teaching is more than placing students in a conducive atmosphere in the hope that they will invent the appropriate strategies for themselves (Roehler and Duffy, 1978), the instructor must be able to verbally demonstrate these skills, as well as explain the processes involved in their use.

These instructional strategies are based on the concepts of informed teaching and modeling. Informed teaching includes knowing what strategies are, how they operate, and when and where readers should use them. These strategies are often not used because they are not understood and because there are no descriptions of these strategies in teachers' manuals (Paris, 1984). The basis of modeling is the assumption that if instructors describe their own conceptions of a test (so that students can see cognitive processes responding to a specific passage), students will realize how and when to do apply these processes (Davey, 1983).

Modeling and explicit instructional strategies include the following:

(1) Text/schema links. Text cluec (key words, phrases, etc.) or background associations which affect coherence are identified by the instructor.

(2) Direction. Leading questions that foster the reader's logical organization of concepts and enable the student to identify main ideas, locate supporting details, and draw conclusions are modeled by the instructor.

(3) Association. The instructor identifies and/or requests other relationships (i.e., comparison/constrast, analogies, uses, etc.). Perceiving these relationships aids in the expansion and use of background knowledge (Atkinson and Longman, in press).

(4) Justification. Students are asked to identify text/schema links used to indicate main ideas, supporting details, and conclusions.

One reason for comprehension failure may be the reader's incorrect formulation of hypotheses and comprehension goals. The reader can resolve this problem by comparing comprehension purposes with the content of the text. If the original hypotheses seems to be correct, the reader should focus on re-reading and re-organizational strategies. Re-reading strategies include skimming and narrowing text information (Davey, 1983) while re-organizational strategies encompass paraphrasing or verbalizing confusing points (Brown, Campione, and Day, 1981). Reading ahead for clarification is the third way to resolve comprehension difficulty (Davey, 1983).

The reader may also fail to comprehend because of his/her inability to identify unknown words. One strategy for the resolution of word identification failures is the use of text-based (Table 2) and framework-based context clues. Framework-based context clues do not rely on written text clues, but are derived from the reader's background knowledge/schemas of surrounding words. (Atkinson and Longman, 1985.).

Summary of Implications

In summary, we have noted the following implications for the instruction of post-secondary developmental readers:

1. Students have received little instruction from teachers or basal readers in elementary schools.
2. Post-secondary texts often provide definitions and drill of skill rather than direct instruction of skills.
3. Good readers have a subconscious model for processing expository text; poor readers have no model.
4. A model for processing expository test can be conceptualized and explicitly taught.
5. Instructors must be aware of all phases of the instructional model and must be able to demonstrate and teach them.
6. Readability should focus on concept load and text cohesion.
7. The instructor can provide students with tools for comprehending difficult text.
8. Teachers must provide background knowledge for schema development and opportunities for developing schema.
9. Instructors must utilize informed teaching and modeling strategies to demonstrate comprehension processing and resolving strategies.

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CRITICAL READING
CAN IT BE IMPROVED THROUGH THE USE OF METACOGNITIVE STRATEGIES?

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The ability to critically analyze written materials has long been recognized as being crucial to the educational process. Building on Dewey's (1910) conception of reflective thinking, and using Bloom's (1956) and Barrett's (Barrett & Smith, 1976) taxonomies for classification of educational objectives has allowed researchers to formulate a more precise image of the concept 'critical reading'. Critical reading involves the ability to evaluate information and draw objective and logical conclusions (Dejnozka & Kapen, 1982), it is personal and allows for different opinions and judgments (Wardeberg, 1967).

During the 1950's and 1960's, many studies which delved into more traditional ways to teach critical reading were conducted. Researchers attempted to design specific instructional units to increase critical reading ability (Maney, 1958; Mason, 1963; Nardelli, 1957; Sochor, 1958; Struthers, 1969; Wolf, King & Huck, 1968). Many of these instructional procedures appeared, on the surface, to have been effective. However, little evidence can be found, in research, of any long lasting effects.

The failure of many of these training studies to bring about an increase in the use of critical thinking and other intellectual strategies indicated a need for a new perspective on the problem. Metacognitive strategies, developed through a fusion of ideas from both educators and cognitive psychologists, could provide the heretofore missing link between cognitive processes and critical reading ability. Metacognition refers to one's awareness of and control over his/her own mental processes (Brown, 1980). Research is now guided by cognitive

theories which draw support from a wide theoretical base and which cut across many academic domains. Barriers between learning theorists and cognitive developmental theorists are disappearing (Brown & Bransford, 1982). While past studies looked at only the product of experimental procedures, present day researchers are analyzing the intellectual processes as well.

Accepting the premise that use of metacognitive strategies and comprehension ability are related, researchers and practicioners have begun to develop instructional procedures which will increase the likelihood that students will employ such strategies. If, as many researchers propose (Worden, 1981; Brown, 1980), critical reading should be considered as an extension of the overall comprehension process rather than as a set of distinct sub-skills, a relationship between critical reading ability and metacognitive awareness can be drawn.

This study was designed to determine the effectiveness of a metacognitive strategy training package specifically developed to increase critical reading ability. Students who are instructed with this training package should become more aware of their own mental processes. They should know when comprehension problems occur and should have strategies available to remedy these difficulties. These strategies, when appropriately selected and used, should increase the probability that the students will critically analyze written materials presented to them and, in addition, should increase general comprehension ability.

The major purpose of this study was to test the strength of the relationship between the use of metacognitive strategies and critical reading ability. It was conducted, specifically, to test the effectiveness of a teaching procedure designed to improve critical reading ability by training students in metacognitive strategies. The hypothesis of this study was that the students who received the metacognitive training would demonstrate not only increased critical reading ability, but also increased general comprehension ability.

This preliminary study was designed to determine if future research, with larger numbers of students, was warranted and to test the effectiveness of experimental procedures and materials.

Subjects

Fifteen students enrolled in a Developmental Reading Laboratory served as subjects for this preliminary study. Students reading below grade level were selected to test the effectiveness of this metacognitive training package because research has indicated that such students often are not spontaneously using metacognitive strategies and would probably benefit from this type of instruction (Baker & Brown, 1980; Goetz, Palmer & Haensley, 1983; Paris & Myers, 1981; Pitts, 1983). These students were randomly assigned to one of three groups: Experimental Group 1, Experimental Group 2, and Control Group. There were five subjects in each group.

Materials

After a thorough search of researcher-designed tests (Struthers, 1969; Taba, Levine & Elzey, 1964; Wolf, et al, 1968; Worden, 1981), the Intermediate Level of the Ohio State University Critical Reading Test (Wolf et al, 1968) was chosen as a test of critical reading ability. This test was chosen because it included appropriate skills and because test items were well written and seemed to tap critical reading ability. Since there was only one form of the test, odd numbered items were used as a pre-test and even numbered items as a post-test. Passages and their accompanying questions were selected from commercial materials used in the Reading Lab to serve as general comprehension probes. Test passages used in experimental treatments were also copied from commercial materials used in the Reading Lab.

Procedures

The duration of this study was three weeks. Treatments lasted approximately thirty minutes each day. Following is a discussion of experimental procedures used with each group.

Experimental Group 1

Experimental Group 1 was instructed with the metacognitive strategy training package which included two phases. During Strategy Training (Phase 1), subjects were instructed in the use of four strategies (questioning, summarizing, predicting, and speculating on the author's intended tone or purpose). During a second phase called Corrective Feedback Training, subjects participated in an adaptation of the Reciprocal Teaching Procedures developed by Palincsar and Brown (Palincsar, 1984; Palincsar & Brown, 1983, 1984). Working in groups of five, members took turns being 'group leader'. Using presented text passages, the 'leader' discussed his/her use of the strategies following a prescribed sequence and invited active participation of other group members as he/she critically analyzed the passage. The researcher remained a group member and provided modeling, probing, and prompting whenever necessary.

Experimental Group 2

Experimental Group 2 subjects were taught through the use of an instructional package referred to as a Passive Written Procedure. Subjects were taught the same four strategies but were given written rather than oral instructions. Minimum teacher explanation was provided and there was no opportunity for group oral interaction. During Phase 2, these subjects were asked to complete a written worksheet which required them to use the strategies while critically analyzing the same text passages as those used by Group 1 during Corrective Feedback Training.

The major differences between the two experimental groups concerned not only the method of instruction (written versus oral) but also the presence of a metacognitive element. Subjects in the second experimental group were less likely to be cognizant of their own mental activities since they had not been provided with the corrective feedback which should facilitate the monitoring of such processes.

Control Group

The control group only received the pre- and post-tests (on the same days as the experimental groups). During the remaining days, they participated in regular Reading Lab instruction.

Results

Data obtained from this study was quantitatively analyzed

using an Analysis of Covariance and qualitatively analyzed through informal observations and discussions. The results are discussed below.

Quantitative Analysis of Data

An Analysis of Covariance was performed on both the critical reading and the comprehension tests to analyze variance between and within groups. Method of instruction, as determined by group membership, was the independent variable. Post-test scores were used as dependent variables and pre-test scores as covariates.

Test scores indicated that experimental procedures did not significantly affect performance on the critical reading tests at the .05 level of significance, $F(2, 10) = 3.41$ (See Table 1). Comprehension test scores also indicated a non-significant difference in group scores $F(2, 10) = 1.45$ (See Table 2).

Informal Observations

Informal observations revealed that subjects in Experimental Group 1 seemed to have improved not only in their use of instructed strategies, but also in their attitude toward reading. Such improvements were not noted with Experimental Group 2 subjects.

Experimental Group 1 subjects appeared to improve in their use of the instructed strategies. The ability to formulate good comprehension questions gradually improved throughout this three week session. Initially, subjects had problems not only with picking out improtant information about which to ask questions, but also in the actual wording or formulation of the questions. As students became more proficient at choosing main ideas and topic sentences, they not only improved in their ability to summarize, but also improved in their question formulating ability. Gradually, less important ideas and trivial details were deleted from both summaries and questions.

The skill of predicting should have allowed students to get a 'mind-set' for what a passage would be about. During the Corrective Feedback phase, subjects began to use such predictions to mentally recall their background experiences and prior knowledge about a particular subject. Building upon this knowledge, they admitted, increased their understanding of the passages.

Speculating on the author's intended tone or purpose proved to be a very effective, stimulating activity. Students initially had a difficult time reacting to the text but, as they became more involved in the oral interaction and more self confident about their own strengths, they improved in their ability to more intelligently discuss such things as propaganda techniques, emotional tone, and author's true intentions. They were able to compare and/or contrast their own feelings and opinions to those of the author.

While the actual strategy instruction was an important and critical first stage, the continuing 'instruction' that occurred during the Corrective Feedback stage (when they were encouraged to interact orally) was even more important to the developing critical reading and metacognitive abilities. At first, the researcher did most of the talking, but gradually the students 'took over'. An important point is that the students appeared to recognize the interrelatedness of these strategies as evidenced by their ability to use one or all of them as the necessity arose. This would seem to indicate that strategies had been internalized. Even though these students were labled as 'poor readers', many creative ideas were presented and intelligently discussed and analyzed.

An informal evaluation of the students' perception of this instructional procedure revealed many positive attitudes. All five students in this group felt that the strategies they had learned would be very useful in future college courses. They could even given specific examples of how they were already using these strategies in other courses they were taking.

Discussion and Conclusions

Despite the apparent success of training procedures (as perceived by both the researcher and the subjects), statistical analysis revealed that the metacognitive critical strategy training employed in this study did not produce significant gains in achievement on either critical reading or general comprehension tests. A carefuly analysis of procedures and materials employed in this exploratory study enabled the researcher to speculate upon reasons for the lack of statistically significant results and to recommend modifications for use in future studies.

A possible problem could have been the tests. The critical reading test was too short; critical skills were not equally divided between pre- and post-tests. The comprehension tests were not of sufficient difficulty and, consequently, did not produce adequate variance between the groups for either the pre or the post-test. This could possibly have masked treatment effects which might have otherwise surfaced. The possibility also exists that the subjects had successfully learned and internalized instructed strategies but that these tests did not adequately measure such improvement. Testing instruments and procedures should be closely scrutinized and appropriately adapted before future studies are implemented.

Informal discussions and observations of strategy use indicated the success of this procedure; however, statistical data failed to reveal significant results. Because of this disparity, a third phase for Experimental Group 1 (in addition to Strategy Training and Corrective Feedback Training) which would allow for additional practice of instructed strategies by pairing subjects and allowing them to 'critically discuss' selected newspaper articles will be included. This might increase chances that the subjects will apply learned strategies in a testing situation and that they will use them in their daily lives.

The small group size could also have been responsible for the lack of significant results. Increasing the number of involved subjects, should increase chances of finding treatment effects.

A different statistical procedure than the one employed here is recommended for future studies. Rather than an Analysis of Covariance, a Repeated Measures Analysis should allow for a variety of comparisons.

Although statistical analysis failed to reveal the effectiveness of this training procedure, its potential for increasing critical reading ability should not be dismissed. Qualitative improvements noted in subjects' strategy use provided sufficient evidence for further study into the effectiveness of this training procedure.

TABLE 1
CRITICAL READING TESTS

Descriptive Statistics

Pre-Test

Group	n	x	SD
Exp. 1	5	68.00	8.37
Exp. 2	5	70.00	9.35
Control	4	80.00	7.07
Total	14	72.67	9.35

Post-Test

Group	n	x	SD
Exp. 1	5	68.00	14.40
Exp. 2	5	59.00	16.73
Control	4	63.75	7.50
Total	14	63.57	13.36

Ancova Table

Source	SS	df	MS	F
Between	393.76	2	196.88	3.41
Within	577.51	10	57.75	
Total	1135.71	13	87.36	

TABLE 2
COMPREHENSION TESTS

Descriptive Statistics

Pre-Test

Group	n	x	SD
Exp. 1	5	93.80	4.09
Exp. 2	5	85.80	12.87
Control	4	93.00	4.24
Total	14	90.09	8.65

Post-Test

Group	n	x	SD
Exp. 1	5	92.60	3.78
Exp. 2	5	84.00	11.85
Control	4	95.75	6.65
Total	14	93.00	4.24

Ancova Table

Source	SS	df	MS	F
Between	72.20	2	36.10	1.45
Within	249.29	10	24.93	
Total	1095.43	13	84.26	

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REACTION: CRITICAL READING ABILITY—CAN IT BE IMPROVED THROUGH THE USE OF METACOGNITIVE STRATEGIES?

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This study was modeled after the Brown and Palincsar training studies (1984) in which seventh graders whō were 2-3 years behind in comprehension served as subjects in reciprocal teaching studies which lasted from 8 weeks to 6 monts. the subjects showed remarkable improvement in answering questions on "novel" passages as well as on regular science and social studies materials in their regular classrooms (383-87).

In this study (Parson, 1984)there are problems which overshadow the results obtained and make them very questionable as the author has noted in her paper.

1. The sample size is small (5/group) with accompanying statistical ramifications, and lacks precise description, i.e., developmental lab students.
2. Questions of validity and reliability of tests and materials arise due to a lack of description, i.e., materials from reading lab (not named nor selectin procedure outlined) and pertinent information regarding the *Ohio State University Critical Reading Test*is lacking such as the reliability coefficient between the odd and even items which were used as the pre- and post test in this study.
3. The length of the study was limited (3 weeks) and the exact number of sessions is not explicit, i.e., 15?
4. The content of the training procedure needs to be spelled out more explicitly.

Though this study lacks enough information to be replicated, the author presents a very good *qualitative* analysis of her findings. She seems to possess the "vision" that Tierney and Cunningham (1984) have noted a concern for:

> When we say that someone has "vision", we generally mean two things. We mean that the person has the ability to see what is possible to achieve or accomplish, given the strongest concerted effort. We also mean that the person has the ability to see how all the parts of a complex operation can fit together and work together dynamically (639-40).

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RESEARCH IN STUDENT TEACHING: TRANSFER FROM THE IVORY TOWER TO THE CLASSROOM

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Successful performance on the *National Teacher Examination* (NTE) is required by law in 17 states in order for graduates of approved teacher training programs to apply for certification by the state departments of education. Little research has been done on the correlation between student teachers' scores on the revised NTE and their actual classroom performance. This study, funded by the Louisiana Board of Regents, was designed to answer two research questions:

(1) How well do the scores from the revised NTE, the *American College Test* (ACT), cumulative grade point average, sex, race, age, and certification level predict student teachers' classroom performance, as measured by three instruments from the *Teacher Performance Assessment Instruments* (Capie, Johnson, Anderson, Ellett, & Okey, 1979)?

(2) How well do student teachers chosen at random from seven state universities perform in the classroom, as measured by the TPAI?

Review of the Literature

The American public indicated in a 1979 Gallup survey that they believed the best way to improve the quality of public schools was to improve the quality of classroom instruction. In response to the demand for improved teacher performance, many states and individual school districts have initiated policies which affect the certification, hiring, and tenure of teachers (Gudridge, 1980; Viaanderen, 1980). In many states this has led to legislation which has, at times, prescribed the teacher evaluation instruments to be used (Beckham, 1981).

The goal of evaluation of teacher effectiveness at the preservice level is two-fold: degree-granting institutions and certifica-

tion agencies want some form of quality control, and also wish to diagnose and remediate preservice teachers' weaknesses, in order to improve classroom performance. Darling-Hammond, Wise, and Pease (1983) stated these concepts in terms of detecting, preventing, and correcting incompetencies. Detecting involves the development and application of instruments designed to measure teacher knowledge or behavior. Preventing focuses on the development of effective teacher education programs. Correcting involves intervention utilizing results of evaluation measures.

Research in teacher evaluation has focused on the identification of factors which influence teacher performance and on the establishment of valid and reliable measures of these factors. Previous research has centered on studies of intelligence, academic ability, personality characteristics, the teacher's ability to manipulate and/or control the educational environment, time on task, and teaching knowledge. Review of the literature reveals:

(1) Studies investigating the relationship between teachers' intelligence, college grade point average, college board scores and teacher effectiveness reveal small positive correlations (Hawn, 1981; Hellfritzch, 1945; LaDuke, 1945; Lovelace, Collins & DeSanti, 1984; Rostker, 1945). Some preliminary studies also indicate that a measure of writing may prove a better predictor of classroom performance than other measures of academic achievement.

(2) Prediction of teacher performance based on teachers' attitudes, flexibility, interests, problem-solving ability, creativity, and professional commitment is ineffective. King (1981) reviewed the literature and found no set of skills, interests, or abilities was able to discriminate between effective and ineffective teachers. Cronbach (1967), Hunt (1975), and Joyce and Weil (1972) found little, if any, correlation between teacher characteristics and effectiveness based on the match of teacher and student traits.

(3) Ellett, Capie, Okey, and Johnson (1978) found the teacher's ability to manipulate and control the classroom environment is a factor related to teacher performance. Ellett, Capie, and Johnson (1980) urged that research be conducted in this little-explored area.

(4) Academic engagement, or time and quality of time on task, appears to be an important factor in evaluating teacher effectiveness. The teacher who is able to keep students on task, involved in meaningful work, is more likely to be successful and affect subsequent learning and achievement (Lomax & Cooley, 1979). More specifically, Anderson and Scott (1978) determined that certain types of academic activities were more likely to produce quality engagement than others. Despite this, few studies have been conducted which related specific tasks to academic engagement (Anderson, 1976; Capie & Tobin, 1980).

(5) Though it seems logical that the greater the teacher's knowledge in the teaching field, the greater the chance of that person being an effective teacher, little research has been published which directly relates teaching knowledge to success as a teacher (Schalock, 1979). The studies reported in the literature have almost exclusively used grade point average or NTE scores as measures of teaching knowledge. Results of these studies reveal low correlation coefficients, at best.

Methodology

Determining interrater reliability. Eight investigators representing seven major Louisiana universities were trained to observe student teachers with the TPAI in the fall of 1983 by Dr. Charles Johnson, Professor, University of Georgia, one of the senior authors of the instrument. All eight raters were college professors, who as a group, had acquired 70 years experience in observing student teachers. These raters spent three days learning to administer the TPAI. At the end of the training, they examined a sample portfolio, observed a videotaped lesson, and rated the teacher's performance on three instruments of the TPAI: *Teaching Plans and Materials, Classroom Performance* and *Interpersonal Skills.* Interrater reliability was computed by Dr. Lee Hoffman, Assistant Director, Bureau of Evaluation, Louisiana State Department of Education, and was found to be .875 for each instrument.

Higher interrater reliability is noted when observers can actually go into a classroom and conduct the observation, since the video camera never tapes exactly what a rater would observe during actual classroom instruction. The interrater reliability figures obtained agree with those found in previous studies, which indicate that, with training, agreement rates of 85 to 90 percent are common (Capie, Ellett & Johnson, 1979).

Sampling procedures. Ninety college seniors who had completed all prerequisites for student teaching, and who had enrolled in the student teaching practicum, were chosen at random from the population of all seniors student teaching during the academic year 1983-1984 at seven Louisiana universities. Half the students were observed during the fall semester, half during the spring semester. All students participating in this study were assured of total anonymity.

Data collection. The eight investigators observed the 90 student teachers three times each, with the exception of one student teacher who resigned from student teaching after the rater had completed two of the three observations. Some 269 observations were conducted, totaling 672 hours of documented clinical observation. Raters also collected the following demographic data and achievement scores on each subject: ACT and NTE scores, cumulative grade point average at the end of the semester prior to student teaching, race, sex, age, and certification level (elementary, secondary, or K-12).

Results of Data Analyses

Descriptive statistics were used to analyze demographic data. Of the 90 students participating in the study, 74 were female and 16, male. Of the females, 11 were black, one was Hispanic, and 62, white. Four of the males were black, one was Hispanic, and 11 were white. Mean age was 24.26 years, with a mode of 22 years, and a range of 20-46 years. Mean cumulative grade point average was 2.98, with a standard deviation of 0.44 on a four-point grading scale. Of the 90 subjects, 38 were transfer students. Forty-eight desired elementary certification, while 39 would apply for secondary teaching certificates. Two students were enrolled in programs which would enable them to be certified K-12.

The investigators found it difficult in some cases to obtain students' ACT and NTE scores. Fifty-nine of the 89 subjects had scores available from the ACT, while 78 took the Core Battery on the NTE. Only 57 completed the Area Examina-

tion in their field of certification. Students' scores on the ACT ranged from 15.63 (Math) to 19.44 (Science), with a Composite Score of 17.35 (s.d. = 5.17). National percentile scores on the NTE were: General Knowledge, 45th percentile; Professional Knowledge, 38th percentile; Communication Skills, 48th percentile.

On the three instruments of the TPAI, students are considered to have demonstrated minimal competency on any of the 45 indicators if they obtain a score of three on the five-point scale used for each indicator. (Note: In order to observe the best possible instruction, all observations were scheduled at least one week in advance. Also, the scores on the indicators were averaged across the three observations, in order to determine students' usual classroom performance.) As a group, the 89 subjects in this study scored at the minimal level of competency on only one indicator on the *Teaching Plans and Materials Instrument.* They achieved minimum competency on 15 of 20 indicators on the *Classroom Procedures Instrument,* and met the criteria for minimum competency on all 10 indicators on the *Interpersonal Skills Instrument.*

Pearson product moment correlation coefficients were computed to determine the extent of the relationship between:

(1) students' ACT scores and grade point average, sex, race, age, and level of certification. As a group, these correlations were very low (r = .57 and below). No strong relationships were observed.

(2) NTE and ACT scores. High correlations were noted between subjects' ACT Composite Score and the NTE General Knowledge and NTE Communication Skills subtests (r = .83, r = .75). These tests appear to be measuring the same factors.

(3) NTE scores and cumulative grade point average, sex, race, age and certification level. Again, as with the ACT scores, correlations were weak, with r's ranging from .02 to .42. No strong correlations were noted.

(4) student teachers' scores on subtests of the NTE and TPAI. Results of data analyses revealed no strong correlation coefficients between the NTE and TPAI, with r's ranging from .09 to .33.

Correlated t-tests were computed to determine the degree of change in the effectiveness of the 89 student teachers from the first to the third observation. Results of the analyses reveal no statistically-significant difference in the 89 subjects' performance from the first to the third observation on any one of the three TPAI instruments. In other words, student teachers exhibited little change in planning for instruction, actual classroom performance, and interpersonal skills from the beginning to the end of the student teaching practicum. As previously noted, the subjects were deficient in all skills measured by the *Teaching Plans and Materials Instrument,* and in 15 of the 20 indicators on the *Classroom Procedures Instrument,* while they were judged minimally competent on all indicators of the *Interpersonal Skills Instrument.*

Results and Conclusions

Results of this study obtained through statistical analyses of data collected are summarized below:

(1) As a group, the 89 student teachers met or exceed the minimum competency level on 26 (58%) of the behavioral indicators on the three TPAI instruments used in this study.

(2) Correlation coefficients computed between subjects' ACT scores and their cumulative grade point average, sex, race, age, and level of certification are very low, and reveal no educationally significant relationships.

(3) Analyses of correlations between NTE and ACT subtests reveal strong correlations between the subjects' ACT composite scores and their scores on the NTE General Knowledge and Professional Knowledge subtests.

(4) Results of correlation coefficients computed between NTE scores and students' cumulative grade point average, sex, race, age, and level of certification suggest that students' performance on the NTE cannot be predicted on the basis of any of these variables.

(5) Correlations between student teachers' academic achievement on the NTE and their actual classroom performance as measured by the TPAI are very low. No robust correlations were noted in any of the analyses.

(6) No statistically-significant differences were noted between the 89 subjects' performance on the three instruments of the TPAI from the first to the third observation.

Conclusions drawn from the results of the data analyses include:

(1) Student teachers' performance on the revised NTE is a poor predictor of actual classroom performance, as measured by the TPAI. While the NTE serves as a paper-and-pencil test of teacher knowledge, it will not reveal how well student teachers will actually perform in the classroom.

(2) Student teacher performance, as measured by the TPAI, was highest in the area of interpersonal skills (classroom management and discipline), low in the area of classroom performance, and lowest in the area of planning for instruction. The NTE, used in conjunction with the TPAI or a similar instrument with high validity and reliability, could perhaps provide a more accurate description of student teachers' abilities. Such a combination of measures of teacher effectiveness would enable certification agencies and local school districts to more effectively select teachers, which should ensure higher academic performance among school children.

(3) The quantity and quality of supervision of classroom performance of student teachers, regardless of the source, is vital to the development of teacher effectiveness. Student teachers enrolled in this study were critical of the quality and quantity of supervision they received. Training college and classroom teachers who supervise student teachers in clinical supervision with an instrument similar to the TPAI might result in an increase in student teachers' effectiveness.

(4) The high correlations between certain subtests of the ACT and revised NTE suggest that these instruments may be measuring the same variables. Rather than overtesting students, perhaps teacher training institutions might consider exempting students who score high on the ACT from similar subtests on the NTE, saving students needless expense.

Results and conclusions from this study are generalizable only to similar populations of student teachers enrolled in teacher training programs have characteristics in common with those seven which participated in this study.

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THE JUNIOR GREAT BOOKS PROGRAM: CAN IMPACT BE MEASURED?

NANCY BORAKS

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The Junior Great Books (JGB) Program developed by M. Adler and others for grades 2-high school provides a variety of selections from "great literature" which are to be discussed within a small group framework. The guidelines for discussion are carefully delineated and taught to discussion group leaders in workshops presented by JGB representatives. JGB is used in many gifted and talented programs in Virginia; yet, a review of the literature (CIJE, ERIC) revealed no research on JGB. The only study found on adult GB programs evaluated attitude, concomitant cultural knowledge, ability to discern quality of writing and reading habits. There were no significant differences found between adult GB and non GB participants. Apparently the JGB program has been evaluated largely through the use of anecedotal records - i.e., informal surveys of teachers', workshop leaders' and students' affective reactions.

To learn more about JGB, I took the JGB leadership training program and then ran a JGB program for group of fifth grade volunteers. It was while leading this group that I began to wonder about the program. It did not seem possible to stick to the prescribed guidelines and still conduct an effective lively discussion. It was also not clear if the program added to student's skills or simply allowed students to display skills they already possessed.

The purpose of this paper is to describe the JGB program and consider the development of an instrument for evaluating this program.

Questions on JGB

There are many facets of the JGB program which require examination. Thus, as each component of the program is described below, related issures will be raised.

Philosophy/Goals: The basic tenet of the program is that open active inquiry into great literature will improve comprehension and reading habits. Thus, the goals of JGB are 1) to improve comprehension - specifically interpreting author's meaning and 2) improve reading habits. The framework - namely that deeper reading requires examining author's meaning and examining one's views or interpretations in light of other-is not unique. I.A. Richards (1929) stressed that when one reads one should read to get in touch with the author's meaning. Dewey (1920) emphasized the importance of interaction stating, "left to himself the individual can do little or nothing, he is likely to become involved in his own self-spun web of misconceptions."

The long-term impact of a program with an early focus on critical reading is not clear. Would the much heralded child's tendency "to suspend disbelief" - to read without questioning be lost? Would children tend to learn more about literature and less from literature? Adler, in another context (Adler and Van Doren, 1972) emphasized the point that personal reaction is only valid after carefully considering a story's meaning. The JGB stress is less on reading oneself into a story and more on pulling out an author's meaning and questioning their truth.

Questions: The types of questions asked during JGB discussions and resultant interactions are considered the keys to the program. However, while reading selections vary, the question type suggested in workshops for each age group does not vary. Discussion leaders are not trained to vary the type of question with the age group. Yet developmental/cognitive psychologists suggest that ability to deal with abstract concepts, or high level questions does vary with age.

Process: Guidelines for conducting a JGB program are specific. Each child should contribute, children should generate as many possible answers to the questions as possible, children should verify their answers by looking at the text and children should reflect upon each others responses. Interaction or "shared inquiry" is promoted as the leader asks children if they agree or disagree with peer responses. When children compare/evaluate or seek to find answers different from those of their peers - it is possible that some may be challenged, but others may become threatened.

JGB Leaders: The program is conducted largely by volunteers, usually parents who have attended a two day workshop conducted by JGB program personnel. All who stay for the length of the program become leaders. There are no prerequisites for entering the training program other than paying the required fee. There is an attempt to have two leaders for each session to provide some peer control. Hower, no final test is given, no check of volunteers who set up a program is conducted by JGB personnel.

Sessions: The focus of the initial training workshop for leaders is the development of high level interpretive questions. Suggested questions and instructional inserts are provided in the new JGB student (1984) materials but discussion leaders are expected to spend time planning and developing questions. There is no documentation of the *actual* questions asked during JGB programs or of leaders ability to generate these questions at appropriate times in the discussion.

Evaluating JGB

While each of the issues raised above should be addressed, initially the program must be considered in relation to stated goals.

One reason given by a JGB leader for not evaluating the program was that no appropriate evaluation instrument could be found. While long-term studies are underway to consider the issues raised above, only the initial goal of developing an evaluation instrument will be discussed here.

*Instruments:*Specifically, the goal here was to determine if any type of item could clearly distinguish between JGB and non JGB participants. There are a variety of instruments available for evaluating appreciation and comprehension of literature. yet, most of these instruments are for high shcool students- and do not evaluate the specific goals of JGB: comprehension of author's meaning and deeper appreciation. However, Anderson (1969) developed an interesting instrument to measure profundity of appreciation of literature. This Literacy Profundity Test uses a set of short stories (apx. 100 words), each with five endings representing five levels of profundity. These levels represent a hierarchy - moving from a focus on the physical, mental, moral, psychological to the philosophical.

Anderson established content validity and reliability (split half r.76, K-R.84). This instrument was long, developed for high school students but the concept is excellent and the story topics would capture the interest of all age levels. The major shortcoming of this instrument was noted by Anderson himself. He stated "physical actions of one literary selection might be rightfully judged more profound than mental actions in another." Anderson was not able to demonstrate that training impacted upon awareness of the different levels of profundity.

For these reasons, his instrument was adapted in two ways: 1) passages werer shortened and rewritten to accomodate the reading ability and attention span of the target population; 2) students were asked to directly state their rationale for selecting their ending.

This adapted form spoke to the issue of appreciation but did not assess the initial goal of JGB - deeper comprehension. The questions and instructional inserts in level 5 JGB focus upon identifying and answering interpretive questions and the process of open inquiry. This (higher interpretive) level of comprehension would seem to be more a function of reading or ability; therefore, it was decided to concentrate on the stated comprehension goal of JGB - understanding author's intent.

The final instrument included items directly related to the two stated goals of JGB (author's intent and appreciation) and to two components of the direct instructional program(awareness of question types and attitude toward open inquiry).

The final instruments consisted of five items:

ITEM RATIONALE

Population: the target population consisted of four intact groups of fifth graders. To evaluate the impact of reading level and general ability on responses groups varying in JGB experience (2 years versus no experience) reading level (level 5 and 6) and ability (gifted and average) level were included.

Group I was designated gifted, had two years in JGB and read on 6th grade and above, Group 2 was designated as gifted, had 2 years in JGB and read on a fifth grade level; Groups 3 and 4 had no JGB experience, Group 3 of average ability read on a grade 5 level, Group 4 was designated gifted and these students read on a 6th grade level.

Reading level was established by the SRA test, status of gifted and talented was established using two IQ tests and teacher designation.

RESULTS

The final "Adapted Literacy Scale" was administered to all children, Fall, 1984. All data is reported as raw score because of the unequal numbers in each group. Responses were evaluated to identify those items which seemed to have the greatest potential for discriminating between JGB and non JGB participants.

Preferred Ending: Students were given a stem story and asked to choose between two endings - one rated as less profound (physical/level) and one rated as more profound (philosophical level).

More of Group 3, the non JGB fifth grader average readers, selected the more profound ending (11 of 21). More students in Groups 1 and 2, the JGB sixth gifted fifth (4 of 6) and sixth grade readers (10 of 15) selected the less profound ending. This unexpected pattern can be understood when the rationale for the selected endings is analyzed.

Rationale for Ending: Rationales for student answers were categorized according to whether a) content or by) how the content was presented was mentioned as the reason for the preferred ending.

Rationale seemed to be a function on interaction between reading level, JGB and giftedness. That is, many of the gifted JGB sixth level readers (11 of 15) noted literary qualities - but only two of the gifted JGB students selected their ending becuase they liked *what* the character did or because they liked *what* happened.

Quantity differed but quality of responses on literary qualities of JGB and non JGB seemed equal:

JGB: "It sounds more realistic, also I think it was more actionous," "because it was more exciting. The way it exaggerates is also very good," "because it blends with the beginning, the other does not."

NON JGB: "It told how the ending was and it didn't leave you hanging in the air like ending A did. Besides it was more exciting," "because ending A fits the story better than ending B."

Most non JGB responses were more direct (Groups 3 and 4) - "Because the baby lions got something to eat and didn't get shot," It shows the mother lion is very brave to get them the food they wanted."

Student Questions: Whether all JGB students are considered separately or as a group, they (Groups 1 and 2) generated twice as many high level inference questions as the non JGB program students. Even the quality of interpretation questions varied:

GBP: "If you were one of the lions which ending would you want us to pick?" "There were bones laying in the dried up water holes. Why?"

NON GBP: "Was the mother killed?" "Why were the babies hungry?" "Why was it dry?"

Questions Answered: The single fact question was not answered differently by JGB and non JGB students. Moreover, the single question to draw out interpretation of author's language appeared too difficult for all students.

However, questions three and four were somewhat more viable. Question three, on interpretating character, again seemed to differentiate more between gifted JGB sixth level readers and the other groups. Few children in the other groups answered correctly while seven of the fiftenn JGB students answered correctly.

The fourth question on author's intent in relation to setting, was the single question in this category separating students solely on the basis of JGB participation. Again, combining both fifth and sixth level gifted JGB students (13 or the 21 were able to answer correctly compared to one-third non JGB students). However, children in the JGB and NON JGB gave equally high level responses: "so you can really picture it like it was real," "because they want you to know how life can change and how much it did change," "to let you get the picture or the setting of the story."

Attitude Toward Teacher: To determine if JGB results in a different perception of teacher behavior, children were asked why a teacher would question a response from a student.

Neither JGB reading level nor giftedness seemed to be a factor here - that is, more JGB students regardless of reading/general ability stated that the teacher wants to check a child's reasons - not test or caution the child. More NON JGB students regardless of reading/general/ability view the teacher as a tester.

Attitude Toward Peers: To determine if JGB results in a different attitude toward peers, students were asked why a student would question a peers response. Almost all fifth graders assumed the peer had positive reasons for this.

DISCUSSION

The three items which most clearly distinguished between JGB and NON JGB participants were 1) level of questions students write, 2) attitude toward teachers, and 3) interpretation of author's meaning in relation to setting.

The first two items are dealt with through direct instruction in the fifth level JGB. That is, the rationale for questions and responses is very clearly explained within instructional segments printed in the test.

Two items seemed to be due to an interaction between reading level or giftedness and JGB participation: rationale and author's intent.

The item on rationale needs to be explored further. Guthrie (1980) in analyzing Purves results of high school students, stated that the rationale for literary preferences indicated that

students tend to consider all aspects of a text (form, content, personal reaction) when examining literature in the abstract, but the focus varied when an individual story was considered. In fact, those high school students who were high in reading achievement tended to note content and affect more when an individual story was considered. The results are opposite here. JGB high achieving (in reading) gifted fifth graders do comment more on form than their JGB gifted but average (reading) peers.

Few student seemed to delve into or understand the implications behind the author's choice of words. This single item may not have been appropriate or sufficient for checking this ability.

Use of multiple items would help clarify the types of language (descriptive, idioms, etc.) children can respond to within the "author's intent" framework.

Interpretive questions which focus on character's intent predominate in the JGB book 5. The new JGB edition also stresses questions on the "Truth" of text and author's messages. These types of question should be explored further.

SUMMARY

This initial exploration for item types which would tap the goals of JGB provides some insight into items for a JGB evaluation instrument. there can be no firm conclusions. It is apparent that some program effects of JGB can be tapped through both open and direct questions. It is also apparent that some program effects will vary depending on the reading and general ability of students. Three items best distingush JGB participation: attitude, question development and question on author's intent/setting. However, two other item types seem worthy of further exploration: responses to author's intent on all aspects of text and rationate.

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PUNCTUATION AND INTONATION: THE EFFECTS ON YOUNG READERS' COMPREHENSION AND PERCEPTION OF TEXT

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This paper presents a comprehensive review of the research and literature relevant to the effects of phrase boundaries, line breaks, and other cues in text, on the intonation and resulting comprehension efforts of children. The review will focus on the theory that intonation miscues caused by confusion over punctuation, other phrase boundaries, and line breaks will make the apprehension of text more difficult than necessary for young developing readers. Finally, the evidence in the literature will be examined and the implications for design of texts for young children will be addressed.

Punctuation and Intonation

Gutknecht, Apol, and Morton (1982), from an analysis of second graders' miscues, determined that terminal punctuation and its location in text affects comprehension of less proficient readers. Most second graders in the study comprehended more when they read standard texts in which punctuation appeared randomly at the end of each sentence. At the same time, Gutknecht found that less proficient readers comprehended more when reading modified texts. Modified texts in this study consisted of textual material restructured so that the terminal punctuation was always at the end of a line of text and the next sentence started on the next line. It was concluded that as readers become more proficient, location of terminal punctuation in text does not reduce comprehension, and it was suggested that readers at all levels should be exposed to random terminal punctuation. However, this 1982 study does suggest that less proficient developing readers may benefit from terminal punctuation cues at the end of lines, rather than appearing randomly in the paragraph.

Baldwin and Coady (1978) explored the relationship between punctuation and grammatical expectation. Based on their findings, they suggest that the roles of English punctuation established in conjunction with traditional grammar neither predict nor explain reading behaviors involving punctuation. As a result, Baldwin and Coady raise the question of whether punctuation as an active cue system can be considered for 10 year-olds, and by extension, elementary school children. An implication is that punctuation, as a cue system in reading, has a later onset. Another question that could be asked, is whether or not the late onset of punctuation utilization is due to maturation of the reader or lack of appropriate early instruction.

Read et al (1978) suggest that many beginning readers have difficulty comprehending what they read, even though they can identify the individual words in a written sentence, because they depend heavily on prosodic cues. Prosodic cues have a influence on oral reading and comprehension (Witte, 1980).

If children can translate print into something resembling their own oral language, the retrieval of meaning will be accomplished with greater ease (Stice, 1978). Readers do not attend to all details before them on a page, but selectively attend to a sampling. Details selected are called cues because readers use them as a basis for making a guess as to the correct response (Vogel & McGrady, 1975).

Words alone do not carry meaning until they are placed in the structural system of the language. Intonation functions as a controller of meaning and provides more phrasing information to the reader for the purpose of organizing the words into meaningful units (Eisenhart, 1974; Stevens, 1981). Eisenhart states that readers must bring to the printed page, the ability to recognize the graphic cues that signal meaning. Graphic cues operate as a three part system: vocabulary, structure, and sound. The whole system should be taught nontechnically to children at an early age as they are learning to read. Children already know a lot about language structure intuitively, so the signals are not new. She indicates that training in graphic cues has to be done in the context of meaning in reading not as part of a spelling or grammar lesson. Gutknecht et al state that changes in stress, pitch, or pause indicate the reader's anticipation with regard to expected grammatical structure. They list seven categories of intonation: (a) within words, (b) between words within a phrase of a sentence, (c) relative to phrase or clause structure of a sentence, (d) at termination of phrase or sentence, (e) where conjunction is used in place of terminal punctuation, (f) direct quotes, and (g) no change.

Read et al (1978) observed that 7-year-old children correctly identified subject and predicate phrases with surprising accuracy. Poorer success was demonstrated when children were presented with sentences that contained misleading intonation contours. They seemed to be particularly dependent upon phrase-final lengthening as a cue signaling syntactic structure. The prosodic system, the rhythmic patterns of speech, consists of timed sequences of short and long syllable duration, accented and unaccented levels of stress, and the rise and fall of pitch — information readily available to the listener but missing when the listener becomes a reader (LeCoultre & Carroll, 1981). Martin and Meltzer (1976) conducted a study generated from the notion that if syllables were seen and heard as when spoken, it would help children make the connection between sequence of symbols seen and sequence of sounds heard. Their conclusion seemed to be that visual rhythm should improve ability to organize read sentences into well-structured wholes and facilitate fluency. Le Coultre and Carroll conducted a study to determine whether, as Martin and Meltzer predicted, visual syllable duration pattern affected comprehension. The visual display in their study consisted of a slash for a long syllable, a triangle for a short syllable, an inverted triangle to indicate a pause and dashes for rhythm-pulse. They concluded that visual rhythm gave children an advantage in ability to comprehend sentences. Their study could not clarify whether it was the duplication of speech rhythm or the nature of the visual display which aided comprehension. However, they indicated that any pattern not consistent with the speech pattern would not aid comprehension.

Ehri (1976) conducted a study with second, third, and below grade level fourth graders using words printed in three sizes to correspond to the intonation patterns of the text. The intoned text was then compared with a standard text and a random text in which words were printed in different sizes and spaces were varied at random. Her results indicated that children trained to read intoned print did not outperform the standard print or random print groups. She concluded that printed intonation cues are useless to beginning readers.

Ahlvers (1970) conducted a study aimed at instructing first-graders in intonation skills in reading. There was no significant difference in overall reading comprehension between the experimental groups, receiving the intonation instruction and the control groups, not receiving the intonation instruction. However, on the oral Test of Intonation, when children were rated for appropriate use of pitch, stress, and terminal juncture, there was a significant difference between groups.

Means (1968) found that children who use fewer inappropriate intonation patterns in oral reading, comprehend better in oral and silent reading. Independent readers appear to use each element of intonation equally well. Witte (1980) indicated that by modeling correct intonation patterns orally, combined with students repeated reading practice, comprehension performance can be improved in the reading of passages silently.

Vogel and McGrady point out the importance of children internalizing the intonation or melody pattern of their native language for the development of syntax and for reading comprehension. They state that intonation is perhaps the most important and least understood signaling system at the sentence level. Intonation's role in children's acquisition of reading behaviors and its relationship to instruction was examined by Coady and Baldwin's (1977) survey of Economy, Holt, Ginn, Houghton Mifflin, and Scott Foresman primers, in which they found difficult, confusing sentences with regard to intonation cues, and a virtually complete lack of guides for instruction in intonation in the teacher's manuals.

Flippo (1980) also examined the texts of major publishers of basal readers (Economy, 1980; Macmillan, 1975; Harper & Row, 1976; Rand McNally, 1974; Harcourt Brace Jovanovich, Bookmark, 1974, 1979; Scott Foresman, 1974; Houghton Mifflin, 1976; Holt, 1977). It was found that many of the second grade level basals examined, contained ending punctuation structure that could conceivably alter the meaning for unsophisticated primary grade children. Again, no suggestions were found in the teachers' manuals for children experiencing comprehension difficulties with the location of ending punctuation.

Because written language is devoid of intonation, the reader must reimplant the melody by utilizing clues that punctuation and one's own background of oral language provide. Auditory memory does not appear to be a factor. Children seem to have the ability to internalize melody patterns as they relate to language acquisition, and of a foreign language as well, while adults do not. Clay and Imlach (1971) found that poor progress in reading could be interpreted as a failure to structure a very complex set of response hierarchies to intonation cues. Children who make fewer pauses tend to be the best readers. Better readers complete a sentence with fall in pitch. Poor readers pause more and are likely to use a rising or sustained pitch implying uncertainty. Good readers read seven words between pauses and 4.7 words per stress. Poor readers read

1.2 words between pauses and stress every word as in reading a list.

The findings of Stice (1978) indicate that children who usually have the most success comprehending written language also have the most success comprehending oral contrastive stress in standard English. Conversely, lack of success in comprehension includes lack of success comprehending stress in standard English. Intonation as a signficant part of language is a potential instructional element for improving what the developing reader needs to know about language. She points out that several reading educators advocate teaching intonation patterns as part of the developmental reading curriculum. This would give readers a greater awareness of an additional signal system to indicate meaning. Reading, she maintains, is a matter of utilizing all the available cues to meaning. Intonation operates similarly across all dialects of English. Stice suggests some strategies that could be used to affect cue selection in the structuring of meaning: (a) segment utterances into recognizable and manageable units, (b) draw attention to special content, (c) make contrasts with previously stated or inferred information, (d) point out new material, (e) confirm or negate a query, (f) tag words, phrases, sentences according to type and function, (g) indicate that pause can be signaled with a punctuation mark, (h) indicate that context of passage and word placement in a phrase or sentence are aids to proper identification and meaning, and (i) develop awareness of WH words as cues.

Beardsley (1982) supports the view that children make use of context cues according to age and ability (Flippo, 1980, 1982). If linguistic constraints within the text are to be of value to the reader, some consideration must be given to understanding which cues are liely to be the most useful at different stages of reading development. Beardsley's study indicates that the more useful cue for all readers, other than six to seven year old poor readers, was the proactive semantic constraint. The gist of the phrase following a deleted word in the cloze test gave the most help in determining what the missing word could be. Young readers seemed to have expectations of meaning from the material they read based on their experiences with language. The youngest poor readers predicted words to fit the syntactic structure of the material. This may be due to the fact that young readers are bound by the limits of their ability to take in only certain elements of the materials and may not have interpreted the reading operation as a linguistic one. Good six year old readers and good and poor readers in the seven to eight year old age group showed that proactive and retroactive semantic cues were important information for interpretation.

Beardsley, and Clay and Imlach seem to agree that reading behavior becomes patterned close to the onset of instruction in ways determined by visual and linguistic quality of text; emphasis of the teacher and his/her methods; and the developmental status of the pupil in the visual, linguistic and cognitive areas. Approaches to instruction will inevitably influence the young readers' willingness to use what the material has to offer and the ability to integrate the different aspects of text.

The literature and studies outlined suggest or imply approaches which base early reading materials on meaningful language without too rigorous an emphasis on the precise visual scanning of letters and words, and helping children become aware of words in relation to one another (Beardsley, 1982). They also support the idea that the key to reading lies in the child's own language and not in some standard model of English (Stice, 1978). Finally, they emphasize the importance of intonation as a controller of meaning (eisenhart, 1974), and also suggest that punctuation exerts a variable influence upon comprehension (Baldwin & Coady; Gutknect et al).

Phrase Boundaries and Text Structure

As children learn that prosodic cues are not preserved in writing, they begin to make better use of other kinds of signals that are preserved, such as semantic and contextual features (Schreiber, 1980). The key to fluency is grouping words together into meaningful sequences and beginning to understand that the purpose for reading is to extract the message that the written form communicates. Students who have difficulty providing meaningful phrases for words comprehend little. Even if they understand the words, they will not grasp the meaning of paragraphs unless they organize the words into meaningful units (Stevens, 1981). Poor readers read word-by-word rather than organizing their input into meaningful groupings, but when encouraged to group reading in a meaningful way, they are able to comprehend at a level comparable to that of good readers (Cromer, 1970). Once individuals have become proficient in the recognition of single words, they must progress to the notion that words occur in groups with a certain sense of patterning sequence and meaning. If they do not, cautions Cromer, they may have overlearned word-by-word patterns of reading. These individuals can be instructed to change by artificially grouping words in a manner that is meaningful for them.

Parsing (grouping) sentences into meaningful phrases and clauses is an essential step in language comprehension. Parsin difficulty is a common reading problem (Kleiman et al, 1979). Early and recent theories regarding how readers code items of information suggest that phrases or segments of written material, chunks, are the perceptual units of spoken and written language. Chunking sentences facilitates free recall of information and promotes rapid memorization of prose passages. Therefore, preorganization of reading materials into meaningful word groupings might improve efficiency of reading as it has improved recall and memorization (Carver, 1970). Carver suggests that punctuation should be used to determine the boundaries between chunks of text and that clunked text should not be broken due to lack of space at right margins. Royer and Cable (1975) indicate that good readers may, in contrast to poor readers, organize what they read.

O'Shea and Sindelar (1983) determined that segmenting sentences assisted both low and high performance readers in comprehension as measured by a maze task. Segmentation of written discourse into meaningful units helps simplify the syntax of complex sentences. With units isolated, the reader is cued to the relationship among intrasentence phrases. They found that children who read slowly, but accurately, scored higher on segmented passages than on standard passages. There was no difference between standard and segmented passage performance for children who read with both high fluency and accuracy. Since segmentation aids young develop-

ing readers in comprehension, its use in the classroom would seem appropriate as a supplement to basic instruction. O'Shea and Sindelar segmented passages as follows: (a) subject and predicate of simple sentences were separated and the object was also separated from the predicate, (b) noun modifiers, if short, were linked with nouns, and verb modifiers with verbs, (c) clauses were set off and if long, broken into appropriate thought units. They indicated that an alternative to retyping passages would be to use vertical lines of underlining. Students could help in the preparation of these segmented passages.

Goldman, Hogaboam, Bell, and Perfetti (1980) looked at the length of input segments related to recoding, or the transforming of material from short term to long term memory; sentence boundaries serve as cues to the individual to recode. They found differences between reading and listening. Boundaries are less important in reading because discourse is under reader control, the individual can reread and backtrack to re-encode, whereas in listening the speaker controls input. The study indicated that skilled readers retain encoded discourse of more difficult length longer than younger and less skilled readers. The latter used sentence boundary as a recoding cue only when relatively few words in an easy text had to be read. Demands of word recognition over lengthier and more difficult text produce working memory overload, even within a sentence, for less skillful readers.

In order to help children understand that reading with expression means compensating for lack of prosodic cues in written text, Blum and Hoffman (1979), and Schreiber (1980) suggested drawing attention to the spacing between words as a kind of graphic device. While it only very occasionally provides evidence about phrasing, readers do observe white spaces between words, and through them can develop clarity about the function of spaces in defining written word boundaries. Explosure to meaningful print, they maintain, results in clarity about word space and skill in recognizing words.

There is also evidence in the literature to suggest that visually marking subject, predicate, and phrase boundaries should result in an improvement in children's reading comprehension. Weiss (1983) investigated two methods of text segmentation to test this hypothesis. The results support the theory that making the underlying oral phrase boundaries visible facilitates elementary school children's reading comprehension. Text segmentation along phrase boundaries was effective in helping the children comprehend text. Good, average, and poor readers, when reading material evaluated as "at or above grade level," did show improvement of their reading comprehension. Weiss suggests that the children's comprehension would have shown even greater improvements if they had been trained to use the phrase segments beforehand. There was no evidence to suggest that phrasing easy passages would hinder good readers' comprehension. Weiss recommends that textbooks be written using the syntactic and pausal phrase format.

Raban (1982) chose line-breaks, a feature of text display in books printed for young readers, as the focus for her research. Fluent reading requires that the reader discount line endings which occur at any point in syntax without this affecting their reading comprehension or fluency. Research has found this to be the case with readers aged ten years and up whose eye-movements have stabilized. Cromer (1970) supported the notion that one source of comprehension difficulty could be attributed to a difference in the way the word groupings are arranged in text. Raban felt there was a great deal of "impressionistic" evidence that line-breaks do cause difficulties to children when they are young and still learning to read. The difficulties, however, do not become apparent immediately, because children are mostly encountered sentences of less than one line in length; difficulties emerge as sentences increase in length. Teachers can be alerted to confusion possibly caused by line-breaks if children's reading is marked by various non-fluencies and self-corrections. In her study, Raban investigated children's reading of a text with line-breaks in every possible position, as frequently as possible within a Subject-Verb-Object-Adverbial sentence pattern. From the findings of her study, Raban concludes:

1. The solution to the problem of where to break the line in texts for young children is not straightforward. Research points to the value of line-breaks both within and between phrases. Line-breaks within a phrase cause less disruption of fluency when they occur towards the end rather than near the beginning of the sentence.
2. "And" should not occur at the beginning of a line. "And" and prepositions act as "signposts" in text.
3. More research is needed in the field, particularly to identify the hierarchy of elements of sentences like "and", so that publishers have alternatives with regard to line-breaking while preserving the integrity of sentence meaning.

The Raban research enhances the findings of Gutknecht et al (1982) and confirms the position of Flippo (1980, 1982). The effect of the location of ending punctuation and line breaks in text on intonation and resulting comprehension is a developmental process and effects the unsophisticated and/or low ability early childhood reader. However, the more able/mature/and developed reader is not so affected by location of ending punctuation and line-breaks.

Implications for Text Design

Goodman and Burke's miscue analysis (1972) gives insight into how children regress, and lookback to fix up inconsistencies produced while reading, and highlights childrens' use of syntactic and semantic features. Research information on how children are effected by text structure, such as the information presented in this paper, coupled with factors of intellect, language background and ability, physical and emotional stability, allow children to make the most of the events and situations that enhance the transfer of learning. Teachers and publishers should become more aware of the importance that punctuation, intonation, and phrase boundaries have in children's reading comprehension. If text segmentaiton or end of line punctuation is related to an improvement in developing children's reading comprehension, it might be worthwhile to redesign some texts. It might also be worth the time it takes teachers to redesign instructional strategies to work with children who are still unsophisticated readers on development of strategies to deal more effectively with phrasing, text segmentation, punctuation, and intonation.

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