# TEACHING READING AND STUDY SKILLS IN THE SECONDARY SCHOOLS



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by

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## Abstract

Traditionally, teaching can be legitimately described as "assumptive teaching", where the teacher simply assumes that students have the requisite skills and abilities to handle their reading and study assignments. Research and experience clearly illustrate that this assumption is quite likely false and that many students are having difficulty reading their assignments independently. Coupled with the fact that students receive most of their information through print and that this trend is not likely to disappear, the technological revolution notwithstanding, the need for a new philosophy of teaching subject matter would seem obvious.

One mode of content-area teaching that has proved successful is what has been labelled "Reading in the Content Areas". The basis of this approach is that teachers must concern themselves with the process of learning as well as with the products of learning. This does not imply that content area teachers are expected to sacrifice content in favour of teaching reading but rather that the content area teacher, utilizing the curriculum material pertinent to his field, incorporates in his teaching style a number of validated learning strategies. These strategies will allow teachers to intervene during the learning process and thus facilitate learning rather than simply being concerned with assessing how well (or how poorly) learning has taken place.

Some might argue that the foregoing describes teaching as it is rather than suggesting a new trend or philosophy. However, a review of the literature concerning high school reading shows that such is not the case. Historically, reading at the high school level has been mainly remedial in nature and not very successful at that. In addition, various observational studies have concluded that at present in all levels of schooling there is mainly a concern for management instruction, transition and comprehension assessment as opposed to comprehension teaching.

The literature also shows that the philosophy of content area reading has progressed well beyond the stage of mere rhetoric to a number of carefully delineated, practical teaching strategies. In keeping with a number of recognized authorities in the field this thesis proposes a particular scheme of strategies that will ensure content area teachers become concerned with process rather than product.

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## Preface

The belief that reading is mainly, if not solely, the responsibility of the primary and elementary school is a naive but prevalent assumption. Typically, high school personnel feel that students have reached a level of proficiency by the time they reach the secondary level which precludes any kind of systematic attention being given to the reading process. They see themselves as being teachers of content only, and all too often reading and content instruction are seen as mutually exclusive rather than interrelated. Anyone who seriously reflects on this situation will immediately recognize that such an argument is not only naive but also very damaging to the student.

Tonjes and Zintz (1981) articulate this very well when they state that:

> ... while the ability to read meaningfully is clearly a necessity, it cannot sadly enough be taken for granted. It is well documented that far too many students today are sadly deficient in those basic reading/thinking/study skills deemed necessary to master the content of their texts. And to compound matters, the range of reading levels in any given class widens as students advance through the grades (p. xv).

Even if one agrees that students cannot read meaningfully there is little consensus as to what implementation form a reading program should take if these students are to be helped. Many teachers conceive of reading instruction as being the job of a specialist whose

task is drilling the students on a number of so-called "reading skills". At the high school level particularly, such a skill-centered approach is not necessary, but what is needed is the "concerted effort of each and every content teacher in science, foreign language, physical education, English, social studies and the arts to bridge the gap" (Tonjes and Zintz, p. xv).

I concede that this sounds highly theoretical or that it may be viewed as an attempt to get mileage out of an idea that has passed out of vogue. Admittedly, the idea of reading in the content areas is a hoary one but this does not diminish its utility. The problem is not with the idea itself but with the attempts to delineate the various components of such a reading program and how to incorporate them into a regular, content-area schedule. This thesis will attempt to address both these concerns by pointing out the various things a content teacher can do to facilitate the reading process, and that following such a program really becomes a way of teaching as opposed to "something else to teach".

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# CHAPTER I

# INTRODUCTION

## The Need for the Study

Many educators and laymen find it difficult to rationalize a concern for reading at the secondary level. However, there is no other area of student learning begging our attention quite as much as the need to help students handle the various types of reading they will in fact be required to do. In a section to follow we shall try to address the need of structuring a reading program that involves all content teachers, but here we shall look at the area of secondary reading instruction generally.

Some would argue that reading, that is, "gaining information through the printed page" is fast becoming an anachronism. They point to rather impressive advances in the area of telecommunications and videotronics that would seem to support their contention. While we cannot deny the electronic revolution and the implications it will have for education, neither can we ignore the importance of print. In fact, one could argue, as Alvin Toffler (1970) does, that the current knowledge explosion demands that students be able to retrieve information from a variety of media:

> At the rate at which knowledge is growing, by the time the child born today graduates from college, the amount of knowledge in

> the world will be four times as great. By the time that child is fifty years old, it will be thirty-two times as great, and 97% of everything known in the world will have been learned since the time he was born (pp: 157-158).

Harold Shane (1976) has put the problem into an educational setting when he states:

> The problem of the 1980's in education will be similar to those of the 1960's and the mid-seventies, but they probably will be clad in even tougher armour. They will be broader in scope and the settings will differ (p. 135).

If the problems of the 1980's will in fact be tougher educationally, it is imperative that students be taught how to retrieve information from all media forms independently. Since the most important information medium, for the present and for the foreseeable future, is print, it is not only logical but indeed mandatory that our primary concern should be with devising a program that will allow students to read both meaningfully and independently.

In a less philosophical vein one can point to fairly weighty evidence that students are not at present coping with their reading assignments very well. Roe, Stoodt and Burns (1978) feel that the reading ability of students in classes above the sixth grade commonly has a range of at least eight school years. Complicating this situation is the fact that up to 20% of all junior and senior high school students may be in need of small-group or individual remedial work to correct specific reading disabilities. In secondary

schools, as most teachers will agree, "grade placement means nothing in terms of indicated reading ability" (p. 3).

A study conducted in New York City (1974) and reported in Robert Karlin (1977) underscores the need for reading instruction in many secondary schools. In only twenty six of the one hundred and sixty-eight junior high schools were half or more of their pupils reading at or above grade level. In seventy-six junior high schools fewer than twenty percent of the pupils were reading at or above grade level (pp. 1-4).

Other reports summarized by Karlin (1977) corroborate the results just presented. In "A Report of the Study Group on Linguistic Communication," sponsored by the National Institute of Education, it is claimed that over twelve million people who are fourteen or more years old cannot read as well as the average fourth grader (p. 3). The reading summary of the National Assessment of Educational Progress reports that only "fifty-one percent of the thirteen year olds surveyed and sixty-eight percent of the seventeen year olds surveyed were judged successful at reading for main ideas, making inferences and reading critically" (p. 3).

While it may be argued that such results are not pertinent to us because they are based upon studies carried out in the United States, one wonders if the situation is any different here. While it is difficult, indeed impossible, to cite statistical evidence that would support such a contention,

one could easily argue that students in Newfoundland are equally deficient with regard to reading ability. Teachers in all content areas in all parts of the province generally decry the inability of their students to handle their reading assignments. This is supported by the Guidance Association of Pleasantville (1971) report that most Newfoundland schools do not have any effective reading-study skills program. It was also reported that students complain that they do not know how to study and indicate that too much time is spent studying without success because of their own insufficient and ineffective study methods. The implication for secondary school reading is obvious - students must be helped to read independently and meaningfully if they are to avoid frustration and failure.

## Nature of the Study

It was mentioned previously that high school personnel generally do not see reading instruction as part of their responsibility, and an attempt was made to voice this concern in the preceding section. Even if one does feel that a concern for the reading process is an important part of one's instructional responsibility, there is little agreement as to how that concern should manifest itself. More simply, what form should a secondary level reading program take?

H. Alan Robinson (1978) has helped to answer this question for us. He maintains:

> Although there is no guarantee of and certainly no formula for success, it seems reasonable to assume that if instructors will place emphasis upon guiding their students to gain independence in unlocking the ideas of a discipline, more adequate learning should take place in a given content area. The independent learners, the students who have learned the techniques for unlocking ideas, can fend for themselves in the acquisition of knowledge, and will learn more to depend on the teacher as a guide, a question formulator, a reactor, an evaluator, and someone with whom a meaningful dialogue can be maintained (p. 16).

Herein lies the strength of the approach. A reading program that stresses the involvement of all content areas, as opposed to being restricted to the efforts of a single reading teacher is the most sensible way of integrating the teaching of reading with content instruction. The ambiguity of the phrase notwithstanding, "every teacher a reading teacher" is sound educational philosophy.

This fact alone is rationale enough for a reading instruction program that stresses the involvement of all content-area teachers. While one may have his own beliefs regarding the theoretical positioning of reading specialists, we must all agree that the ultimate goal of reading must be "meaningfulness." Hill (1979, p. 98) claims that "the reading act can only function meaningfully in terms of the substance of the message." Implied in this statement is the indispensable role of content material in reading and the indispensable role of reading in content material. The interpretation simply cannot be ignored.

This position is reiterated by Robert Karlin (1975, p. 254):

> The main point to remember about reading instruction is that it should be offered under circumstances likely to promote growth. Instruction associated with the subjects pupils read about will be more meaningful to them than instruction that stresses mere skill development.

Numerous other writers have emphasized the same point. Shepherd (1973, p. 11) supports the view that reading does not and cannot take place in a vacuum. He states:

> It is generally accepted that a student's competence in a reading skill grows best when he is instructed in its use at the moment his need occurs.

The student's need presents itself every time he is instructed to read an assignment and gain sufficient knowledge from the process. Reading skills taught and nurtured under these circumstances are those most adequately acquired and most strongly developed.

Not only can reading be taught more effectively using material that is meaningful to students, so too can the teaching of content be enhanced. This two-way relationship between reading and content instruction was mentioned in an earlier paragraph and it is articulated very well by Hill (1979, p. 110). It is more fully elaborated by Strang (1970, p. 229) when she states:

> Proficiency in general reading skills is not enough; pupils need a technical vocabulary and special skills in each of the content areas.

It doesn't take much imagination to realize that helping students acquire a technical vocabulary and those concepts which may be pertinent to a particular content area transcends the mere teaching of reading and includes the internalization of important content material.

Herber (1978, p. 4) advocates the idea of reading instruction in the content areas to the point where he states that "the curriculum content in each of the subject areas should be the organizing element for reading instruction." He clarifies this position by recognizing that "reading skills are the means by which one learns the content of the material being read." When one accepts the notion that reading instruction and content area instruction are so closely related, Karlin (1975, p. 254) points out that teachers are lessening their own headaches, for they "will not have to be concerned with the problem of transfer of learning if skill development parallels the acquisition of content." As well, Herber (1978, p. 4) also claims that integration of reading instruction with content area instruction "meets the challenge of increasingly sophisticated material by showing students how to apply the same skills at increasingly sophisticated levels."

Devine and Evans (1971, p. 5) had earlier supported the integration of reading and content instruction. While certain researchers such as Robert Price (1978, pp. 312-314) may feel that reading and content are in opposition, Devine

and Evans (1971, p. 5) feel that "a dichotomy between content and skills need not exist if skills are not isolated and taught independently." The same writers go on to state that (p. 5):

> The skills taught are those needed by students to successfully complete textbook assignments, and the skills are taught functionally as teachers use textbooks as a means for developing reading and study skills.

Thus, optimum reading instruction in the middle and secondary schools implies that every teacher must become involved in the reading process. If this is to be labelled "every teacher, a reading teacher", then so be it. Successful acquisition of content area knowledge comes through the use of previously learned reading skills and the development of further reading skills. The point cannot be overstressed. The teaching of reading is not an imposition on the teaching of content. Rather, the teaching of reading and the teaching of content are integrated. Herber (1978, p. 11) states the point well:

> There is no place for reading instruction, as reading teachers generally employ it, in content areas. There is a need for a whole new strategy in teaching reading through content areas, a strategy that uses what we know about the direct teaching of reading but adapts that knowledge to fit the structure of and responsibilities for the total curriculum in each content area.

# CHAPTER II

## REVIEW OF RELATED LITERATURE

This literature review will comprise four main parts:

(1) Reading instruction at the secondary level in historical perspective;

(2) The emphasis being given reading by content-area teachers in their classrooms;

(3) The effectiveness of various kinds of reading strategies in the content area;

(4) The salient features of content-area reading.

### I. Secondary Reading Instruction--Historical Perspective

As has been mentioned, many teachers at the high school level feel that reading is not a part of their responsibility and that a student knows how to read well enough by the time he leaves elementary school. This is a naive and invalid assumption and is for too many informed people a most perplexing attitude when one considers that as early as 1941 writers were decrying the usefulness of such an attitude. Eva and Guy Bond (1941) suggested that no better results could be expected from this procedure (or lack of procedure) than to leave a vegetable garden to grow by itself without any care once it has been started.

Nevertheless, the attitude persists, such admonitions notwithstanding.

In fact, a concern for reading instruction at the high school level goes back even further than Bond and Bond. In 1925, The Twenty-Fourth Yearbook of the National Society for the Study of Education, stressed the need for high school reading instruction. This citation serves to illustrate the point that reading instruction at the secondary level is hardly a novel or revolutionary concept. It has been a concern of educators for six decades or more; unfortunately, it has not had significant impact where it counts - namely, in our public schools.

Those early proponents of reading instruction at the secondary level, particularly pre-1950, were mainly concerned with remedial reading instruction. Certainly Nila B. Smith (1965) agrees with this view, as do other writers. This is not to say that remedial reading instruction was the only concern of those involved with high school reading since it was Bond and Bond (1941) who first used the term "developmental reading" to distinguish a program planned in terms of all high school students from a remedial program designed for special students (p. 296). As Smith maintains however, reading instruction at the secondary level during the 1940's and early 1950's was mainly of a remedial nature.

As is so often the case in North American education it was a series of events on the international stage that forced a change of focus in reading instruction. According to Cowan (1977), Communist activity in Korea in 1950 and Sputnik in 1957 forced educators to become conscious of the need for developmental reading programs at the secondary level, and this quite in addition to the remedial. Robinson (1977) agrees with Cowan's contention and states from 1960 onward, at least, there was a decided expansion of developmental reading programs in high schools.

Bamman, Hogan and Green (1967, p. 123), for example, held that every field of knowledge had its own language and that to succeed in that field one had to know how to read the language. Grommon (1963) reiterated the position of Bamman, Hogan and Green. During the later sixties more and more educators and writers were becoming convinced of the need for reading programs at the secondary level. One of the most important of these was Robert Karlin (1969), who edited a collection of essays entitled Teaching Reading in High School. Numerous writers in this text stressed the urgency of teaching reading that would involve teachers from as many content areas as possible. Carter, McGinnis, and S.E. Davis are but a few references in this area of concern.

While the pundits of the sixties may have stressed developmental reading programs for the majority of students as opposed to remedial instruction for those with serious

skill deficiencies, there are those who argue that very little impact was felt as a consequence. Herber (1978) feels that the main reason for this was that, in the main, very little attention was given to the relationship of reading to content. He goes on to state that despite the expenditure of large amounts of money little real benefit was realized, because reading instruction in the sixties involved programs that were separate from the regular school curriculum. Despite the urgings of such writers as Karlin, Carter, and McGinnis and Davis for reading programs that stressed the involvement of content area teachers, Herber (1978, pp. 1-2) summarizes the activity of the 1960's thus:

> Students were given special reading instruction in a setting different from that in which the reading skills were actually required. Separate reading classes were formed, and rarely was attention given to coordinating that instruction with what was being read by the students in their subject areas. It was left to the students to transfer what they learned in the reading classes to what they needed to learn in the content area classes. Most people were disappointed because, even though students improved their reading scores in the reading classes, they did not progress proportionately in their reading performance in other subjects.

Herber implies that the 1970's witnessed an important change in direction for secondary reading instruction in that the relationship of reading and content has been more fully recognized. In a somewhat self-laudatory tone, he claims that his 1970 text was "the first book devoted exclusively to

reading in the content areas". While one could probably argue with this contention the essential truth of the statement cannot be denied. We seem to have come almost full circle since the 1940's and we now believe that secondary reading has to be more than remedial, with emphasis being placed upon helping students acquire the specific reading skills or strategies pertinent to particular subject areas. Baldwin and Readence (1980) have stated that during the last decade we have seen a proliferation of information about content area reading as never before, and certainly one has only to sample the literature to prove the veracity of this contention.

Secondary reading instruction, then, has had a long if not colorful past. In the writer's estimation we have seen a positive evolutionary trend in favour of the view that reading instruction at this level has to be developmental in nature, including even the gifted student, where all content area teachers will help students apply reading strategies specific to their field. As alluded to earlier, however, such postulating has not had enough of an impact where it really counts; namely, the high schools. Baldwin and Readence (1980) put this very well:

> Unfortunately, however, the receptive audiences have been reading personnel, not content area teachers, and the potential benefits to students in English, science, history, and mathematics classes have been unrealized because subject matter specialists either have never heard of content reading or have summarily rejected the idea as an intrusion into their teaching.

## II. The Emphasis Being Given Reading Instruction in Content Classrooms

The observation of Baldwin and Readence (1980) that content area teachers have not really been reached by the theorizing concerning high school reading instruction is easily supported in the literature. Numerous studies have been done over the years which show that, generally speaking, content area teachers are not very much concerned with the reading process in their respective subject areas.

Austin and Moores (1963) commented on this situation in their study. They reported that teachers feel that they do not have sufficient time to teach everything and, unaware that a dichotomy need not exist, feel it more important to cover content than to teach the reading skills in the content areas.

Gunn's (1969) study dramatically illustrates the strength of the foregoing argument. Gunn revealed that 90 percent of the ten thousand American teachers sampled did not feel prepared to teach reading. In the same report it is stated that Squire found in 32,580 observed minutes of classroom instruction that English teachers spent 52.2 percent of their time on literature, 13.5 percent on language, 15.7 percent on composition and the remaining 18.6 percent on speech, media education and reading instruction, respectively.

Cawletti (1963) surveyed forty-two mid-west high schools and reported that only twenty-seven percent of them

had reading programs, of which only twelve were developmental and none were very good. Simons (1963) found much the same thing when he surveyed 127 high schools and discovered that while two-thirds had reading programs, all lacked depth, scope and good administration.

A.S. Artley (1968) seems to have summarized the activity up to the 1970's fairly well:

(1) Systematic reading instruction beyond grade six was uncommon.

(2) High school programs were extremely limited in that they lacked specific objectives and scope.

(3) There were more programs in the junior high school than in the senior high school.

(4) There was a marked scarcity of trained teachers and reading supervisors.

The immediate question is; has the situation improved at all in the last ten years? If the attitudes of such people as Robert D. Price (1978) are representative of the field at large one could probably say the situation has worsened. Price states rather explicitly that teaching reading is not the job of the social studies teacher. He feels that if reading and content were treated simultaneously: (1) content would simply be a vehicle for reading instruction; (2) teachers would be trying to attain objectives that are really incompatible; (3) poor readers who may have been experiencing success at social studies would be completely alienated; and

(4) teachers would feel too frustrated because they are not really qualified to teach reading.

While Price's may be an extreme position, one wonders if a vast majority of teachers do not feel as he does. Rather than try to address Price's arguments here one can simply state that Bob Taylor (1978, pp. 313-317) has provided a most adequate critique of Price's major points. Nevertheless, numerous research studies would seem to indicate that Taylor and other proponents of content-area reading have a formidable task ahead of them.

Margaret J. Early (1973) reviewed secondary reading instruction and concluded that:

> In the past thirty years, the status of reading instruction in the secondary school has changed very little. In 1972 as in 1942, we are still debating the merits of special reading services and urging the whole school faculty to teach reading in the content field... It is the exceptional school system that offers courses in reading and study skills beyond eighth grade. Only in rare instances do I find high school departments other than English departments demanding teachers who are skilled in teaching reading.

Freed (1973), after surveying 485 school systems and the fifty U.S. state departments of education in respect both to the nature and extent of secondary school reading programs and to the certification standards for teachers and specialists, concluded that:

> Secondary schools are still a long way from providing what William S. Gray suggested in 1948, "a program designed to promote maximum reading growth among all high school students in keeping with their individual capacities and needs."

Freed goes on to state that as many as 34 percent of the junior high schools and 45 percent of the senior high schools surveyed offer no reading courses. The most encouraging aspect of the findings, according to Freed, was the fact that 88 percent of the departments and 94 percent of the school districts believe that reading programs must be improved.

To a certain extent Freed's assertion that school personnel recognized the need for change and thus by implication would do something about it is born out by Hill's (1975) observations. He found that 77 percent of 172 responding schools reported some type of organized reading instruction in one or more of grades seven through twelve. However, a closer look at the findings prompted Hill to conclude that a rigorous review of content area reading was required. Particularly disquieting were the following observations:

(1) Most organized reading instruction took place in grades seven and eight only.

(2) Organized reading instruction in grade five or six was not necessarily carried through grades seven or eight.

(3) There is minimal involvement of content area teachers even in content related reading activities.

While Hill saw a trend towards establishing more secondary reading programs that are broader in scope, he was forced to conclude thus:

> There is little evidence of a vigorous, comprehensive thrust toward reading development in these schools. Much remains to be done in the reading preparation of both the classroom teacher and the secondary reading specialist. The data support balanced professional preparation (developmental, corrective-remedial, and content area strategies) rather than stress upon isolated approaches or singular methodologies.

Nicholas P. Criscuolo (1979) believes that a survey of the literature on secondary reading instruction reveals three major areas of concern:

(1) How to reach content area teachers in order to increase their understanding of ways to incorporate effective reading strategies within their disciplines.

(2) How to develop and implement broad based in-service reading programs.

(3) How to administer and supervise the reading program effectively and efficiently.

Once again we see the need to involve content area teachers in the reading process. Thinking back to Baldwin and Readence's claim that the wrong audience is being reached, one can see that this has been an unfortunate unifying thread of secondary reading instruction through the years. A closer look at Criscuolo's findings shows that there is definitely a need to reach content area teachers. In looking at what

reading strategies make sense to content area teachers (Table 1) one can see that there are a number of disquieting trends and that such a state of affairs is hardly conducive to the development of sound content reading programs. For example, 70 percent of the respondents believed in readability formulae whereas only 28 percent felt strongly about distinguishing fact from opinion and less than 50 percent believed in skimming and scanning with a fairly high ambivalence rate for both.

## III. The Effectiveness of Various Kinds of Reading Strategies in the Content Areas

Probably one of the most disturbing facts about the situation described previously is that there is considerable evidence to suggest that content reading programs are effective. They are effective in not only helping students become better readers but also in helping students more effectively to learn and assimilate new information. As mentioned so often previously, content instruction and reading instruction are interrelated rather than in opposition to one another.

Call and Wiggin (1970) reported an experiment where a control group was taught a unit in algebra without reading instruction in the strategies appropriate to that subject. An experimental group was taught the same unit but with

Table 1

What Reading Strategies Make Sense to Content Area Teachers?

| Instructional Area | Description | Makes Sense | Makes No Sense | Ambivalence | No Response |
|---|---|---|---|---|---|
| Evaluation | IRI | .48 | .24 | .26 | .02 |
| | Student Placement | .48 | .18 | .34 | .00 |
| | Group Testing | .56 | .14 | .30 | .00 |
| | Readability Formulae | .70 | .16 | .10 | .04 |
| | Cloze Procedure | .30 | .40 | .28 | .02 |
| Decoding | Rec. Short Vowel Sound | .48 | .24 | .26 | .02 |
| | Rec. Vowel Dipthong | .50 | .20 | .30 | .04 |
| | Syllabication | .36 | .34 | .26 | .04 |
| Comprehension | Reading for Details | .64 | .06 | .28 | .02 |
| | Following Directions | .74 | .12 | .14 | .00 |
| | Sequence | .74 | .08 | .18 | .00 |
| | Anticipating Outcomes | .48 | .14 | .32 | .06 |
| | Fact from Opinion | .28 | .30 | .34 | .08 |
| | Creative Thinking | .62 | .18 | .16 | .04 |
| | Cause and Effect | .56 | .18 | .22 | .04 |
| | Main Idea | .52 | .24 | .20 | .04 |

| Instructional Area | Description | Makes Sense | Makes No Sense | Ambivalence | No Response |
|---|---|---|---|---|---|
| Reference/Study Skills | Dictionary Use | .60 | .10 | .28 | .02 |
| | SQ3R | .66 | .14 | .18 | .02 |
| | Using an Index | .72 | .14 | .12 | .02 |
| | Skimming/Scanning | .48 | .28 | .20 | .04 |
| | Using Card Catalogue | .60 | .16 | .20 | .04 |
| | Changing Boldface Print to Questions | .50 | .14 | .32 | .04 |
| | Reading Rate | .50 | .28 | .22 | .00 |
| Vocabulary | Root Words | .68 | .16 | .16 | .00 |
| | Prefixes | .74 | .16 | .10 | .00 |
| | Content Clues | .66 | .20 | .12 | .02 |
| | Etymology | .40 | .34 | .26 | .00 |

Criscuolo, Vacca and LaVargna. What reading strategies make sense to content area teachers? Reading World, March 1980, pp. 265-270.

instruction in the appropriate reading strategies. The experiment was adequately controlled and the experimental group was found to achieve significantly better than the control group who were simply taught content.

Call and Wiggin's findings simply reinforced results that had been reported previously. Rudolf (1949), for example, conducted an experiment with eight-grade social studies students. She reported that those students who had been given specially prepared materials on certain reading skills showed greater gains in social studies knowledge, study skills, and reading comprehension, than comparable students who had had no such instruction.

Schiller (1963) reported a study which used control and experimental groups to demonstrate that the systematic and functional use of work study skills in the social studies resulted in mastery of skills and promoted a significant improvement in geography achievement.

Similar results were reported by Severson (1963) with high school science students who were given instruction in reading and study skills as opposed to students who were not given such instruction.

Dalton (1966) showed that a reading study skills program also had a positive effect on the academic achievement of a selected group of university students. One important aspect of this study is that it had a longevity of three full semesters, which obviously must add to the validity of any generalizations generated by the study.

Robyak (1978) reported a review of research relating to reading and study skills and their effect on academic achievement. Generally, he was able to report that there is a positive correlation between a study skills program and academic achievement. This is not to say that there has been complete agreement regarding this issue. Many studies, for example, Stordahl 1956, Noall 1962, Howe 1970, and Idstein 1972, found little if any increase in learning from various reading and study techniques such as note taking and underlining.

In an attempt to reconcile the various opinions Annis and Davis (1975, 1978) conducted two studies that are two of the more comprehensive ones conducted to date. They concluded that various reading strategies or study strategies such as note taking and underlining were found to be effective. With regard to note taking they said that it was an effective technique because it served an encoding function whereby students were forced to transform lecture notes or a printed page into personally meaningful form.

Stoodt and Balbo (1979) were able to conclude the following concerning reading and study skills:

(1) The integration of study skills instruction with content leads to greater mastery of both study skills and content.

(2) Improvement of study skills appears to enhance learning in the content areas.

(3) Students who are not taught study skills apparently do not identify and learn these skills independently.

(4) Reading specialists and content teachers can and should work together to provide instruction in those study skills which will enable students to become independent learners.

It is possible to conclude from the evidence that has been presented, somewhat scanty though it may be, that content area teachers can help their students achieve more if they would include various interventionist reading and study strategies in their instruction. If we do not take advantage of the potential that a content reading program holds, we will do our students a most grievous disservice.

## IV. The Theory and Practice of Content Area Reading

So far in this literature review an attempt has been made to show that reading in the content areas is an approach that most people concerned with reading agree with and that this consensus is the logical result of an historical progression. In addition, it has been pointed out that the most appropriate audience, that is, teachers and other high school personnel, have not been receptive to this philosophy despite its proven effectiveness. If one accepts these arguments, the logical conclusion for this review would be a closer examination of the nature of content area reading.

Even though a previous section has rationalized the usefulness of a content reading program, an attempt shall be made here to elucidate the mechanics of an approach.

Much has been said already about the fact that in a content reading program reading and content are interrelated as opposed to having students transfer reading strategies to their curriculum content which they have learned in an artificial situation. A. Sterl Artley has put this very well:

> Since the teaching of content assumes that the learner will need to purposely select, comprehend, organize, evaluate and apply ideas, generalizations and principles--all of these being reading competencies--the close alliance of subject matter and reading is a natural and obvious one.

This is the cornerstone of reading in the content areas which many people seem to ignore or dismiss too lightly. Devine and Evans (1971), for example, define reading in the content areas as the "teaching of reading in the subject matter fields, usually by subject matter teachers." Although the writers qualify their definition somewhat, standing alone it does not include the idea of integration of reading and content in a satisfactory manner.

A more compelling definition is provided by H. Alan Robinson (1978):

> A secondary reading program then should be considered the complete set of skills and strategies needed by each student to contend with the vast array of print materials to be digested during the school career.

This definition is based upon the idea of integration, which is clearly what Robinson had in mind. He goes on to say that at the secondary level, in particular, there is no sequence of skills to be taught. When reading tasks appear, strategies should then be employed that will tackle them. As the NCTE Commission on Reading has noted (Robinson, 1978, p. 19):

> Indeed one danger in the "back to the basics" call is that it can encourage the separation of the teaching of reading from the teaching of content. The result can be the teaching of reading as an isolated process rather than as a means for the communication of information, ideas, and experiences. It is easy to forget when we become concerned with "the basics" that our best learning occurs when we are performing real and significant tasks.

Readence, Baldwin and Dishner (1980. p. 523) mean the same thing with their idea of "content communication" which they define as:

> good teaching practices which are designed to teach more effectively the essential concepts of subject matter areas. It deals with communicating content to students by means which will enhance their learning from text.

What this definition implies of course is <u>functional reading</u> - an idea which Riley develops more fully. He contrasts the ideas of functional reading and direct reading. Whereas direct reading instruction is product-oriented, functional reading instruction is process-oriented. By following a reading process relevant to the assigned content reading, the student acquires mastery of the process employed

and knowledge of the content used. Riley's (1979, pp. 132-133) definition is diagrammed in Table 2.

Table 2

| DIRECT | FUNCTIONAL |
|---|---|
| Identification of body of skills | Identification of content |
| ↓ | ↓ |
| Selection of skills (product-oriented) | Selection of skills (process-oriented) |
| ↓ | ↓ |
| Application of content | Design of instruction |
| ↓ | ↓ ↓ |
| Reading task | Reading tasks / Learning Tasks |
| ↓ | ↓ ↓ |
| Acquisition of skill by student | Acquisition of content and process by student |

Source: Riley, James D. Defining content area reading instruction. Reading World, 1979, 19, 129-133.

According to Riley (1979), then:

> Teaching reading in the content areas is instruction that facilitates the learning of content area concepts through careful design and implementation (by the content teacher) of lessons that focus on selective processes, theoretically based or empirically verified.

This definition covers all bases since it conveys the ideas of integration, communication, and facilitation, all in the causes of better teaching and better learning.

As mentioned in the introduction then, while certainly not a novel idea, it is one that has the potential for greatly facilitating the learning process if approached in the right way. The key is to elucidate the important constituents of the content reading process and to incorporate these into an instructional methodology based on process rather than product. Hopefully, in the pages to follow both these objectives will be achieved.

# CHAPTER III

# TEACHING READING AND STUDY SKILLS

## An Experimental Curriculum

### Introduction

It was necessary to define content area reading clearly and precisely because misunderstanding and misconception regarding the concept is a major obstacle towards implementing a successful content reading program. Cramer (1978, p. 391) refers to the misconceptions held by content-area teachers of the cliche, "every teacher a teacher of reading", and reading in the content areas generally. He claims that:

> Teachers have overlooked the rather fine, but crucial, distinction between reading as additional content to be learned and reading as a process to be used in learning from the printed text. As a result, they tend to dismiss reading as additional content material for which they simply cannot find the time or place in their present curriculum.

It is only necessary to recall Riley's (1979) definition to see that a content reading program is not an appendage; in fact, it is not something to be taught at all. As Riley explains content area reading is instruction -- a way of teaching -- rather than something to teach. I am fully cognizant of the fact, however, that merely defining what content area reading is does not answer some of the other objections that people have towards such a method of

instruction. Many of these objections are valid and must be redressed if content area reading is to be successfully implemented.

For example, Cramer (1978, p. 392) identifies lack of preservice training of teachers in reading instruction as a major obstacle to implementation of reading in the content areas. O'Rourke (1980, p. 339) recognizes this obstacle, as well, and goes so far as to state that "a course on teaching reading in the content areas should be required for future teacher certification". Marksheffel (1966, p. 155) had earlier made the point emphasized by the authors above. As well as lack of preservice training, O'Rourke (1980, p. 339) also points to inadequate inservice training in reading in the content areas. Whether such problems would preclude the successful implementation of content area reading is open to conjecture but they can be serious drawbacks. It also seems to me that such concerns can be readily rectified since they are in the administrative domain and can be taken care of by regulation.

More serious obstacles are those outlined by Marksheffel (1966, p. 155) and Herber (1970, p. 5). Herber (1970, p. 5) claims that teachers are "haunted" by the massive amounts of textbook material they are required to cover in the span of a school semester. Marksheffel (1966, p. 155) more clearly defines this syndrome in terms of administrative pressure to focus on use and completion of a

prescribed textbook in a content area. Any teacher with a modicum of teaching experience will recognize this problem, but rather than merely look upon it as an obstacle I prefer to conceive of it as one of the detriments to a quality education that content area reading can care for.

Perhaps the best-known obstacle to content area reading is the negative, often cynical attitude of the content area teacher toward reading in the content areas. For example, Olson (1968, p. 239) in a study of content teachers' attitudes toward teaching reading, found many inconsistencies in teachers' responses, to the point where his study was almost totally useless except for the fact that it indicated teachers' confusion and doubt about the concept itself. Paolino (1969) similarly concluded that while teachers generally recognize the need for reading instruction they feel inadequately prepared to become involved. This reticence was cited by Fisher (1974) as one of the main reasons why very few reading programs involving secondary teachers have been developed.

Quirk, Weinberg, Trismen and Nolan (1976) found that teachers spend most of their time at the following:

| | | |
|---|---|---|
| (a) | Management of instruction | 30% |
| (b) | Pronounciation and word recognition activities | 26% |
| (c) | Comprehension activities | 12% |
| (d) | Spelling | 9% |
| (e) | Non-reading instruction | 4% |

Durkin (1978) in a comprehensive study that cannot be fully summarized here reiterated what the above researchers concluded. Briefly, Durkin (1978) discovered that there was almost no comprehension instruction in the classrooms observed. Most attention was paid to comprehension assessment. That is, teachers mainly attended to giving, completing, and checking assignments. There was much time spent on 'transition' and 'non-instruction.' While Durkin's study was limited to the elementary situation, it is probably safe to conclude that the situation is even more deplorable at the secondary level.

The point of all this seemingly extraneous detail is that historically teachers at the secondary level have had a regrettably negative attitude towards reading instruction as evidenced by the surveys of teacher attitudes and the classroom observation studies. I would assume that Newfoundland teachers would feel much the same way that the teachers quoted in those studies feel, which may have serious implications for the implementation of a content reading program. However, on a more optimistic note, a relatively recent study conducted by O'Rourke (1980, p. 339) concerning teacher attitudes towards content area-reading specifically found the attitudes of teachers toward the concept relatively good. His study, however, did not examine the extent to which these positive attitudes were reflected in the integration of reading instruction into the content areas.

For the most part, little current research has been conducted regarding the types of reading programs at the secondary level. This has been mentioned before, and Cramer, for one, (1978, p. 392) points this out as a serious problem. He claims that it is this lack of knowledge and lack of conviction that reading in the content areas is a successful approach to reading in the middle and secondary schools which causes a lack of commitment to the idea by content area teachers.

Even so, this is a real "Catch 22" situation, since research cannot be conducted unless implementation first takes place, after which the results can be studied. I feel that in the Review of Literature section outlined previously enough documentation was presented that points to the beneficial effects of some form of content area reading instruction. Saying a strategy may not succeed does not prove that it will not succeed. Oftentimes, such attitudes of cynicism and negativism overpower all other obstacles to progress. Noted educators have, in fact, provided potentially practical and sound philosophy and theory for reading in the content areas. Implementation is the ultimate responsibility of the content area teacher, and a heavy responsibility, at that, in an age where student failures and perceived teacher inadequacies are likely to become issues of public concern.

What then are some of the things a teacher must do in order to incorporate reading with content instruction?

I believe the procedures outlined in the following pages are some of the requisites.

A. Diagnosis

Every teacher has to be concerned with getting to know his students, which essentially is what diagnosis is all about. For many, however, "diagnosis" is a word in a textbook or something carried out by a guidance counsellor or educational psychologist. Constraints of time and lack of understanding about what comprises diagnosis are often cited as the main reasons for not becoming heavily or directly involved. Nevertheless, the reading-conscious teacher must meet each student with a view to getting a complete picture of that student's strengths and weaknesses. How then can one reconcile two seemingly contradictory viewpoints? This is more than simply a rhetorical question since such a reconciliation is necessary if a content reading program is to be implemented.

We cannot escape the fact that teachers are busy and that diagnosis demands time and energy. Nor can we deny the benefits of careful elucidation of the capabilities and weaknesses of students. This, however, is not answering the question outlined above. I feel that teachers can be successful diagnosticians if they could redefine their concept of diagnosis in terms of how it could be conducted and how the results can be used.

Quite simply, the intent of diagnosis is to determine students' strengths and weaknesses and to use the results as the basis of instruction. The aim is not to generate a grade equivalent to be placed on a cumulative record for who knows what purpose. Thomas and Robinson (1977) suggest the following framework for diagnosis:

(1) Learn, often through observation, which skills students already have.

(2) Examine the assignment to learn precisely what skills they must have in order to complete it.

(3) Tie in instruction in these skills in which students are deficient, thus removing roadblocks.

Many teachers will react immediately to this and say that it is too vague and time-consuming. Diagnosis to them usually involves the administration of a standardized test which ties things up in nice, neat little packages. While such a process may be convenient in terms of time and record keeping it is not in keeping with the philosophy of content-area reading. Standardized tests usually only report the products of very specific types of reading students are called upon to perform in a subject-matter classroom (Robinson, 1978, p. 32).

It is unrealistic to suggest that standardized tests not be used. However, they should be used with a great deal of caution and with a realistic idea of what they can do. They do not permit adequate evaluation of an individual's

reading ability. (To begin, any score reflects frustration level rather than instructional level performance.) And certainly at the secondary level a score of 4.5 (or 37th percentile or sixth stanine) has little relationship to overall performance in reading, since students are asked to read materials at many levels (Robinson, 1978, p. 35). The most important evaluation tool in the classroom is the teacher and far more functional than standardized testing are various informal procedures that can be made continuously rather than at a given point during the school year (Robinson, 1978, p. 36). Robinson has suggested various informal diagnostic procedures for us (Robinson, 1978, pp. 36-66):

(a) Observations. To be most meaningful, observations should be made in relation to the objective(s) of a given instructional situation. Asking the class to read an assignment and be prepared to discuss the main points or implications of it would be a case in point. Students can be observed as they read with the instructor noting students who move their lips or heads, seem to struggle over certain words or whose attention is easily distracted. In the subsequent discussion these students can be observed responding to specific questions which can give the teacher insights into how well or how poorly the selection was read. (It is advisable to work with a few students at a time and to record dated impressions.) This is a first step allowing the teacher to

further evaluate a student's reading ability through the utilization of other procedures.

(b) A valuable device is a "reading autobiography", which is simply a written account of a student's reading experiences. It gives the student a chance to vent feelings about reading and may give the teacher definite suggestions about what direction needs to be taken with a given student. Ruth Strong (1964) suggests an autobiography that consists of a series of specific questions such as those outlined below:

| | Yes | No | |
|---|---|---|---|
| 1. | _____ | _____ | Do you remember the name of the first book you ever read? |
| 2. | _____ | _____ | As a child, did you prefer books that were illustrated? |
| 3. | _____ | _____ | Do you like to have the radio, record player, TV on while you read? |
| 4. | _____ | _____ | Did you learn to read before you came to school? |

(c) Projections. This technique depends on extremely good rapport between student and teacher. The student is presented with a stimulus that permits free response and is encouraged to record information about his inner feelings. This technique should be used selectively when it appears that the information gained may be useful for a student or for a small group of students. An example of such a device arranged as a sentence-completion test is outlined below:

## SENTENCE COMPLETION EXERCISE

1. I like..._____
2. In the morning..._____
3. This school..._____
4. After school..._____
5. I need..._____
6. My schoolwork..._____
7. My mother..._____
8. My worst habit is..._____
9. When I read..._____
10. My friend..._____
11. I don't like..._____
12. My father..._____
13. I am happy when..._____
14. Teachers..._____
15. People think..._____
16. At home, I..._____
17. I worry about..._____
18. I wish..._____
19. When I do arithmetic..._____
20. I can't..._____
21. I get nervous when..._____
22. My family..._____
23. I am..._____
24. On Saturdays..._____
25. Having fun..._____

Source: Rudolph F. Wagner, Study Skills for Better Grades, Portland, Maine: J. Weston Walch, 1978, p. 11.

(d) The Cloze Procedure. In the literature the cloze procedure has received attention as an assessment device, readability instrument, and instructional strategy. Only the first application will be discussed here. Quite simply, "cloze" is a procedure where every nth. word is deleted from a passage the student is asked to read. Usually the first sentence is left intact and sometimes the final sentence. Students are then asked to fill in the deleted words and may retrace their steps and erase when desired. The objective is to find out how much background knowledge students possess about a topic and, especially, to find out if they are capable of making connections between ideas as they utilize the syntax of the sentences. There is no emphasis on a right or wrong answer but rather on the strengths students possess in processing information (Robinson, 1978, p. 131).

Not surprisingly, there is disagreement about how to apply the cloze procedure. William Taylor is generally credited with developing the technique mainly as a procedure for measuring readability (Lamberg and Lamb, 1980, p. 168). When used in place of the IRI, the cloze test consists of a series of passages each representing a different grade level. For group testing, students write in deleted words and the teacher checks responses with an answer key. According to criteria provided by Bormuth (1975), a student's independent level is indicated by at least 57 percent correct responses,

instructional level by at least 44 percent correct responses, and frustration level by 43 percent or less. In addition, Bormuth has developed specific procedures for using and constructing cloze tests (e.g., Passages are to be 250 words in length with every fifth word deleted (50 deletions). Only those responses which are exactly the same as the words in the original text are counted as correct.).

Many disagree with accepting only correct responses and argue that good substitutions which preserve the meaning and syntax should also be counted as correct. Bormuth feels that his procedure avoids inconsistencies by a teacher and variability among teachers. The procedure also saves time. In addition the criteria for determining levels are much lower than those for the IRI. A reader could miss 20 words on the cloze test and still be at the independent level of performance. Students are not being punished when good substitutions are not counted, but if a student's ability is overestimated by counting substitutions he may be forced to read material that is too difficult for him. A major weakness of the cloze test is that it places at a disadvantage those students who are weak in context analysis but strong in other skills (Lamburg and Lamb, 1980, pp. 168-170).

Below is a sample of a cloze test following procedures outlined by both Robinson and Bormuth. That is to say, the first and last sentences have been left intact but thereafter every 5th word is deleted for a total of approximately 50

deletions. In scoring, only the correct responses provided in the key should be counted. Placement criteria are those suggested by Bormuth as outlined previously.

Sample

The Cloze Procedure

Fill in the blanks with appropriate responses.

The Commission of Government period of the 1930s and 1940s was a long crisis of self-confidence for Newfoundland as a community. As the war brought 1 _____ into closer touch with 2 _____ life, they wondered increasingly 3 _____ their country could survive 4 _____ its own in a 5 _____ of insecurity, and if 6 _____ could whether it could 7 _____ them with the costly 8 _____ services and benefits Canadians 9 _____ receiving.

The crisis of 10 _____, the sense of vulnerability, 11 _____ the question of 12 _____ services for the people 13 _____ the supporters of Confederation 14 _____ foothold in the postwar 15 _____ debate. The issue that 16 _____ largest in their campaign 17 _____ not the relation of 18 _____ to local government, 19 _____ the relation of government 20 _____ the individual citizen, 21 _____ direct and personal security 22 _____ by Canada.

The Confederation 23 _____ constantly stressed the immediate 24 _____ for the mass of 25 _____ people -

"Never again would 26 _____ be a hungry child 27 _____ Newfoundland". This emphasis took 28 _____ debate of the 1940s 29 _____ away from the arguments 30 _____ the nineteenth century and 31 _____ supporters of responsible government. 32 _____ skilful propoganda made the 33 _____ of Confederation look as 34 _____ they wanted to deprive 35 _____ people of important advantages 36 _____ the sake of their 37 _____ pride and their own 38 _____.

Cast in these terms, 39 _____ debate took on something 40 _____ class conflict, with the 41 _____ championing the cause of 42 _____ common folk of Newfoundland. 43 _____ federal government of Canada 44 _____ intercede on behalf of 45 _____ "toiling masses" against the 46 _____ who would ask them 47 _____ pay the heavy price 48 _____ a shaky independence. Given 49 _____ type of campaign, with 50 _____ from both the British governments in power in Newfoundland and the Liberal Party in power in Canada, it is not surprising that slightly over half the voters chose Confederation.

Source: Canada Since Confederation: An Atlantic Perspective, page 235.

Answer key to cloze test:

1. Newfoundlanders
2. mainland
3. whether
4. on
5. world
6. it
7. provide
8. social
9. were
10. confidence
11. and
12. up-to-date
13. gave
14. their
15. island
16. loomed
17. was
18. central
19. but
20. to
21. the
22. offered
23. supporters
24. benefits
25. the
26. there
27. in
28. the
29. right
30. of
31. the
32. Such
33. opponents
34. if
35. the
36. for
37. own
38. influence
39. the
40. of
41. Confederationists
42. the
43. The
44. would
45. the
46. men
47. to
48. of
49. this
50. support

(e) The Informal Reading Inventory (IRI). Many teachers are familiar with the IRI since it is a widely used diagnostic tool in many schools. While the IRI is usually thought of in terms of beginning-reading and secondary remedial reading, it is, nevertheless, a valuable tool in content reading as well, since it is a relatively quick way of determining whether or not students are ready to handle the specific content under consideration (Lamburg and Lamb, 1980, p. 162).

Simply put, the IRI consists of a series of graded passages, that is, each passage is written at a particular level of difficulty which corresponds to the equivalent grade level of reading. Some sort of readability formula(s) (see pages 60-76), can be used to verify grade level. (A complete IRI will have passages from pre-primer level to grade twelve.) For each of the passages there is a set of five to ten questions which can be constructed in a number of ways. Typically, questions call for literal recall of details and ideas; interpretations of implied points, causes, or feelings; and sometimes a creative response, such as supplying an appropriate title for the passage (Lamburg and Lamb, 1980, p. 163).

Questions are usually arranged in order of difficulty or by level of comprehension. Questions can also be arranged to follow the order in which the passage presents information. That is, the first question may be answered with information

contained in the first several sentences while the last question might call for the interpretation of a phrase or statement found toward the end of the passage, or yet for the main idea of the entire passage (Lamburg and Lamb, 1980, p. 163).

Whereas standardized tests yield a grade-level equivalent, the IRI provides three scores or levels of reading ability. At the independent level students can read the material with sufficient ease to handle it on their own, independent of the teacher's help or guidance. They know almost all the words and can answer all or most of the questions. At the instructional level, students read with success but may experience some difficulty, usually with unfamiliar words which they cannot analyze successfully. Their comprehension is good. With material at this level, students may need some help from the teacher -- for example, with pronouncing and defining words or by providing guiding questions. This material is appropriate for instruction; it provides problems to be overcome and therefore, facilitates development of skills. The frustration level indicates that the material is simply too difficult to read. Students experience frustration and make mistakes they would not exhibit at the instructional and independent levels. There is a noticeable increase in frequency of mistakes (Lamburg and Lamb, 1980, p. 163).

Criteria have been proposed for determining the different levels, but there are two limitations. First, the criteria have been tested out on elementary-level readers; little research has been done at the secondary level. Second, different criteria have been proposed, such as that below from Emmett Betts and William Powell:

| | Betts | | Powell | |
|---|---|---|---|---|
| | Word Recognition | Comp. | Word Recognition | Comp. |
| Independent | 99%+ | 90%+ | 97%+ | 80%+ |
| Instructional | 95%+ | 70%+ | 92%+ | 60%+ |
| Frustration | 94% or less | 60%- | 91%- | 50%- |

Obviously caution must be a guiding principle - to wit, use the criteria as a general guide and consider both the quantity and quality of mistakes made by students (Lamburg and Lamb, 1980, p. 166).

Tonjes and Zintz (1981) define what they call a Content IRI as opposed to the traditional IRI used mainly by elementary teachers and reading specialists. A Content IRI is prepared by each teacher using the text for that class. It is administered to an entire class simultaneously during one period and reflects directly the area being studied and the types of questions the teacher considers to be important. The purpose of the Content IRI is to estimate

how well individuals in a particular class will be able to handle that text and what skills still need to be worked on (p. 82).

Tonjes and Zintz (1981) suggest the following steps for constructing a Content IRI:

(1) Select from the beginning of the text a representative sample of approximately 250-400 words.

(2) The selection can be typed or printed or students can be asked to read it directly from the text.

(3) Compose an introductory motivation paragraph that includes a general statement about the topic to be read -- a frame of reference statement and a sentence telling the reader the purpose for reading it.

(4) Prepare ten or more comprehension questions that include several vocabulary definitions, stated facts (literal), and inferential questions, asking the reader to go beyond what is directly stated. Vocabulary terms should always be used in context, and not in isolation.

(5) When you complete the rough draft of your questions (at least three in each category), evaluate each according to the following:

Vocabulary -- Did you select key terms important for your students to know? Did you use them in context?

Fact -- Were the details you asked them to recall clearly stated in the selection?

Inference -- Did these questions relate the topic to their background of experience?

Part I of the Content IRI attempts to determine the suitability or the fit between students and their text. The first part should not take students longer than twenty minutes to complete.

Part II of the Content IRI consists of needs assessment of selected skills. The individual teacher is the best judge of those skills necessary for his students to master for success in a particular class. To construct the first section of Part II it is necessary for the teacher to determine which skill areas are important to assess. Tonjes and Zintz (1981) suggest that three of the skill areas listed below should be selected for testing:

(1) Use parts of texts -- Are the students efficient in using textbook aids, such as the table of contents, index, appendices, glossary, references?

(2) Locate reference materials -- Can students locate and use information in encyclopedias, almanacs, reader's guides, and other reference materials?

(3) Outlining and notetaking -- Are students able to outline information and take notes from reading references or while listening to lectures?

(4) Interpret graphics -- Do students know how to interpret maps, charts, diagrams, tables, graphs and cartoons?

(5) Follow directions -- Are they able to follow directions correctly and exactly?

(6) Translate symbols or formulas -- Do students know the meaning of specific symbols or formulas needed for that particular subject?

(7) Define content-specific vocabulary -- Do they recognize with adequate understanding the special vocabulary of a particular area?

(8) Display comprehension skills -- Are students able to note main ideas, supporting details, sequence of events, conclusions, cause and effect?

(9) Use study strategies -- Do students know and use appropriate study skills and strategies?

(10) Adapt rate -- Do students adapt their rate according to their purposes, and the difficulty of the material?

Having selected three areas considered important, the first step in Part II has been completed.

Step two of Part II is to construct test questions based on a text or other class materials that will determine students' strengths and weaknesses in the skill areas selected. (An example of each is contained in the Content IRI which follows.)

The Content IRI should be administered to a total class at the beginning of the term. It should not take longer than one fifty-minute class period to administer.

When introducing it to a class, the teacher should mention that this is an inventory of their strengths and needs, rather than a test. This inventory will help determine what they need. With younger students, teachers may wish to break up the inventory into sections, giving one part each day for two or more days.

To score the inventory, teachers should follow their own criteria. For example, in one area you may decide that it is necessary to get three out of five items correct to show skill competency. In another area, ninety-five percent correct might be deemed necessary. Regardless of the criteria it is beneficial to fill out a class chart showing general areas of the class's strengths and needs as well as individual student scores (Tonjes and Zintz, 1981, pp. 82-86).

Content - Informal Reading Inventory (Tonjes and Zintz):

Part I: Introductory Statement

All of you are no doubt aware that the economic times are difficult in Canada right now. You have also heard people talk of another depression such as that experienced by the people in the 1930's. Read the following story to find out how the Canadians of that time felt about and dealt with the economic hard times.

---

People reacted to the Depression in different ways. Some lined up for relief vouchers; others took wage cuts in order to hang on to their precious jobs; and still others raised a few vegetables and forgot about catching the fish or sowing the crops they couldn't sell. Some preachers

claimed that it was divine punishment. Other people looked for scapegoats and found them in millionaires or in cheap immigrant labor. Many people became isolated by the Depression, withdrawing into day-to-day living where a cigar was a special occasion.

While some headed hopefully for cities where welfare services were better organized, still other people left the cities to look for a simpler way of surviving in the country. Crowds of single men travelled as never before, jumping long-distance freight trains on the trail of a rumor of work. People all over Canada sought escape in movies, radio comedy shows, and such headline events as the birth of the Dionne quintuplet girls in Ottawa.

Governments too were anxious for escape, reluctant to admit how serious the situation was becoming. In 1930, the Liberal Prime Minister, Mackenzie King, told parliament that he would not give a single five-cent piece in emergency relief funds to any provinces run by the conservatives. Under the leadership of R.B. Bennett, a self-made millionaire who exuded business success and promised a tough approach to the crisis, the conservatives won the federal election of that year.

Emergency funds now went out to local authorities. Military-style camps were set up to put jobless single men to work on such public projects as the Trans-Canada Highway. These piecemeal efforts were intended to help hold the line while the Conservative grand strategy, the highest tariff in Canadian history, did its work. There was some relaxing of this policy when Canada joined Britain and other dominions in a limited common-tariff group after the 1932 Imperial Economic Conference.

Source: Canada Since Confederation: An Atlantic Perspective (Part II) by Richard Howard, Sonia Riddoch and Peter Watson (Grade IX social studies text, p. 166).

Answer the following questions in the spaces provided:

1. List three ways in which the Canadian people reacted to the Depression:
   (a) _____
   (b) _____
   (c) _____

2. "Other people looked for scapegoats and found them in millionaires or in cheap immigrant labor."
   (a) The word "scapegoat" means _____
   _____

3. Who became the Canadian Prime Minister as a result of the 1930 federal election? _____

4. Why do you think the people of Canada changed governments in the federal election of 1930? _____
   _____

5. "Some preachers claimed that it was divine punishment."
   (a) The phrase "divine punishment" means _____
   _____

6. What does the fact that some people headed for the cities to improve their situation while others were leaving for the same reason tell us about the emotional condition of the people at the time? _____
   _____
   _____

7. "People all over Canada sought escape in movies, radio comedy shows, and such headline events as the birth of the Dionne quintuplet girls in Ontario."
   (a) As used in the sentence above, what does the word "escape" mean? _____

8. Why would Mackenzie King not give emergency money to certain provinces? _____
   _____

9. Are the writers talking about cigars specifically when they state that "a cigar was a special occasion"? _____
   _____

10. "Many people became isolated by the depression...." What does the word "isolated" mean in this context?
    _____
    _____

**********

Part II: Needs Assessment of Selected Skills

Tonjes and Zintz suggest that three skill areas be selected from the list provided earlier. In this sample as many of the skill areas as are pertinent to social studies will be utilized.

1. Parts of Text:
   (a) On what pages will you find information about "appeasement"? _____
   (b) When was this text copyrighted? _____
   (c) On what page will you find a chart on the topic of food prices? _____
   (d) Define the last word in the glossary. _____
   _____

2. Reference Materials:

   (a) What source would you use to find out more information about Newfoundland's entry into Confederation? _____

   _____

   (b) Why are magazines and newspapers important when studying social studies? _____

   _____

3. Outline and Notetake:

   (a) Read the passage entitled "Three Options" on page 230 and outline its most important points.

   (b) Listen carefully as I read a short passage entitled "Reactions to War" on page 216 of your text. As I read take notes on the most important points of the passage.

4. Look at the chart on page 227 of the text:

   (a) What is the topic of the chart? _____

   (b) Why do some of the chart entires have lines connecting them while others do not? _____

   _____

   (c) Based on the information contained in this chart, which is the most important part of the United Nations? _____

   _____

5. Follow Directions: There are a number of ways to test this concept. If the text is such that there are passages describing an event or explaining a process one can simply have students read the selection and follow the directions as written. If this is not possible there are a number of other possibilities.

(a) Have students look at a map of their particular area and prepare a set of directions that would enable a stranger to get from point A to point B. Since they are so familiar with the area they could describe the road signs and prominent landmarks on the particular route chosen. In other words they could make the connection between the graphic display (map) and the real world (highway; country road, etc.).

(b) A useful activity that can be used on a class basis (with pairs of students or individually) is having students reconstruct a geometric figure from a set of directions that someone could dictate. If the teacher wants to work with the whole class he can simply prepare a set of directions and have the whole class try to reproduce it exactly. Students can work in pairs where each one is expected to have a design in mind with a set of directions previously made up and then test the other. If any particular student exhibits an unusual amount of frustration with such an activity the teacher can conduct an individual session to get additional information.

6. Content-Specific Vocabulary: Every subject area has a technical vocabulary specific to it that students must know if they are to be successful in this content field. A random list of common but important terms can be made up and presented to students either to match with a given definition or to define themselves. Sometimes a textbook will have periodic vocabulary checks of important terms and phrases that can be used either in total or as a supplement to a teacher made list. In the case of the textbook under consideration here, page 161 of the text lists a set of specialized vocabulary important to social

studies in general and to the understanding of this text specifically. With a few additions if needed this list is more than adequate for our purposes here.

(a) In your own words define what each of the following terms means to you: (Page 161)

(i) mass production
(ii) natural resource concession
(iii) inflation
(iv) regional development
(v) branch plants
(vi) prohibition
(vii) assimilation
(viii) revenue
(ix) resource-exploiting economy
(x) subsidiary
(xi) Americanization
(xii) cultural gap
(xiii) continentalism
(xiv) technology
(xv) corporation
(xvi) isolationist

7. Comprehension Skills:

Read the paragraph below and answer the questions which follow:

The Depression that began with the stock market crash in October of 1929 affected different groups in different ways. Although rural people might be stuck with grain that could not be sold when prices plummeted by 75 percent, they could grow much of their own food and hitch up their horses to the cars that had no gasoline to run on. People in towns and cities whose jobs disappeared could look for any other kind of work there was, but they needed cash to keep going.

(a) Underline the main idea of this paragraph.
(b) What conclusion can you draw from this paragraph?
(c) Rewrite this paragraph in your own words.

8. Study Strategies: Administer a study habits survey asking students how often they do such things as the following:

(a) Survey a chapter before reading.
(b) Ask themselves questions as they are reading.
(c) Check answers to their questions as they read.
(d) Review immediately after reading.
(e) Schedule their time for study.

If the above is not comprehensive enough a study skills survey could be useful (Tonjes and Zintz, p. 13).

9. Adaptable Rate: Short passages can be selected from the text and students asked to read each for a different purpose at different speeds. They can be timed while doing this. For example, they can be asked to skim a paragraph to find a certain fact or detail. They could be asked to examine a paragraph a little more closely to determine its main idea whether it is directly stated or implied. They could be asked to outline a sequence of events which would require even closer inspection.

This completes a Content IRI as suggested by Tonjes and Zintz. Since these instruments have to be constructed by the individual teacher the foregoing was but an example. Teachers can make changes and adjustments in their own instruments as they see fit. For example, the sample just discussed contains nine skill areas to be tested, when in fact Tonjes and Zintz suggest that only three be singled out and tested. Teacher flexibility is necessary here; one can

devise a Content IRI that best suits his class and subject area. While the process is fairly time-consuming it is not so difficult as one might expect and in fact can be prepared fairly quickly. It should also be noted that the Content IRI like many other of the diagnostic instruments mentioned in these pages requires a lot of time only at the beginning. Once a teacher has built up a repertoire of assessment instruments they can be reused or updated quite easily and administered whenever desired.

The foregoing is by no means an exhaustive summary of all of the diagnostic techniques at a teacher's disposal. Any kind of procedure or structure that can be used to find out certain kinds of information about students is itself a diagnostic tool. The cloze procedure, the IRI, and other such devices would seem to be important diagnostic procedures as would be standardized tests if they are selected carefully and used properly. The most important point is that a teacher who is reading conscious regardless of subject area is one who pays careful attention to diagnosis, which in the final analysis simply means getting to know your students. In the final analysis, too, the most important diagnostic instrument or procedure is the careful observations of an alert teacher. While such a pronouncement may sound trite it is nevertheless true though difficult to bring about.

B. Readability

Another important component of a content area reading program is a concern for the readability of content materials. In Section A an attempt was made to suggest strategies that would help teachers determine their students' strengths and weaknesses in relation to content material. That discussion was based on the assumption that the learning process can be either impeded or facilitated by the peculiarities of individual students. However, careful diagnosis alone will not permit a teacher to prescribe the requisite instructional strategy. To determine realistically why a disparity may exist between the student and instructional materials a teacher should also consider the content with which a student has to deal. In a way this may be considered diagnosing the strengths and weaknesses of content as opposed to students.

For too long teachers have passively accepted materials from the department or district office for use in their classes with little or no regard for the suitability of these materials until after the "experiment" has failed, so to speak. One may well argue that there is very little a teacher can do if a text has been prescribed by the Department of Education or if it fits in with district policy. This may be so and I suppose it would do little good to argue that enough teachers could make a difference if they were sensitive to such things as readability. It is a fact, however, that if one finds himself with a text that has a high readability

level and if one is familiar with the concept he can do much to change and adapt that particular text to meet his students' needs and abilities. Time consuming though it may be, it would be as worthwhile an experience as many of the curriculum development committee functions teachers now perform, indeed probably more so.

Mention the term "readability" and most teachers immediately think of readability formulas. This is understandable since it is this aspect of readability that has provoked the most ink. There are more than thirty formulas currently in use and they differ in:

(1) the kind and number of variables they measure;

(2) the degree of difficulty and amount of time required to use them;

(3) the computational procedures;

(4) the grade levels of materials they are designed to measure.

(Lamburg and Lamb, 1980, pp. 136-137)

Most formulas measure only word and sentence length and difficulty, are comparatively easy to use, and are based on one of two assumptions:

(1) First, is that the successful reader can respond effectively to a variety of linguistic units such as "phonemes, syllables, words, phrases, and sentences". In order to respond successfully the reader must "recognize, analyze, combine and recombine" the units. Generally, the longer and more complex the unit, the more difficult the reading.

Therefore, a passage with many long and complex words and sentences is expected to be more demanding than an equally well-written passage on the same content with shorter and simpler words and sentences (Lamburg and Lamb, 1980, p. 137).

(2) The second assumption is that the successful reader interacts with the text and does not just passively receive information from it. This interaction requires the reader to bring his or her knowledge and experience to the act of reading. The more knowledge and experience the reader has of the language and content of a passage, the easier the task should be. Stated in a negative way, the greater the number of unfamiliar words and concepts, the more difficult the task. Most formulas are used to measure either familiarity (assumption number two), or length and complexity (assumption number one) (Lamburg and Lamb, 1980, p. 137).

It seems to me that most readability formulas are more concerned with assumption number one; that is, sentence and word length and complexity, than with assumption number two. Certainly, historically this has been true and it is only within the recent past that readability formula makers have tried to incorporate the experiential background of students as a factor affecting readability of print. In fact, some, such as Mary Monteith and H. Alan Robinson, would argue that readability formulae do not take into consideration the experiential background at all. As Monteith succinctly puts it, "The ultimate test of readability lies with the individual

student." (Lamburg and Lamb, 1980, p. 137). In any event the following table shows in chronological order the formal beginnings of readability considerations and selected formulas developed since 1852. It is probably only necessary to become familiar with one or two readability formulas to have available a useful tool to check the approximate difficulty levels of classroom materials.

It is obviously impossible to discuss all of the readability formulas in detail, but we will try to apply some of the more important or widely-used ones. Obviously the first formula that comes to mind is the Fry graph for estimating readability. The complete instructions and details for applying the Fry readability formula are given in the sample below (Tonjes and Zintz, 1980, p. 61). An attempt to apply this formula has been made, utilizing material from the text The Fishery of Newfoundland and and Labrador (1980).

## Sample

Step 1: Select three 100 word passages from the beginning, middle, and end of the material. (Because most texts range in readability from one section to another, a minimum of three passages are necessary for analysis.)

Selected Readability Formulas

| | | Factore measured | | | |
|---|---|---|---|---|---|
| | | Sentence Length | Vocabulary | | Other |
| Date | Formula | | Word Length | Familiarity | |
| 1852 | Spencer "Philosophy Style" | | | | |
| 1921 | Thorndike list of most frequently used words | | | | |
| 1923 | Lively and Pressey, formal beginnings | | | | |
| 1935 | Gray and Leary | | | | |
| 1939 | Lorge | | | | |
| 1943 | Flesch Reading Ease | X | X | | |
| 1948 | Dale-Chall | X | | X | |
| 1948 | Flesch's Human Interest Scale | (number of personal pronouns and personal references in 100 words) | | | |
| 1952 | FOG (Gunning) | X | X | | |
| 1953 | Spache | X | | X | |
| 1953 | Cloze (Taylor) | | | | X |
| 1968 | Fry's Graph | X | syllables | | |
| 1969 | SMOG (Mclaughlin) | X | syllables | | X |
| 1975 | SEER (Singer) | | | | X |
| 1978 | Rauding (Carver) | | | | X |
| 1979 | Raygor Readability Estimate | X | count letters | | |

(Tonjes and Zintz, 1981, p. 60)

Passage 1

The problem of isolation was to affect the development of the fishery particularly with regard to supplies. Some goods such as certain foods, dry goods, building materials or fishing gear could not be locally provided and were not readily available in communities. This meant a long and often arduous trip by boat to a large settlement. Gradually, merchants opened stores to supply the small communities and a system of merchant paternalism commonly known as the "truck" system evolved. (This system was not indigenous to Newfoundland, but was, in all likelihood, adapted from the truck system which was found in English and Welsh coal mining villages until the mid-1800s.) (p. 12)

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Passage 2

The shrimp fishery, only recently developed in Newfoundland, offers longliner fishermen in places such as Port aux Choix another high-value catch. Two major shrimp beds are known to exist, one off the Northern Peninsula and the other off the Labrador Coast. The species is smaller than the southern United States shrimp, and this fishery is usually carried out from longliners with bottom trawls. In 1977, 3,400 MT were landed for a value of $1.8 million, and in 1978 the catch was 3,435 MT for a value of $2.3 million. In 1979, fishermen received 39½ cents per pound for shrimp. (p. 51)

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Passage 3

The companies, too, will have considerable input in the future development of the industry. They now are examining the feasibility of purchasing "super" freezer trawlers to pursue the northern cod stock. Existing trawlers as they near the end of their working life will have to be replaced on a systematic basis and the companies will probably lobby for increased vessel subsidies to help meet the cost of this replacement. In addition, the companies will continue to examine and develop new processing technology with the ultimate aim of acquiring new markets. No doubt, they will apply increasing pressure on government to negotiate new tariff agreements in order to broaden the industry's market base. (p. 129)

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Step 2: Count the number of sentences in each passage and determine the average sentence length. Although the passages may contain more than 100 words, count only the number of sentences that comprise 100 words, being careful to include fractions of sentences.

Step 3: Count the total number of syllables in each passage and determine the average number of syllables.

Step 4: Plot the point on the Fry Readability Graph where the average sentence length and the average number of syllables intersect.

The Fry analysis of the three passages just outlined showed that the average sentence length was 4.4 and that the average number of syllables was 172. Plotting this on the graph shows that the text The Fishery of Newfoundland and Labrador (1980) written by Sally Lou LeMessurier and edited by Susan Sherk, published by the Extension Service, Memorial University and intended for use in the Level I social studies program has a reading level of 14, which is at the college level.

In an attempt to corroborate this finding as well as to present another useful instrument for assessing readability McLaughlin's SMOG Formula was applied to the same text. Like the Fry Formula, SMOG is fairly time-consuming but relatively easy to apply. McLaughlin's SMOG formula is:

$$\text{SMOG} = 3 + \sqrt{\text{number of words with three or more syllables in thirty sentences}}$$

The formula is based on the interrelationship of sentence length and number of polysyllabic words. Words with more syllables are considered to be more difficult than shorter words. The number of polysyllabic words in three ten-sentence samples are determined first. Since short sentences will have fewer slots to include many large words, the difficulty level may be determined by the number of polysyllabic words in three ten-sentence samples (Tonjes and Zintz, 1981, pp. 60-62).

The steps in the SMOG formula are:

(1) Count ten consecutive sentences near the beginning of the text, ten near the middle and ten towards the end.

(2) Taking the total of thirty sentences, count every word of three or more syllables when they are read aloud. Count words of three or more syllables even when they are repeated.

(3) Estimate to the nearest perfect square -- the square root of the total number of polysyllabic words. (The total number of polysyllabic words in the samples chosen here was 97, which means the nearest perfect square is 100 of which the square root is 10. If the total number of polysyllabic words falls directly between two perfect squares take the lower of the two.)

(4) Add three to the square root to determine the reading level. Since the square root is 10, three added to this gives a reading level of 13.

(5) When samples of the three ten-sentence selections vary considerably further samples should be selected for greater accuracy.

(6) Note that by adding "three" to the score it will not be usable for primary materials. (Tonjes and Zintz, 1981, pp. 60-62)

Research has shown that the Fry and the SMOG, although both are considered accurate, are not always in agreement as to readability level. If you use both, it is important to understand how to interpret this difference. Fry's graph estimates the reading ability needed to comprehend with fifty to seventy-five percent accuracy, or somewhere between frustrational and instructional reading levels, whereas SMOG predicts reading ability required by ninety to one hundred percent understanding, or the "independent" level. However, since Fry changed in 1977 to counting proper nouns these variances may be less notable (Tonjes and Zintz, 1981, p. 62). Therefore, the grade 14 obtained by the Fry analysis means that students can handle the text The Fishery of Newfoundland and Labrador only if they have a very high reading ability and with instructional aid. The grade 13 obtained by the SMOG means that students reading at that grade level can handle the material independently.

Before moving on it would probably be appropriate to mention two other quick-assessment formulas. Sometimes it

is necessary to determine the difficulty level of passages shorter than 100 words, such as these found in math texts, directions, essay questions, or other material less than 100 words in length. Forgan and Mangrum have outlined procedures for doing this, using the Fry graph (Tonjes and Zintz, 1981, p. 64):

(1) Count the total number of words in the passage. For example, the total might be sixty-nine words.

(2) Round down to the nearest ten. In this case you would round down the sixty-nine to sixty.

(3) Use this number (in this case sixty) when counting the number of sentences and syllables.

(4) Multiply the number of sentences and the number of syllables by the corresponding number found in the conversion chart below. With our example of sixty-nine word passage, rounded down to sixty, you would multiply the number or sentences by 1.67 and then the number of syllables by 1.67.

(5) Use these numbers to enter Fry's graph to find your readability estimate.

Sticht reported on a quick estimate of readability called "Forcast" that can be readily applied to materials at fifth grade level or above. Although he cautions that ten samples must be used for accuracy, smaller samples may give an accurate quick check of the Fry score. This formula is:

$$20 - \frac{\text{number of one syllable words in 150 words}}{10}$$

(Tonjes and Zintz, 1981, p. 65)

Evaluating Reading Difficulty of Short Selections

(Tonjes and Zintz, 1981, p. 65)

(Conversion Chart)

| Number of words in selection (Less than 100) | Multiply by |
|---|---|
| 30 | 3.3 |
| 40 | 2.5 |
| 50 | 2.0 |
| 60 | 1.67 |
| 70 | 1.43 |
| 80 | 1.25 |
| 90 | 1.1 |

Are such formulas good indicators of readability? Nearly everyone agrees that at best the scores obtained are approximations and are not to be interpreted too literally. Research seems to indicate that as approximations the formulas are indeed useful. They are relatively simple and quick to use and studies comparing the most widely used formulas show that they generally agree in the ranking of materials as to difficulty. Other studies have also shown a high correlation between readability measurement and group comprehension scores of students; that is, a group of students were able to read successfully materials indicated appropriate for them (Lamburg and Lamb, 1980, p. 143).

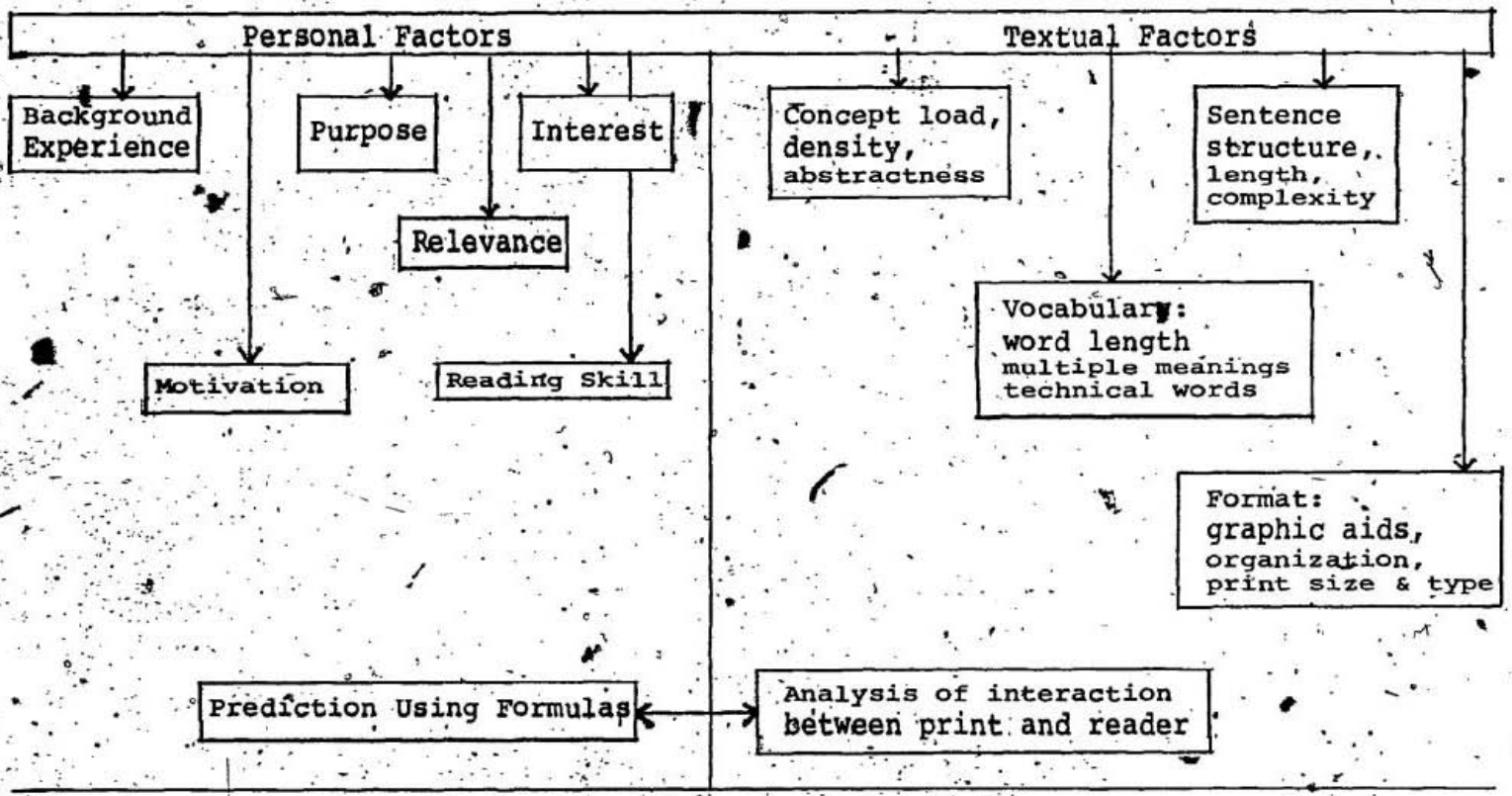
There are obviously problems with readability formulae, such as the methodological inadequacy in generalizing from limited data. The difficulty of an entire text is generalized on the basis of the difficulty of a few passages. In turn, the difficulty of each passage is generalized from measures of two or more variables (Lamburg and Lamb, 1980, p. 143).

The problem in making a general estimate of the readability of an entire text lies in the fact that secondary textbooks commonly range in level of difficulty. The desire for consistency in difficulty conflicts with the desire for variety, which is often expected of good writing. Variety is achieved in part by what T. Stevenson Hansell calls a "delicate balance" between simplicity and complexity of style (Lamburg and Lamb, 1980, p. 143).

The second major limitation of readability formulas was alluded to earlier when it was mentioned that they neglect to take into account the experiential background or prior knowledge of students. Readability varies and there are factors which make reading more difficult for some. For example, if the content is familiar to a student, the vocabulary will also be familiar and therefore easier. How much interest a student has in the subject of the material also affects difficulty: content-familiarity may affect interest. Lou Burmeister has identified additional factors which affect reading difficulty, including: syntax (sentence structure), organizational patterns, the number of textbook aids, and other matters of format like type face and type size, the kind of paper and the type of cover (Lamburg and Lamb, 1980, pp. 143-144).

Tonjes and Zintz (1980, p. 57) illustrate very clearly what we have been talking about. As one can see from the accompanying chart, readability can be affected by both textual factors and personal factors. The various formulas address themselves mainly to the textual factors and not to the personal factors.

Factors Affecting the Readability of Content Materials




Source: Marian J. Tonjes and Miles V. Zintz. Teaching Reading/Thinking/Study Skills in Content Classrooms. Dubuque, Iowa: Wm. C. Brown Co., 1981, p. 57.

As a result some seem to reject readability formulas outright. It fact, Robinson (1978, p. 131) states that:

> while these formulas may have some limited benefit they are very unsatisfactory. Basically they do not take into consideration the changing concepts of words today as used in a variety of contexts; they do not focus on the inter-sentence factors in a passage or on the organization of a passage; nor do they take into consideration the background, interests and purposes of the reader.

In opposition to readability formulas, Robinson (1978, p. 131) sees Bormuth's cloze readability procedure (discussed in Section A) as an improvement, since it takes into consideration many of the factors outlined above. In addition, it provides a scale for arriving at a readability level. Bormuth (1968) discovered that student scores falling between 44 and 57 percent reflected their ability to handle the material with supervised instruction. Scores above 57 percent indicated that students could read the material on their own with adequate comprehension.

Probably more important to the content teacher is Robinson's (1978) extension of a list of readability criteria first suggested by Krause (1976). Teachers should ensure that:

(1) The density of concepts isn't intended to frustrate the student.

(2) The sentence complexity isn't unusually high, utilizing long compound and complex sentences.

(3) The authors don't continually choose to use long, difficult words when simpler synonyms would suffice.

(4) Captions under graphs, tables and diagrams are clearly written.

(5) The text contains both a table of contents and an index.

(6) The table of contents shows a logical development of the subject matter.

(7) When a text refers to a graph, table or diagram, that aid is on the same page as the textual reference.

(8) Pictures are in color and are contemporary, not dated by dress unless the author's intention is to portray a certain period.

(9) Difficult new vocabulary words are highlighted, italicized, or underlined.

(10) The main idea of purpose for reading a chapter is stated at the beginning.

(11) The authors include a summary at the end of each chapter.

(12) Passive tense is used only when essential, since frequent use tends to trouble poor readers.

(13) The variety of connectives is somewhat controlled so that they are used sparingly as important signals to the reader.

(14) Antecedents and referents are clear, particularly across sentences.

(15) Relative clauses are limited in number in a given sentence, clearly written and clearly attached to a referent.

In the final analysis, it is probably not important what readability procedures content teachers use so long as they are familiar with the procedure(s) used, have faith in them, and have specific reasons or purposes for their utilization. The various strategies discussed here are at best approximations of reading difficulty and are not hard and fast limits. As Monteith so aptly put it, "the ultimate test of readability lies with the individual student". It is therefore impossible to generalize about readability when thirty or more different students are dealing with the same text or reading assignment. What is difficult for one may not be challenging for another and thus we have varying degrees or levels of readability made apparent within a given class.

In the grade nine Literature text, Exits and Entrances, there is a selection from Charles Dickens' novel, Great Expectations, which presented many of my students with difficulty but which was not challenging for others. A SMOG analysis of that selection revealed a grade eight reading level, so it seems that there was something else at work here. When questioned about their difficulty many of the students were hard pressed to explain what the problem was. However, after some discussion it was concluded that the

idea of an old lady living in a dilapidated mansion where time had stopped twenty years previously was outside their realm of experience. With instructional help, however - no more than placing the brief selection in the context of the larger work - most students came to appreciate Dickens' beautiful characterization, use of setting, and precise language. It might even be said, albeit somewhat presumptuously, that most of them got something out of the story, whatever that may entail. The point of this example however, is whether this story was in fact readable. The readability formula said yes, but the students were hesitant and were experiencing difficulty. However, instruction seemed to help and eventually most students seemed to enjoy it. Therefore, the story is readable and I believe that this is a good example of what Monteith meant earlier about individuality and readability.

Much the same thing happened with W.O. Mitchell's novel, Who Has Seen the Wind, used in Newfoundland schools for the course Thematic Literature 1200. Before doing a detailed study of the novel in class, I attempted to make sure that students were reading it and from time to time would bring it up for a few minutes during some of my other periods. The reaction was that it was a difficult novel to read and that they were having trouble understanding it. Subsequent discussions determined that it was certain aspects of Mitchell's style that were presenting problems. The vague

time span, episodic nature of the story, gradual introduction and development of character, the point of view, the symbolism, etc., were frustrating them. After approximately twelve periods of instruction dealing with these factors in some detail, the work became more readable, so to speak, and I believe it's fair to say nearly everyone enjoyed it.

Many of the things mentioned in these two examples would not reveal themselves on a readability formula and if one simply used these devices little would be gained. That is not to say that such formulas are not useful as was the case with the text, The Fishery of Newfoundland and Labrador, which has a very high readability level and will present many problems for students. The book is about four or five levels above grade level and the teacher who is aware of that can prevent many of these problems from arising or at least getting out of hand. The readability formula finding should have warned teachers to examine the text in terms of the needs and abilities of their students - which they should already know something about. Successful reading requires, after all, the proper match between a reader and the printed page. Diagnosing students' levels, needs, and interests in conjunction with a consideration of the readability of instructional materials are precursors to a successful combination.

C. Vocabulary Development

That diagnosis and readability assessment are but precursors of a process-oriented instructional strategy that has been defined as content-area reading should now have been established. Whatever information is gained from the procedures outlined in Sections A and B must become the basis of instruction. Estes and Vaughan (1978) make this very clear with their idea that instruction is effective only if it bridges the gap between what a student knows and what he needs to know. If we were dealing with a specific student population whose needs, interests and abilities had been carefully assessed we would know more specifically what instructional strategies are required. However, since we are working mainly in a hypothetical fashion we must be as inclusive as possible. At the same time we must be selective and try to piece together from the mass of material available a program that hopefully will be as useful to as many people as possible.

It is very likely that students at all levels will either exhibit a need for or benefit from a program of vocabulary development. I suppose almost every teacher in Newfoundland was exposed to the Words are Important vocabulary program as a high school student. One will find little support for that kind of program here. Nor are we talking about copying definitions of words on the chalkboard to be

dutifully transcribed and memorized by students. This is but one miniscule aspect of vocabulary development that is easily carried out but is not terribly useful. One has only to think back to Robinson's earlier idea of "unlocking ideas independently" or to Riley's definition of functional content area reading to realize that vocabulary development has to be more comprehensive than that. Word power is vital to effective comprehension of written discourse and the process of improving and extending vocabulary must be a continuous undertaking (Tonjes and Zintz, 1980, p. 133).

Reading and vocabulary development are related in at least two ways: (1) when the meanings of words in context are clear, the reader is able to effectively comprehend connected discourse; (2) through the act of reading, new words are acquired and shades of meaning are expanded and refined (Tonjes and Zintz, 1980, p. 136). One might see some similarity here to the phrase "Learn to read: read to learn" which would be a mistake. I feel that such thinking is inadequate because it implies that the two are disjointed processes. This is impossible, since while one is learning to read he must be reading to learn as well. The relationship mentioned above is an interrelationship and I disagree with Tonjes and Zintz when they say that readers constantly switch back and forth between the two. The two processes work simultaneously and in a good program should merge into one another.

One could list a large number of vocabulary difficulties that students experience. Basically, however, the difficulties fall into two categories: namely, problems with technical words and problems presented by words with multiple meanings. Lamburg and Lamb (1980, p. 32) define a technical term as one peculiar to a particular area of study, such as "cosine" in mathematics, as opposed to a word such as "point" which is also used in mathematics but which transcends subject area and has a number of meanings.

Technical words, those peculiar in meaning and usage to a specific content area, fall into three categories:

(1) words which are used only in that content area;

(2) words in common usage which have special emphases or meanings in the specific content area;

(3) specialized symbols and abbreviations.

(Lamburg and Lamb, 1980, p. 38)

These technical terms may be entirely new to a student and he may experience trouble pronouncing them or using word analysis skills. Sometimes the concept represented by the word may be unfamiliar to the reader even though he has no trouble verbalizing it. Finally, the word may be somewhat familiar but creates confusion because it does not have a simple concrete referent, such as the word "polynomial" in mathematics, which means a sum of two or more algebraic expressions. If the word is a common one but with a special emphasis in a certain subject area, sometimes the student is

unable to make the transition or see a relationship between the two. The problems with specialized symbols and abbreviations are fairly obvious and probably the easiest to deal with. However, merely knowing what an abbreviation or symbol represents does not guarantee that the meaning is clear (Lamburg and Lamb, 1980, pp. 33-35). Once a symbol has been decoded the same problems as those outlined previously present themselves. For example, NATO is an acronym that can be easily memorized and the referent is well known, but what does the student know of the concept - i.e., the North Atlantic Treaty Organization?

A problem that almost every teacher has faced has to do with the denotative and connotative meanings of words. Denotation, the common dictionary listing for a word, at times presents problems but not in as perplexing a manner as does connotation. Connotation, as defined by Dale and O'Rourke, is "the circle of ideas and feelings surrounding that word and the emotions that words evokes." Attention to connotative meanings is particularly important and is a potential source of difficulty in four situations: (1) literary writing, (2) persuasive writing, such as propaganda and advertisements, (3) discussions of controversial issues, and (4) the students' own writing (Lamburg and Lamb, 1980, p. 34). Even some textbooks which are considered neutral might exhibit positive or negative bias in word choice. I wonder what different shades of

meaning students would place on the following passage from The Fishery of Newfoundland and Labrador:

> The union plans to influence the entire industry in order to foster the interests of its members. As long as the companies do not process all of the fish the fishermen can legitimately catch, the union will negotiate direct, over-the-side sales with foreign buyers, although many fishermen might prefer that the plants would increase their capacity to handle this fish. (p. 129)

Some might see "fostering the interests of their members" as a rather selfish viewpoint, particularly when it may not be what many of the members want in this instance.

We could go on to document many types of vocabulary difficulties that students may experience. Some, for example, have trouble with figures of speech such as simile and metaphor; for others, idiomatic phrases and euphemisms present difficulty. I feel however that this would not only consume too much time and space but also I am not convinced of its usefulness. It is a simple fact that teachers will always have to help students progress beyond a simple knowledge of the technical language to the development of the more advanced concepts designated by the terms and symbols. Like all other areas of learning, the essence of vocabulary development is concept formation. Concepts result from individuals' attempts to understand their experiences. They observe, compare and contrast, and then categorize particular experiences. They arrive at generalizations which allow them to group specific experiences together, or categorize them,

on the basis of common characteristics and to distinguish these experiences from others. As individuals learn and encounter more and more experiences, the categories are continually revised and expanded (Lamburg and Lamb, 1980, p. 40). As Neil Bolton explains,

> It is ... the match between the learner's repertoire of skills and the nature of the material which is decisive for the development of an intrinsic motivation to attain competence in the subject.

As we mentioned before, the congruence or disparity of the match must be ascertained and then appropriate strategies used to either revise or expand.

It is obvious that rote memorization of key terms and phrases has little to do with concept formation. As a matter of fact, schools teach new concepts in a rather backwards way when compared to the way children learn new concepts before they start school. Lamburg and Lamb illustrate this very well:

> Shortly after infants learn to take food and liquid out of a dish and cup, they begin to react strongly when they see those objects. They have apparently learned to associate the feelings of hunger and its satisfaction with the objects. One day an interesting event occurs. Children see their parents with their own dishes and cups, and they react by waving their arms and making the same noises they do when they see their own dish and cup. Apparently the children have discovered the common characteristics of these different utensils and have grouped them together.

> Later, children will begin distinguishing among these objects. They will learn that certain utensils are their own and that others utensils belong to their parents. They will also learn that utensils with particular shapes and sizes have specialized purposes. Still later, they will learn to associate words with the objects: dish, cup, my dish. Eventually, they will learn more precise terms and subcategories: dish, plate, saucer, juice glass, and water glass. (Lamburg and Lamb, 1980, p. 40)

The same writers go on to show what happens when concepts are normally introduced to students in school:

> When a child enters school, the sequence in learning concepts is often reversed. The typical learning experience begins with the introduction of the term by the teacher or the textbook: "Today we will study the simple sentence." At this point, the terminology may be meaningless. (Remember Bolton's idea of a "match".) Next comes a definition - commonly, a statement of the concept: "A simple sentence is a grammatically complete utterance with one subject and one predicate." Notice that the statement has additional terminology which may also be meaningless to the student.
>
> The concept is further defined by example: "Tom hit the ball" is a simple sentence. Sometimes nonexamples are presented to provide students with a comparison/contrast by which they can discover distinctive features: "Tom, the ball" is not a simple sentence just as "Tom hit the ball, and Anne caught it" is not a simple sentence. (Lamburg and Lamb, 1980, p. 40)

Thus far the concept has been introduced but it has not been learned by the students. Some might say it has not been internalized or that it has not been assimilated with existing capacity. If the teacher stops here or provides a brief homework assignment, which is what happens in too many

cases, the concept will probably never be learned. What is needed now is practice with using the concept in different ways, a mechanism that will make the concept important to the student (more than just test material), if this is possible - or if it is not, at least systematic review of the concept so that it can be revised if need be or expanded is called for.

This is all very well, but how can a busy teacher manage to do all this? Everyone wishes he had a sure formula or magic elixir, but unfortunately such is not the case. Nor are we suggesting that the approaches mentioned here are a panaces - in fact, there is not much new about them at all. At best they are probably redefinitions or extensions of things already being done to a certain degree. Lamburg and Lamb (1980, p. 41) list the following as possible active responses (student activities/teacher illustrations) for concept development in general and for the concept "simple sentence" in particular:

1. SELECTING EXAMPLES: Which of the following are complete simple sentences?

   a. He felt very lonely.

   b. Felt very lonely.

   c. Very lonely.

   d. The dog bit her.

   e. Bit her.

   f. The dog bit.

2. TRANSFORMING NON-EXAMPLES INTO EXAMPLES: Rewrite the following as complete simple sentences:

   a. Looked around

   b. He saw

   c. She running away

   d. the house was

3. EXPLAINING EXAMPLES: Why are the following complete simple sentences?

   a. She was tired.

   b. He fought with his brother.

4. IDENTIFYING EXAMPLES IN DIFFERENT FORMS: I will say some utterances. Tell me when I say a complete simple sentence.

   a. "Looking for you."

   b. "He is looking for you."

5. IDENTIFYING EXAMPLES IN LARGER CONTEXTS: Select a passage for students to read and then have them underline each complete simple sentence.

6. CREATING EXAMPLES: Write five complete simple sentences.

7. ESTABLISHING SUBCATEGORIES: Here are three patterns of simple sentences.

   a. Tom hit the boy. N V N

   b. Tom was sad. N V ADJ

   c. Tom was at home. N V ADV

   Label the following sentences and explain which pattern they fit.

   a. Cindy enjoyed the movie.

   b. It was humorous.

The point of the above sample is that a variety of activities should be utilized so that a student can move from one level of concept development to another. Having been told what a simple sentence is, the student has many opportunities to work with the concept and apply what he has learned. In a real situation it may take some time to move through the different activities so that the concept is developed gradually over a period of time. While the simple sentence is specific to English instruction, the same structure could be utilized in other subject areas. For example, one could do the same with concepts such as polynomials in mathematics, weathering in science, capital expenditure in economics, imperialism in history, and so on. Regardless of the particular concept, the point is that something other than defining a word on the chalkboard and then answering a brief homework assignment on some related aspect is needed. We reiterate that vocabulary development like other areas of learning is essentially a matter of concept development. The facility or difficulty with which concepts are developed depends on the amount of congruence or dissimilarity between that concept and a student's experiential background. Sometimes the congruence is such that the new information is redundant; conversely, sometimes the dissimilarity is such that the student cannot handle the new information. In a perfect situation there would be a balance between congruency and dissimilarity but this is

ideal and the exception rather than the rule. The reading-conscious teacher, regardless of subject area, must (1) attempt to determine the amount of congruency or dissimilarity, and (2) use such findings as may occur on the basis of instruction. It is easy to see that introducing new vocabulary, whether it be technical terminology, words of multiple meanings, or abbreviations requires more than giving a definition and having the students give back the same information on one or two written assignments.

A simplistic but effective method of introducing new technical vocabulary to students is to focus upon the relation of abstract concepts to concrete experiences - the experience of the five senses. Teachers should provide as many concrete examples or representations of examples (pictures, films, filmstrips, etc.) as they possibly can. In addition the students should be encouraged to find illustrated exampled of concepts independently (Lamburg and Lamb, 1980, p. 42). Techniques such as a montage creation, for example, would be helpful in developing concepts such as 'poverty' in social studies. Quite simply, a montage is a collection of pictures fitted together on some kind of background in an attempt to illustrate the different aspects of a certain concept.

We cannot escape the fact that teachers have much to teach, little time to do it, and too many students to deal with. Consequently, they are at times forced to rely on

short general definitions of concepts. Since such definitions are often inadequate, in that they may contain additional meaningless information, the more ways a teacher can define a concept the more likely it is that meaningful learning will take place. In addition, it is good teaching practice to show students that definitions come in many forms and that to be independent learners they must learn to recognize these forms. Dale and O'Rourke (1971, pp. 28-32) present seven types of definitions which will be highlighted here with a brief example to illustrate each. The sample word "Culling" is an important concept in the text, The Fishery of Newfoundland and Labrador (Level I, Social Studies).

(1) Words can be defined with a formal, general definition. Such a definition identifies the term as a member of a class of similar items and identifies the features of that item which distinguish it from other items in the same class.

e.g. FORMAL DEFINITION:

Culling is the process of grading saltfish by size and quality.

(2) Words can be defined by examples. Often a formal definition includes one or more examples. The generalization is related to the particulars.

e.g. EXAMPLE:

Either a short film, filmstrip or picture depicting the process of culling fish may be used. If this is not possible, someone

with experience in this aspect of the fishery could be utilized or the teacher could show the students several different sizes and grades of fish.

(3) Words can be defined by a description of the object, process, or other phenomenon which is the referent of the word.

e.g. DESCRIPTION:

This is an important aspect of the fishing industry whereby a fisherman's catch is closely examined for defects and then sorted into different groups of either the same size or defect.

(4) Words can be defined by comparison/contrast; that is, by noting similarities and/or differences between the words.

e.g. COMPARISON/CONTRAST:

In a sense, 'culling' is similar to what a teacher does when he grades papers and assigns them values according to quality, depth of treatment, etc.

(5) The definition can use one or more synonyms (words with similar meanings) or antonyms (words with different or opposite meanings).

e.g. SYNONYM:

"Culling" is the same as sorting or picking individual items out of a larger group.

(6) A word can be defined by apposition. Apposition is a grammatical term designating a noun or phrase "placed next to another noun or phrase to identify it." The item may be a synonym, an antonym or a classification.

e.g. APPOSITION:

Culling, the process of picking out different sizes and qualities of saltfish, varied from place to place.

(7) A word can be defined by its origin. Definition by origin clarifies the meaning of a word by calling attention to earlier meanings or usages and/or by identification of how the word derived from a word in another language. It is not uncommon for an abstract word to have as its origin a word denoting a concrete object or experience.

e.g. ORIGIN:

Most reputable dictionaries would give some helpful information such as:

[ME OF cuillir L colligere com-together + legere gather]

(8) Words can also be defined by function. (An additional category suggested by Lamburg and Lamb, 1980, p. 43)

e.g. FUNCTION:

Culling was necessary to determine which fish would go to which markets and more importantly what price fishermen would be paid for their catch since different culls had different prices.

Normally, when discussing vocabulary development one would expect to see the usual things dealing with word recognition skills. Indeed, this is an important aspect of a vocabulary development program, but I choose to discuss it at the conclusion rather than earlier because I want to emphasize the point that in content-areas, vocabulary development is more than context analysis, structural analysis, dictionary analysis, etc. Vocabulary attainment is concept attainment and not just an entry in a glossary.

It was mentioned earlier that reading in the content areas is meant for all students and in that sense is a developmental program. The discussion of concept development, levels of abstraction, etc., illustrate this point. However, many teachers will have students who are deficient in word-recognition skills (determined by diagnosis and needs-assessment discussed earlier) who are probably expected to handle texts at fairly high levels of readability. They will need specific procedures for improving word recognition abilities so that this does not become too serious a stumbling block. The salient features of such a process would include many or all of the procedures to be discussed in the following pages.

When a word is unfamiliar, the reader must analyse it. The four types of word analysis skills are: 1) phonic, 2) structural, 3) context, and 4) dictionary analysis (Tonjes and Zintz, 1981, p. 148). A proficient reader will have mastered all of these types of analyses.

(1) PHONIC ANALYSIS:

To say that researchers and educators are divided with regard to the usefulness of phonics is to put it mildly. Numerous comparative studies have been conducted over the years which have produced mixed results regarding the facilitative effects of phonics instruction on word acquisition. It must be mentioned, however, that these researchers were looking at phonics as an approach to beginning reading instruction while comparing its efficacy to that of other approaches. Here we are concerned with the use of phonics as one type of clue system that would be helpful to students in word recognition. In this regard there is general agreement that phonics is useful, although the degree of usefulness may vary from writer to writer (see Frank Smith's discussion of phonic generalizations in Understanding Reading). As an aid to the content teacher the accompanying list of phonic generalizations and their usefulness might prove helpful.

Put simply, in phonic analysis, the reader matches the graphemes (written symbols) with their corresponding phonemes (distinct sounds). To do this, the redder has visually to analyze the word to identify letters and letter combinations, match them with the sounds and then blend the sounds together. Some concerned professionals object to this system because the reader has to concentrate too much on the visual and oral information rather than on semantic

or syntactic information. Secondly, there are more sounds in the English language than letters so that we have over 40 sounds represented by 26 letters. As a result, there is often no simple one-to-one correspondence between letters and sounds. These facts, plus the amount of background information a teacher must possess in order to teach phonics makes the system probably the least useful of the word attack skills in the content classroom (Lamburg and Lamb, 1980, pp. 35-36). It is useful however for the content teacher to utilize the most effective phonic generalizations in an attempt to facilitate the pronunciation of words.

Utility of Various Phonic Generalizations

| | Percent of Utility | | |
|---|---|---|---|
| | Clymer | Emans | Bailey |
| **Vowel Principles** | | | |
| 1. When y is the final letter in a word, it usually has a vowel sound. | 84 | 98 | 89 |
| 2. If the only vowel letter is at the end of a word, the letter usually stands for a long sound. | 74 | 33 | 76 |

Source: Evelyn B. Spache and George D. Spache. Reading in Elementary School. Boston: Allyn and Bacon, 1972.

| Vowel Principles | Percent of Utility | | |
|---|---|---|---|
| | [illegible]mer | Emans | Bailey |
| 3. When there is one e in a word that ends in a consonant, the e usually has a short sound. | 76 | 83 | 92 |
| 4. When a vowel is in the middle of a one-syllable word, ending in a consonant, the vowel is short. | 62 | 73 | 71 |
| 5. When there are two vowels, one of which is final e, the first vowel is long and the e is silent. | 63 | 63 | 57 |
| 6. When words end with silent e, the preceding a or i is long. | 60 | 48 | 50 |
| 7. One vowel letter in an accented syllable has its short sound. | 61 | 64 | 65 |
| 8. In many two- and three-syllable words, the final e lengthens the vowel in the last syllable. | 46 | 42 | 46 |
| 9. The letter a has the same sound (o) when followed by l, w, and u. | 48 | 24 | 34 |
| 10. When a follows w in a word, it usually has the sound of a in was. | 32 | 28 | 22 |

| | | Percent of Utility | | |
|---|---|---|---|---|
| | | Clymer | Emans | Bailey |
| **Vowel Principles** | | | | |
| 11. | When y is used as a vowel in words, it sometimes has the sound of long i. | 15 | 4 | 11 |
| 12. | When y or ey is seen in the last syllable that is not accented, the long sound of e is heard. | 0 | 1 | 0 |
| **Vowel Digraphs** | | | | |
| 13. | When the letters oa are together in a word, o always gives its long sound and the a is silent. | 97 | 86 | 95 |
| 14. | Words having double e usually have the long e sound. | 98 | 100 | 87 |
| 15. | In ay the y is silent and gives a its long sound. | 78 | 100 | 88 |
| 16. | When ea come together in a word, the first letter is long, the second silent. | 66 | 62 | 55 |
| 17. | The first vowel is usually long, the second silent in the digraphs ai, ea, oa, ui. | 66 | 58 | 60 |
| 18. | When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent. | 45 | 18 | 34 |

| | | Percent of Utility | | |
|---|---|---|---|---|
| | | Clymer | Emans | Bailey |
| **Vowel Digraphs** | | | | |
| 19. | W is sometimes a vowel and follows the vowel digraph rule. | 40 | 31 | 33 |
| 20. | In the phonogram ie, the i is silent and the e has a long sound. | 17 | 23 | 31 |
| **Vowel Diphthongs** | | | | |
| 21. | The two letters ow make the long o sound. | 59 | 50 | 55 |
| 22. | When e is followed by w, the vowel sound is the same as represented by oo. | 35 | 14 | 40 |
| **Vowels with r** | | | | |
| 23. | The r gives the preceding vowel a sound that is neither long nor short. | 78 | 82 | 86 |
| 24. | When a is followed by r and final e, we expect to hear the sound heard in care. | 90 | 100 | 96 |
| | | 100 | 100 | 100 |

| | Percent of Utility | | |
|---|---|---|---|
| | Clymer | Emans | Bailey |
| **Consonants** | | | |
| 25. When c and h are next to each other, they make only one sound. | 100 | 100 | 100 |
| 26. When the letter c is followed by o or a, the sound of k is likely to be heard. | 100 | 100 | 100 |
| 27. When ght is seen in a word, gh is silent. | 100 | 100 | 100 |
| 28. When a word begins with kn, the k is silent. | 100 | 100 | 100 |
| 29. When a word begins with wr, the w is silent. | 100 | 100 | 100 |
| 30. When a word ends in ck, it has the same last sound as in look. | 100 | 100 | 100 |
| 31. When two of the same consonants are side by side, only one is heard. | 99 | 91 | 98 |
| 32. When c is followed by e or i, the sound of s is likely to be heard. | 96 | 90 | 92 |
| 33. Ch is usually pronounced as it is in kitchen, catch, and chair, not like sh. | 95 | 67 | 87 |

| | | Percent of Utility | | |
|---|---|---|---|---|
| | | Clymer | Emans | Bailey |
| **Consonants** | | | | |
| 34. | The letter g often has a sound similar to that of j in jump when it precedes the letter i or e. | 64 | 80 | 78 |
| **Phonograms** | | | | |
| 35. | When the letter i is followed by the letters gh, the i usually stands for its long sound, and the gh is silent. | 71 | 100 | 71 |
| 36. | When ture is the final syllable in a word, it is unaccented. | 100 | 100 | 95 |
| 37. | When tion is the final syllable in a word, it is unaccented. | 100 | 100 | 100 |

(2) STRUCTURAL ANALYSIS:

In structural analysis the reader must break down the unfamiliar word into its component parts. Unlike phonic analysis, structural analysis attempts to break a word down into larger more meaningful word parts. These larger more meaningful parts are prefixes, roots, and suffixes. In addition to the above, two other kinds of structures are inflectional endings and compound words (Lamburg and Lamb, 1980, p. 38).

For structural analysis to be a successful strategy, the student must have some knowledge of meanings of common affixes (prefixes and suffixes) (Tonjes and Zintz, 1980, p. 151). The first chart to follow gives a list of some Greek and Latin prefixes and roots likely to be useful in reasoning out word meanings. For convenience of the user these have been roughly assigned to five levels, increasing with respect to difficulty both of the parts themselves and also of the derived words (Thomas and Robinson, pp. 49-55). The second table includes a listing of common roots and affixes used in science (Tonjes and Zintz, pp. 390-392).

(3) CONTEXT ANALYSIS:

In context analysis, rather than to analyze the particular word in isolation, the reader analyzes the context or the surrounding words for clues to the meaning and grammatical function of the word. With sufficient clues,

the reader can make a good, informed guess at the unknown word. Many educators consider context analysis better than either phonic or structural analysis (Lamburg and Lamb, 1980, p. 38).

Most writers agree about the most important types of context clues. The following summary is taken from Tonjes and Zintz (1980, p. 151):

| | | |
|---|---|---|
| (1) | Definition | To expire is to die. |
| (2) | Restatement | The cliche or stereotyped phrase should be avoided. |
| (3) | Example | "It's a great life if you don't weaken" is an example of a cliche. |
| (4) | Comparison/Contrast | She was quiet in class but extremely loquacious with her friends. |
| (5) | Description | A ginkgo is a shade tree found in eastern China that has leaves in the shape of a fan. |
| (6) | Synonym/Antonym | The robber tried to vindicate or justify his actions. |
| (7) | Familiar expressions or experience | Those first bewildering weeks the thoughts of an entering college student drift back to high school where he was "in", knew everyone and felt at home. A feeling of nostalgia sweeps over him. (Robinson) |
| (8) | Association | It was as airy and buoyant as a feather. |

| | | |
|---|---|---|
| (9) | Reflection of mood | He was aggravated by the constant raspy whine and the repetition of complaints. |
| (10) | Summary | She was despondent; could not sleep or eat, cried much of the time, and could not keep her mind on her work. |

Much more could obviously be said about vocabulary development but hopefully enough has been said to provide the content teacher with the basis of a vocabulary development program. Some general observations would probably constitute an appropriate conclusion. First, since words are the tools with which we work, teachers must devote as much time as is necessary in helping students develop attack strategies for dealing with unfamiliar concepts. Secondly, a variety of strategies must be utilized if students are to be taught to become independent learners. Finally, it must be remembered that a word is a symbol or abstraction for something else. Ineffective instruction simply deals with the symbol, whereas effective instruction attempts to go beyond the symbolic level of words to their concrete (or conceptualized) referents. If that idea alone comes through the foregoing discussion probably something has been achieved. If useful strategies have been suggested which would allow content teachers to incorporate that idea in their teaching, probably we have achieved more than we dared hope for.

The table below gives a list of some Greek and Latin prefixes and roots likely to be useful in reasoning out word meanings. For the convenience of the teacher they have been roughly assigned to five levels increasing with respect to difficulty both of the parts themselves and also of the derived words. Of course, a teacher should draw freely from anywhere on the list when the moment is right for teaching a certain word part.

LEVEL I

Latin Prefixes

| PREFIX | MEANING | DERIVATIVES |
|---|---|---|
| ad | toward, to | adjoining, adhere |
| ante | before | ante meridiem, antechamber |
| circum | around | circumnavigate, circumference |
| dis | opposite of, away | dissatisfied, disarm, dismiss, disperse |
| in | in, into, not | insert, ineligible |
| inter | between, among | interscholastic, intervene |
| mis | wrong(ly), incorrect(ly) | misspell, miscalculate |
| non | not | nonresident, nonpartisan, nondescript |
| post | after | postdate, postscript |
| pre | before | premeditated, preface |
| pro | in favor of, forward, in place of | pro-British, protude, pronoun |
| re | again, back | recur, regress |
| sub | under | subcellar, subordinate |
| trans | across | transatlantic, transcontinental |

Source: Ellen Lamar Thomas and H. Alan Robinson. Improving Reading in Every Class. Boston: Allyn and Bacon, 1977, pp. 49-55.

Latin Roots

| PREFIX | MEANING | DERIVATIVES |
|---|---|---|
| aqua | water | aquaplane, aquarium |
| port | carry | portfolio, transport, portage |
| scrib, script | write | inscribe, scribble |
| spec(t) | look | inspect, spectator |
| vid, vis | see | video, vista, visible, vision |
| voc | call | vocal, vocation, convocation |

Greek Prefixes and Roots

| | | |
|---|---|---|
| anti | against | antitoxin, antiwar, anti-inflation |
| graph, gram | writing, record | telegram, autograph |
| micro | small | microscope, microbe |
| phone | sound | telephone, dictaphone |
| scope | sight | telescope, microscope |
| tele | far | television, telegram |

LEVEL II

Number Prefixes*

| LATIN | GREEK | MEANING | DERIVATIVES |
|---|---|---|---|
| uni | mono | one | unicellular, monologue, monopoly |
| du(o) | bi | two | duplicate, bilingual, biped |
| tri | tri | three | triplicate, triumvirate |
| quad(ri) | tetra | four | quadruplets, tetrameter, tetrachloride |
| quin(que) | pent(a) | five | quintet, pentagon |
| sex | hex(a) | six | sextet, hexagon |

Number Prefixes*

| LATIN | GREEK | MEANING | DERIVATIVES |
|---|---|---|---|
| sept | hept(a) | seven | septet, heptagon |
| octo | octa | eight | octave, octagon |
| non(a) | | nine | nonagon |
| dec(im) | dec(a) | ten | decimal, decade |
| cent(i) | hect(o)<br>hect(a) | one hundred | centipede, centennial, hectograph |
| mill(e)<br>mill(i) | kilo | one thousand | millennium, kilometer |
| semi | hemi<br>demi | half | semicircle, hemisphere<br>demigod |

Prefix Pairs

| | | | |
|---|---|---|---|
| circum | peri | around | circumnavigate, perimeter |
| con,com, co | syn, sym | together, with | convention, cooperation, synchronize |
| lux, luc | photo | light | lucid, clucidate, photoelectric |
| magn(i) | mega | (very) large or great | magnate, megaphone |
| multi | poly | many | multimillionaire, polysyllabic, polygon |
| nov | neo | new | novice, neophyte |
| omni | pan | all | omniscient, Pan-American |
| prim | proto | first | primitive, prototype |
| super, ultra | hyper | over, above, beyond, excessive-(ly) | superfluous, ultrastylish, hypercritical |

Latin Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| aud, audit | hear, listen to | auditorium, audience, audition |
| cap | take, hold | captive, captivate |
| dic(t) | tell, speak | dictation, edict, dictator |
| fac | make, do | factory, manufacture, factotum |
| fid | faith, trust | fidelity, infidel |
| fract | break | fracture, infraction |
| mit(t)<br>miss | send, sent | emit, remit, transmit, missive |
| ped, pod | foot | pedestrian, podium, tripod |
| rupt | break | interrupt, disrupt, eruption, rupture |
| spec, spic | look | spectator, conspicuous |
| ven, vent | come, coming | convention, intervene |

Greek Roots

| | | |
|---|---|---|
| auto | self | autobiography, automatic |
| bio | life | biology, biochemistry |
| geo | earth | geography, geology |
| hydr | water | hydroplane, dehydrate |
| meter, metr | measure | thermometer, symmetry |
| ology | study of | biology, psychology |

LEVEL III

Latin Prefixes

| PREFIX | MEANING | DERIVATIVES |
|---|---|---|
| a, ab | away, from, away from | aversion, abnormal; abduct, abdicate |
| bene | well, bood | beneficiary, benefactor |
| contra, counter | against, opposed to | contradict, counterspy |
| de | down from, away from, reverse the action | descend, deplane, decapitate, depopulate |
| ex | out, out of, away from, formerly | exclude, expel, ex-president |

Latin Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| acer, acr | sharp, bitter | acrid, acrimonious |
| amor | love | amorous, amour |
| carn | flesh | carnivorous, reincarnation, carnal |
| cogn | know | incognito, cognizance |
| cred | believe | credo, credulous, credible |
| crux, cruc | cross | crux, cruciform, excruciating |
| duc, duct | lead | induce, conducive, abduction |
| fort | strong | fortress, fortitude, forte |
| frater, fratri | brother | fraternity, fratricide |
| gen | race, birth, kind | Genesis, congenital, genocide |
| man, manu | hand | manicure, manual |
| mute | change | transmute, immutable |
| nihil | nothing | annihilate, nihilist |

Latin Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| pac | peace | pacifist, pacifier |
| pli, plic | fold | implicate, pliable, complicity |
| sequ, secut | follow | sequence, consecutive, consequence |
| sol | alone | solo, solitary |
| son | sound | unison, resonant, sonorous |
| viv | live | revive, vivacious |

Greek Roots

| | | |
|---|---|---|
| cardi | heart | cardiac, pericardium |
| derm | skin | epidermis, dermatology |
| path | feeling, disease | antipathy, apathy, pathology |
| phil | love | Anglophile, philanthropist |
| phob | fear | claustrophobia |
| pseudo | false | pseudoscience, pseudonym |
| psych | mind | psychology, psychosomatic |
| theo | god | theology, theist, atheist |
| zo | animal | zoo, zoology |

LEVEL IV

Latin Prefixes

| PREFIX | MEANING | DERIVATIVES |
|---|---|---|
| inter | between, among | interscholastic, interpose |
| intra | within | intrascholastic, introspection |
| mal | bad | malady, malignant |
| per | through | perforate, permeate, perceptive |

Latin Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| alter | other | alternate, alter ego, altruistic |
| ambul | walk | ambulatory, somnambulist |
| annu, enni | year | annals, millenium, perennial |
| corp, corpor | body | corporal, corpulent |
| culpa | blame | culprit, culpable |
| deus | god | deity, deify |
| equ | equal | equanimity, equable, equivocate |
| laud | praise | laud, laudable, laudatory |
| magn | great | magnify, magnate, magnitude |
| mort | death | mortal, post-mortem, mortuary |
| oner, onus | burden | onerous, onus |
| pater, patr | father | paternal, patrimony, patricide |
| plac, placa | please, appease | placate, implacable |
| string, strict | tighten | constrict, stringent, stricture |
| ten | hold | tenacious, tenets, tenable |
| tort | twist | distort, contort, extortion, tortuous |
| tract | draw, drag | tractor, tractable, extract |
| scien | know, knowledge | omniscient, science, prescient |
| terra | earth | terrain, terra firma, terrestrial |
| vert, yers | turn | divert, versatile, vertigo |

Greek-Roots

| Root | Meaning | Derivatives |
|---|---|---|
| aster | star | astrology, asterisk |
| bibl | book | bibliography, bibliomania |
| caust, caut | burn | cauterize, caustic, holocaust |
| chrom | color | chromophotography, monochromatic |
| chron | time | chronological, synchronize |
| crat, cracy | power, rule | autocrat, democracy |
| dem | people | democracy, demagogue |
| gam | marriage | polygamy, bigamy, monogamy |
| miso, mis | hatred | misanthrope, misogamist, misogynist |
| num | name | pseudonym, anonymous, acronym |
| ortho | straight, right correct | orthodontist, orthodox, orthography |
| soph | wise | sophisticated, theosophy |
| tom | cut | appendectomy, epitome, microtome |

Prefixes -- Mostly Greek

| PREFIX | MEANING | DERIVATIVES |
|---|---|---|
| a, an | not, without | asymmetrical, asocial, anarchy |
| ambi (Latin), amphi | both | ambidextrous, ambivalent amphibious |
| dia | through | diagonal, diameter, diaphanous |
| dys | ill, bad | dysfunction, dyspepsia |
| epi | upon, above | epidermis, epitaph |
| cu | well, good | eulogy, euphonious, eugenics |
| hypo | under | hypodermic, hypoacidity |
| retro | backward | retrogress, retrorocket |
| se | away, apart | secluda, segregate, secede |

Latin Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| caput | head | captain, per capita, decapitate |
| flagr | flame, fire | conflagration, flagrant |
| flu, flux | flowing | influx, superfluous, confluence |
| greg | flock, herd | congregate, gregarious |
| gress | go | progress, egress, digress |
| jac, jec | throw | projectile, eject |
| junct | join | junction, conjunction, adjunct |
| locu, loqu | speak | circumlocution, soliloquy, colloquial, loquacious, colloquy |
| nasc, nat | birth | nativity, renascence |
| pecc | fault | impeccable, peccadilloes |
| pend, pens | hang | dependent, pendant, impending |
| plen, plet | fill | replenish, plenary, deplete |
| preci | price | depreciate, deprecate |
| prim | first, early | primitive, primogeniture |
| pung, punct | point, prick | punctilious, pungent |
| quasi | as if, seemingly but not actually | quasi-official, quasi-intellectual |
| sanct | holy, sacred | sanctimonious, sacrosanct |
| sen | old | senior, senile |
| somn | sleep | somnolent, somniferous |
| tang, tact | touch | contact, tactile, tangible |
| verbum | word | verbal, verbose, verbiage |

Greek Roots

| ROOT | MEANING | DERIVATIVES |
|---|---|---|
| anthropo | man | anthropology, anthropoid |
| arch | chief, ruler | patriarch, archenemy |
| crupt | secret, hidden | cryptic, cryptogram, cryptography |
| dox | belief | orthodox, heterodox |
| gyn | woman | gynecology, gynarchy |
| hetero | different | heterogeneous, heteronym |
| homo | same | homogeneous, homonym |
| lith | stone | monolith, neolithic |
| mega | great | megaphone, megalomania |
| morph | form | amorphous, anthropomorphic |
| peter, petri | rock | petrify, petrology |
| pry | fire | pyre, pyromania |
| thana | death | "Thanatopsis," euthanasia |

The Language of Science:
Some Common Root Words and Affixes*

| Some Common Root Words and Affixes | | |
|---|---|---|
| Root or Affix | Meaning | Example |
| a-, an | without | anaerobic |
| ab- | away from | abnormal |
| ad- | to, toward | adhere |
| aero- | air | aerobic |
| ambi-, amphi- | both | ambidextrous |
| ante- | before | anterior |
| anthropo- | man, human | anthropology |
| anti- | against, opposite | antigen |
| aqua- | water | aquatic |
| astro-, aster- | star | astronomy |
| auto- | self | automatic |
| avi- | bird | aviary |
| baro- | pressure | barometer |
| bene-, bon- | good | benefit |
| bi- | two, twice | biped |
| bio- | life | biology |
| capit, caphalo- | head | decapitate |
| cardio- | heart | cardiogram |
| carni-, caro- | flesh | carnivorous |
| chlor | green | chlorplast |
| chrom- | color | chromatin |
| chrono- | time | chronology |
| circum- | around | circumference |
| com-, con-, co | together, with | combine |

Source: Tonjes & Zintz (1981, pp. 390-392).

Some Common Root Words and Affixes

| Root or Affix | Meaning | Example |
|---|---|---|
| contra, contro- | against | contraception |
| corous | body | corpse |
| cyclo- | circular | cyclotron |
| cyto- | cell, hollow | cytoplasm |
| dermato-, derm | skin | epidermis |
| di-, dis- | two | dissect |
| dorsi, dorso- | back | dorsal |
| entomo- | insect | entomology |
| epi- | upon, outer | epidermis |
| erg- | work | energy |
| ex- | out, from | excrete |
| eu- | good | euphoria |
| frater | brother | fraternal |
| gen- | race, kind, born, produce | generation |
| geo- | earth | geology |
| germ- | sprout | germinate |
| graph | write, record | graphite |
| gyneco-, gyn | female | gynecology |
| helio- | sun | heliograph |
| hemi- | half | hemisphere |
| hemo- | blood | hemoglobin |
| herb | plant | herbivorous |
| hetero- | mixed | hetergeneous |
| hexa- | six | hexagon |
| homo- | same, alike | homogeneous |
| hydr(o)- | water | dehydrate |

| Some Common Root Words and Affixes | | |
|---|---|---|
| Root or Affix | Meaning | Example |
| hyper- | over, excess | hyperactive |
| hypo- | under, less | hypodermic |
| ichthyo- | fish | ichthyology |
| in- | not | insomnia |
| in-, en- | into | inbreed |
| inter- | between | intercellular |
| intra- | within | intramuscular |
| iso- | equal | isometric |
| -itis | inflammation | tonsillitis |
| junct | join | junction |
| kine- | movement | kinetic |
| lact(o)- | milk | tactic |
| -logy | science, study of | biology |
| lunar | moon | lunarian |
| -lysis, -lyze | break up | analysis |
| macro- | large | macroscopic |
| magni- | great, large | magnitude |
| meta | change, beyond | metaphase |
| -meter | measure | altimeter |
| micro- | small | microscope |
| mono- | one, single | monocyte |
| morpho- | form | metamorphosis |
| mortal, mort- | death | mortality |
| multi- | many | nulticellular |
| natal | birth | postnatal |
| nebul | cloudy | nebulous |
| neuro- | nerve | neuron |
| non- | not | nonnitrogenous |

| Some Common Root Words and Affixes | | |
|---|---|---|
| Root or Affix | Meaning | Example |
| octo- | eight | octopus |
| oculo-, ophthalmo | eye | oculist |
| omni- | all | omnivorous |
| ornitho- | bird | ornithology |
| ortho- | straight | orthopterous |
| osteo- | bone | osteopath |
| patho- | disease, feeling | pathology |
| pedi-, pod | foot, footed | anthropod |
| per- | through | permeate |
| phono- | sound, voice | phonograph |
| photo- | light | photosynthesis |
| physio- | organic | physiology |
| poly- | many, much | polyembryony |
| pos, pon | place, put | position |
| post- | after | postnatal |
| pre- | before | prediagnosis |
| pseudo- | false | pseudopod |
| psycho- | mind | psychology |
| pro- | for, forward | procreate |
| pteron | winged | lepidoptera |
| quad | four | quadruped |
| retro- | backward | retroactive |
| rhodo | rose, red | rhodolite |
| -scope | view, examine | microscope |
| sect | part, divide | dissect |
| som(a) | body | chromosome |
| somn | sleep | insomnia |
| son(i) | sound | supersonic |
| sphere | round, globe | spherical |
| sub- | under | subconscious |

| Some Common Root Words and Affixes | | |
|---|---|---|
| Root or Affix | Meaning | Example |
| syn- | together, with | synthesis |
| tele- | far, distant | telescope |
| ten- | to hold | tenaculum |
| thermo- | heat | thermometer |
| trans- | across | transmutation |
| un- | not | undeveloped |
| under- | below | underactive |
| vita- | life | vitamin |
| -vor(e) | eat | herbivorous |
| zoo- | animal | zoology |

D. Comprehension Strategies

In the vocabulary section it was stated that "when the meanings of words in context are clear, the reader is able to effectively comprehend connected discourse" (Tonjes and Zintz, 1980, p. 136). While most teachers will agree with the logic of a conclusion such as this, "comprehension", I'm afraid, does not lend itself to such a simplistic analysis. The sports arena would seem to offer a pertinent analogy. Many sports enthusiasts are of the opinion that the team with the best players will win the trophy. However, experience teaches us that such is not the case. The winning ingredient is how well the various individuals jell as a unit. Some people refer to it as 'team chemistry' when trying to refer to the intangible ingredients that make a winning combination. It is somewhat the same with words, sentences, paragraphs and chapters. Sometimes the chemistry of sentences and paragraphs is such that students get little meaning from them and thus comprehension does not take place. It is indeed an enigma that the content teacher must attempt to solve.

Probably a good starting point would be with a brief consideration of what the word "comprehension" means. I am fully cognizant of the fact that philosophers, scholars and educators have struggled with this problem for many decades with little real proof of a consensus. For example, Gray in 1917 was the most confident in stating that comprehension

is "the obtaining of meaning through reading" (cited in H. Alan Robinson, 1978, p. 117). However, George Miller and Margaret Early writing in 1976 were forced to conclude that we know very little of the nature of comprehension and the various processes that are operational when people try to comprehend printed discourse (H. Alan Robinson, 1978, p. 118).

So, as Robinson (1978, p. 118) correctly summarizes, the battle rages on over whether comprehension is composed of "discrete skills or is, instead, a unitary thought process". Like Robinson, the philosophy adhered to here is that comprehension is a unitary thought process although specific skill strategies may be helpful. If one feels that a single definition of comprehension is desirable once again I espouse the philosophy put forward by Robinson when he says that he subscribes to the ideas of Frank Smith and John Bormuth. These writers have said that comprehension is "the reduction of uncertainty" and "idea or information gain" respectively. I feel these generalizations provide the content area teacher with a conceptual framework from which he can hopefully come to grips with the comprehension process. The following example attempts to illustrate this.

In Newfoundland's reorganized high school program there are a number of courses which deal with Newfoundland culture, or at least have a cultural heritage component. Cultural Heritage 1200 and Thematic Literature 1200 are two that come to mind. Let's assume that one topic which receives

a fair amount of attention is the "Credit System" as it operated in Newfoundland in the early decades of the twentieth century. The students are expected to do a reading assignment on this topic the purposes of which have hopefully been clearly outlined by the teacher. Since most students have some basic understanding of our local history, either formally taught or picked up by listening to one's elders, they will undoubtedly have some notions - hypotheses - however vague or misguided about this aspect of our culture. They read the assignment and hopefully will either corroborate or modify their own hypotheses. The extent to which this process of hypothesis testing takes place can be considered the student's level of comprehension. Initially, there was a large amount of uncertainty surrounding the topic which has hopefully been reduced. Similarly, if a student has had absolutely no exposure to this issue the extent to which he has gained new information can be considered his level of comprehension.

When looking at comprehension this way one immediately recognizes that there are a number of factors involved in reducing a student's uncertainty or in promoting information gain. Robinson (1978, p. 119) identifies four main factors:

(1) The nature of the learner. In order to facilitate the comprehension process and to measure the extent to which comprehension has occurred the teacher must first assess his students' prior knowledge about the topic.

One does not have to be too specific here but can generally determine where the class is in relation to the assignment. More specific information will already have been gathered about each student if the content teacher has adequately assessed his students' needs as outlined in the section on diagnosis.

(2) The nature of the material. As mentioned in the section on readability, the nature of the material to be read is a crucial factor in comprehension. If a teacher has developed a facility in using the various readability criteria outlined previously this should not be a serious roadblock to comprehension.

(3) The purposes for reading. This is too often taken for granted by content teachers, but as we shall see below, inadequate purposes for reading can be a serious detriment to reading comprehension.

(4) The means used for measurement. If the purposes for a reading assignment are poorly defined or if the means of measurement are not varied at times, the problem is not with inadequate comprehension but with inadequate comprehension assessment. Two of these factors, namely the nature of the learner and the nature of the material, have been addressed somewhat in this thesis. At least we have looked at these variables insofar as it is possible to do so, since we cannot possibly look at every possible reading assignment a teacher can give. However, the factors dealing with

purpose and means of measurement deserve some detailed explanation since they have not really been discussed thus far and because they are of such crucial importance.

It is not unfair to suggest that teachers, regardless of content area, give very little attention to clearly defining the purposes for a given reading assignment. In most cases students are simply asked to read a certain number of pages from a particular chapter or indeed the whole chapter or short story. Some students can handle this type of assignment but for many this overtaxes the system, so to speak, and they either read superficially or worse, give up. The majority need the direction that explicitly-set purposes can give.

Lest one be afraid that setting purposes for reading will require hours of mulling over each individual assignment before it is set, I hasten to add that such is not the case. Indeed, what is needed in many instances is nothing more than a content teacher sharing with his students what he sees as the necessity of a particular reading assignment. If that is too demanding then probably this particular assignment is redundant. In most instances however, a teacher can set purposes for reading by doing something as simple as the following for the novel <u>The Old Man and the Sea</u> which incidentally is taught in Literary Heritage 2201 of the Newfoundland high school curriculum. Rather than simply to say "read a certain number of pages" more specific direction could be given by the following: (Lamburg and Lamb, 1980, p. 207)

> The Old Man and the Sea has a very interesting story line, but you should also pay close attention to the characters and to what is shown about them. As you read do the following:
> (1) Write the names of the two key characters.
> (2) Jot down important details about each. Do this with the first ten pages.

While this may not be particularly challenging for the reader who can fend for himself, it can be most helpful for the majority of the class. It is easier to challenge the able student than it is to provide remedial instruction for the student who gets lost along the way. This purpose-setting strategy is simple and economical with regards to time, but more importantly it is beneficial to the student.

Setting purposes for reading can be considered a pre-reading comprehension strategy as indeed can most of the techniques mentioned here. If one is to facilitate the process of comprehension most strategies have to be employed prior to the reading act since we can only measure how well comprehension has occurred after the reading act. One good pre-reading strategy is what has been labelled by some the "advance organizer" but which Lamburg and Lamb (1980, p. 207) call the "advance organizer and motivator model".

The advance organizer was first labelled by David Ausubel in the 1960's. Ausubel and others felt that many

students were having trouble with comprehension because their storehouse of knowledge which he called their "cognitive structure" in effect rejected the new information which the student was expected to handle. He therefore reasoned that if one could prepare a student's existing knowledge or cognitive structure to facilitate the acceptance of the new information then comprehension will have taken place. To do this he developed the advance organizer which is simply an expository paragraph written at a higher level of generality and abstraction than the material to be read but on the same topic of course. In simple terms, the advance organizer works much the same way as does the process whereby it is seemingly easier to understand the instructions for assembling a bicycle if one has first been exposed to the complicated procedure of writing a computer programme. The complexity of the latter makes the former task seem so much simpler. One must confess that while the technique seems logical the literature is divided as to the efficacy of the advance organizer technique. It appears that a number of studies (Ausubel, 1960; Ausubel and Fitzgerald, 1961; Scandura and Wells, 1967; Groteluescher and Sjorgren, 1968; Allen, 1969; Rickards and Divesta, 1974, and Lawton, 1977) support the approach while an equal number do not support the approach (Schulz, 1966; Jerrolds, 1967; Livingston, 1970; Barron, 1971; Lucas, 1972; Feller, 1973; Moore, Barnes and Barnes, 1974, and Hartley and Davis, 1976). It is, however, a technique worth considering for the content area teacher.

Although it may be somewhat time consuming it is not difficult to construct an advance organizer. Indeed the time factor need not be a drawback once the teacher has developed facility in the use of the technique and has developed a file which he can re-use and expand. An example of the advance organizer strategy could be something like the following which could be used in a social studies unit dealing with the French-English Wars and how such conflicts affected Newfoundland in particular. The organizer can be read to the class, copied on the chalkboard or mimeographed and passed out to students after they have been told the purpose of the reading assignment.

> The government of France has recently announced that if Canada goes ahead with declaring a 200 mile limit around its shores, thus affecting France's fishing activities off our coasts, that country will take similar action. In retaliation, France will declare a 200 mile limit around the French islands of St. Pierre and Miquelon which would include much of the province of Newfoundland.
>
> ASSIGNMENT: Now read the next number of pages in your text dealing with the topic "The French Shore" and find out how France at one time actually did control a great deal of territory in this province.

Since the advance organizer forced the students to think about international relations, fishing rights and fishing limits it is possible that a fairly complicated issue such as the Erench Shore question could become a little less complex.

Lamburg and Lamb (1980, p. 207), by labelling the strategy the advance organizer and motivator model have downplayed the psychological aspects of the organizer technique and instead have concentrated on the motivational aspects of the strategy. This too is important since having an interest in reading a particular assignment can facilitate comprehension. The example mentioned on the previous page should motivate students to read, since the idea of a foreign country taking over territory in Newfoundland is unusual to say the least. If one wants to use the technique strictly for motivational purposes the organizer is not difficult to construct. The following advance organizer taken from Lamburg and Lamb (1980, p. 207) is a case in point. Once again this could be used for the novel The Old Man and the Sea mentioned previously.

> How many of you have seen the movie Jaws? Has anyone read the book? Would someone tell us a little about the movie? Now, The Old Man and the Sea is quite different from Jaws though there are some similarities. People struggle against the sea, and at one point against sharks. There is much more attention to the people than to the sharks, to what is revealed about the characters in their struggle.

Since this information is not necessarily more general or abstract than the material to be read this is mainly a motivational exercise. Nevertheless, it is important if it can make the reading assignment more interesting and meaningful to the class.

Tonjes and Zintz (1981, p. 283) correctly point out that Ausubel described two types of advance organizers, namely; expository and comparative. Expository organizers are meant to be used with completely unfamiliar material, whereas comparative organizers are to be used with material that is somewhat familiar or which can be related to something that is already familiar to the students. What we have been discussing thus far are comparative advance organizers. Of probably more benefit to the content teacher is the expository organizer, since it is more content-specific and can have the additional benefit of forcing a teacher to clarify his own thinking about a particular unit or chapter. Rather than simply to provide an example of such an expository organizer it is probably more beneficial to suggest a framework for constructing them so as to enable the content teacher to construct his own. Tonjes and Zintz mention the disadvantage of time in using this technique and it should be mentioned that one does not have to employ this strategy with all reading assignments. In addition, if one is sensitive to the strategy, a teacher can make use of organizers that are already written such as headnotes or chapter summaries although they may need to be adapted or at least used in ways not previously considered. Briefly outlined, the steps in constructing an expository advance organizer are: (Tonjes and Zintz, 1981, p. 286)

(1) Read the chapter carefully, noting the major ideas.

(2) Reorder these ideas into a hierarchy that will show their relationship to each other or from superordinate (most general) to subordinate (most specific).

(3) Write a 50 to 300 word passage showing this relationship or order, for the reader to understand while reading the chapter.

(4) Go over the written organizer with the students before they read the chapter, making sure they understand the purpose and interrelationships.

An advance organizer, then, provides a brief summary at a more abstract level of the more detailed text material. It attempts to relate to students' existing knowledge, while presenting key concepts in either narrative or expository paragraphs; definitions of concepts are written in simple rather than complex language (Tonjes and Zintz, 1980, p. 286).

There are countless other strategies and techniques that content teachers could use in order to help their students to comprehend text. However, these strategies are somewhat similar to the advance organizer and motivator techniques just mentioned and therefore would be redundant. In any event the content teacher should not be concerned with the number of different strategies he can employ but rather on the effectiveness of the techniques used though they may be limited in number. It is for this reason that I have decided to forego a discussion of such things as structured

overviews, study guides, role playing, simulation, etc., in lieu of a fairly complete discussion of a strategy which was primarily developed for reading classes but which has been adapted for use in the content classroom. This strategy has been labelled in many ways but here it shall be referred to as the Directed Reading Activity since that is the label given to it by its originator Russell Stauffer. The basic plan of the Directed Reading Activity can be summarized as follows: (David Shepherd, 1973, p. 143)

I. PREPARATION FOR READING

A. Investigating and expanding the background of experience.

1. Finding out what the students know.
2. Noting misconceptions of students.
3. Filling in with information to give the students an adequate background for understanding.
4. Arousing student interest.
5. Giving the student an awareness of the significance of the information.

B. PREVIEWING THE READING MATERIAL

1. Noting the basic structure of the information--the introduction, summary, specific sections.
2. Discussing the title and subtitles.
3. Directing attention to the graphic aids: maps, pictures, diagrams, etc.
4. Noting study aids: specific summaries, questions, vocabulary lists.

5. Noting new vocabulary which is usually italicized in a textbook.

C. INTRODUCE THE VOCABULARY PERTINENT TO THE FUNDAMENTAL CONCEPTS

1. Clarifying basically the fundamental conceptual terms, usually one to five in number.
2. Analyzing the structure of the words, if necessary, to aid word recognition.
3. Assisting students to bring their experiences to bear on the meanings of words.
4. Alerting students to the specific meanings as the words is used in the text.

D. EVOLVE PURPOSES FOR READING

1. Evolving purposes in terms of the students own background and needs, those of the group, and in terms of the understandings desired from materials.
2. Helping students to think of purposes as well.

II. READING THE MATERIAL SILENTLY

A. Noting the students ability to adjust their reading to the purposes set up, and to the material.

B. Observing students to note specific areas of need.

1. Vocabulary: recognition of the word, specific meaning as applied to the content.
2. Comprehension: organization of data, finding answers to purposes, noting relationships within data.

III. DEVELOPING COMPREHENSION

A. Discussing answers to purpose questions.

B. Clarifying and guiding further development of the concepts and vocabulary, introducing new vocabulary if needed.

C. Assisting the students in noting organization of information and in recall of pertinent facts.

D. Noting need for further information from both the text and other source materials.

E. Redefining purposes: Setting new purposes for reading.

IV. RE-READING (silent and/or oral, in part or in entirety)

A. Clarifying further the essential pertinent information and concepts.

B. Giving specific skill training in comprehension as indicated by needs of individuals and the group.

1. Seeing organization of data.
2. Interpreting data: drawing conclusions, making inferences, making generalizations, seeing interrelationships of data.
3. Evaluating: making judgments, noting author's intent, seeing the significance of the material, noting the use of language.
4. Applying information to real life situations, formulating new ideas, reorganizing old ideas.

5. Noting use of words: emotive, new meanings, contextual usage, technical terms, indefinite and general terms.
6. Setting up areas for further reading and research.

V. FOLLOWING UP THE INFORMATION

A. Setting up problems requiring further information.
1. Using problem solving; delineating the problem.
2. Locating additional information.
3. Reading to get additional information.
4. Selecting and organizing pertinent ideas related to problem.
5. Concluding and generalizing from data.
6. Preparing and presentation of the report.

## Directed Reading Activity

The sample below is an application of the Directed Reading Activity (DRA) approach to the topic "The Great Depression" found in Chapter Nine of the Grade IX History Text, Canada Since Confederation.

I. PREPARATION FOR READING

A. Investigating and expanding the background of student experience.

1. Finding out what the student know.

A teacher could construct a pre-test of a few objective items based on general information a Grade IX student could be expected to know from outside reading, television, or by talking to older people. Something such as the following might be appropriate.

a) Have you heard the term "Great Depression" before? _____

b) If the answer to the above question is yes, briefly describe the circumstances under which you encountered the term. _____

_____

c) Based on your past experience, what feeling or emotion does the term "Great Depression" arouse in you? _____

d) What is your understanding of the words listed below?

economy _____

stock market _____

unemployment _____

relief _____

recovery _____

e) Rate the following in order of importance.

A man should work to:

(i) have opportunities for entertainment and relaxation. _____

(ii) support his community. _____

(iii) support his family. _____

f) How do you think a man would feel if he couldn't achieve the goal you listed as number one? _____

g) How do you feel about what's happened with regards to work and employment in your area during the past two years? _____

_____

h) Have you ever heard an older person say that we are headed for another depression? _____ Can you remember what caused him/her to make such a statement? _____

_____

i) Have you looked, at all, at Chapter 9 "The Great Depression" in your text? _____

j) Do you think it will be an interesting reading experience? Briefly explain. _____

_____

2. ~~Noting misconceptions of students.~~

This most likely will have been achieved during the assessment of background information just presented. Thus, these two steps can be combined.

_____

It goes without saying that the peculiarities of individual classes will largely determine what happens here.

3. Filling in with information to give the students adequate background for understanding.

If one can assume that the pre-test constructed for item one accurately reflected what a teacher feels a student should know before attempting Chapter 9, student performance can indicate to him the extent to which information needs to be provided. A word of caution needs to be interjected here. At this stage no attempt should be made to teach the chapter but rather to try to provide the student with some sort of context or structure that will make him more receptive to the information which will be presented later. In other words, don't allow them to go in cold. It would seem logical that information should be presented simply and in a variety of forms, i.e., chalkboard notes, handouts, overheads, etc. A short film or a scrapbook on the depression would be most useful and would allow a tie in with number four item which has to do with arousing student interest. The Department of Education and The National Film Board of Canada are the most likely places for films. The Canadiana Scrapbook

Series edited by Donald Santor and published by Prentice-Hall of Canada has two titles, The Confident Years: Canada in the 1920's and The Depression Years: Canada in the 1930's, that would be most useful in this regard.

4. Arousing student interest.

The overlap between items three and four is obvious and has already been mentioned. However, the following techniques are most helpful in arousing student interest. Obviously constraints of time do not permit too much activity here, but the teacher can be selective and adapt the ones he feels most appropriate. Activities such as the following are useful:

(i) School visitation by someone who has lived through the depression.

(ii) Bulletin board displays consisting of newspaper headlines (real or made), photographs and anecdotal incidents concerning the depression. The projects section (pp. 172-187) of the text contains information that is useful here. The sample below is the kind of thing teachers can look for to supplement this material. The teacher's edition of the Canadiana Scrapbook entitled The Depression Years: Canada in the 1930's contains many photographs (with notes) that would be useful.

# ON TO OTTAWA

**The Relief Camp Strikers will leave Regina via C.P.R. Freight**

## Monday, June 17th

### at approx. 10 p.m.

The Federal Government have declared an embargo on our leaving Regina by the same means by which we came.

Only the mass support of Regina Citizens will force the Authorities to keep their hands off us on our way to Ottawa.

We call upon every citizen who supports us in our fight against Forced Slave Labor to assemble at the C.P.R. freight yards (Lewin Alley at 2nd Broad Street

**Monday, June 17th from 10 p.m. until we leave**

We extend to Regina Citizens our heartiest thanks for their splendid support in this vital issue.

Publicity Committee,
Relief Camp Strikers.

C2

Alice Hale and Sheila A. Brooks (eds.), The Depression in Canadian Literature, Toronto: Macmillan of Canada, 1976, p. 34.

(iii) Material from other subject areas such as poetry, short stories, etc., related to the topic under discussion, can arouse student interest quite effectively. In addition, related material from other areas can provide new insights into a subject since the writing style is different and the intent of the writer varies. Thomas and Robinson (1977) put this very well when they state that: "Writers of textbooks drain all the life out of a period. Writers of fiction put it back in" (p. 301). The sources listed below have been quite helpful in putting the "life back in" the GREAT DEPRESSION.

Alice Hale and Sheila Brooks, The Depression in Canadian Literature, Toronto: Macmillan of Canada, 1976.

Barry Broadfoot, Ten Lost Years, Markham, Ontario: Doubleday Canada Limited, 1973.

For an indepth discussion of this technique see Thomas and Robinson, Improving Reading in Every Class, Boston: Allyn & Bacon, 1977, Chapter 6, pp. 277-310.

5. Giving the student an awareness of the significance of the information.

This item basically means giving the student a brief summary (oral or written) of why a particular topic, in this case "The Great Depression", is worth studying. In this particular case something such as the following would seem appropriate:

> It is important that we study the depression not only because we should know what happened to our country during those years but more importantly to try and discover how The Great Depression helped shape the way of life we know as 'Canadian' today. In this regard, we shall see that the depression helped create a new political party in Canada that is still functioning today, changed the way business was conducted and generally changed Canadians' outlook on life to make them even more conservative (careful, cautious) and intensely regionalized (being mainly interested in their own area, i.e., western Canada, central Canada, eastern Canada or province). Thus, we are not only learning of the past but of the present and future as well.

B. Previewing the reading material.

The amount of time and particular activities a teacher would allocate to the five points that comprise previewing would obviously depend on the nature of the material and learner. Probably one-half period would be sufficient and for our particular chapter here I would point out the following:

This chapter is organized in four parts although they may not be clearly defined. Part I, pages 164-168, describes the depression itself and what actually happened during that time period. Part II, pages 169-171, tries to explain why this event occurred. Part III, page 171, discusses the depression in terms of what happened here in Newfoundland. Finally, Part IV (projects) lists a number of things students can do as well as providing additional information on certain aspects of the depression.

Notice also that on certain pages throughout the text there are questions which can be related to each part and will be assigned accordingly. Pay particular attention to the paragraph titles or subtitles as they are called since they tell you what information paragraphs will contain. If you can phrase the subtitle into a question and answer it satisfactorily then you will have read those paragraphs adequately.

The chapter has a number of important photographs with captions that you should look at and notice that most of them picture the depression as it affected the ordinary Canadian as opposed to the politician or businessman for example.

It was mentioned previously that Part IV (projects) not only gives you things to do but also provides you with additional information. Of particular importance is the table on page 173 and the selections written in italics on pages 177-182. These pages present personal stories of Canadians living in different parts of the country during the depression years.

C. Introduce the vocabulary pertinent to the fundamental concepts.

Once again there are five items in this part but it does not require a large allocation of time.

Basically what's expected of the teacher here is that he seek out the important terms for the whole chapter (they are not italicized), help the students recognize and pronounce them, help students understand their meanings (definitions plus structural analysis if necessary) and alert students to the fact that some of the terms may be common words used here in different ways. The terms could then be put on a handout, given to students and discussed in general terms. Then as each concept is dealt with in detail the handout could be referred to.

For this particular chapter some of the important terms would seem to be the following:

(i) crash -- a sudden, severe failure in business and credit.

(ii) stocks -- large businesses usually allow people to buy part ownership of them (stocks) which helps the company raise money and gives the buyer a share of the companies profits.

(iii) speculator -- a person who buys or sells where there is a large risk in the hope of making a profit from future price changes.

(iv) investor -- a person who buys stocks (parts of companies in order to make money by sharing in the company's profits or by reselling his stocks at a higher price later on.

(v) fortune-seeking investor -- very similar to a speculator. This person buys stocks in the hope of making large profits quickly.

(vi) production -- the total amount of goods or services a company produces over a given period of time.

(vii) rural -- people who live outside of cities.

(viii) urban -- people who live in cities.

(ix) relief -- an amount of money paid by the government who are in need and have no money of their own.

(x) bankruptcy -- when you are unable to pay your debts.

(xi) escapism -- when you look for ways to forget your problems and relieve your tensions and worries.

D. Evolve purposes for reading.

At this stage we are talking of purposes in terms of the unit generally which has really already been done when the significance of the information was pointed out to students. The teacher can simply review this but may want to spend some time on having students add to the list. Turning subtitles into questions is a good procedure for helping students develop purposes.

It should be noted that as the chapter is broken down into smaller reading assignments more specific purposes will have to be set. This can be done in a number of ways such as telling the students that after they have read the first ten paragraphs they should be able to answer questions 1, 2, and 3 on such and such a page. Notice that students were not asked to write answers but simply to formulate in their own minds what a possible answer might be. If this can't be done then effective reading has not taken place.

Another way would be for the teacher to highlight the important fact or facts for each paragraph and to formulate a brief question. A structure such as -- After you have read paragraph one you should know (1) when the stock market crash occurred, and (1) what is meant by the phrase "stock market crash".

Admittedly the latter is time-consuming but it may point out to students that paragraphs contain details which when put together provide a detailed explanation of the subtitle. Obviously the nature of the text would be a determining factor. For the text under consideration here, having students turn subtitles into questions (purposes) in conjunction with utilizing the questions provided in the text would seem to be adequate.

II. READING THE MATERIAL SILENTLY

This aspect of the DRA is self-explanatory or at least adequately explained in the outline presented on pages 130-132. A number of points however need repeating:

(1) As much silent reading as possible should be done in class since monitoring student reading is important. However, this does not mean that all student reading must be done in class.

(2) Silent reading is not busy work and teachers should be on the lookout for potential problems.

(3) The best way to check silent reading achievement is to see if the students can adequately answer the purposes for reading previously set.

III. DEVELOPING COMPREHENSION

The emphasis here is on helping students understand and not merely on checking levels of comprehension. The

purposes for reading should be looked at again if the need exists, the pertinent vocabulary (already presented to students) should be dealt with and the organizational pattern of the text discussed. In addition the textual orientation (away from or towards text) should be considered. If the text itself does not provide enough information, additional material will have to be provided. This may involve setting new purposes or re-defining the old ones if they are thought to be inadequate.

IV. RE-READING

There may not be a need for this step and, as mentioned previously, the nature of the class will be the determining factor. Perhaps parts of the assignment need to be re-read by some students. If there is a need for step IV, not much can be said about it in a hypothetical situation. All that is involved is essentially a repeat of steps one to three. If however an adequate job has been done the first time around, there won't be a need for step IV.

V. FOLLOWING UP THE INFORMATION

It was mentioned earlier that step I is the most important step in the DRA. It goes without saying that step V is no less important. However, in the DRA approach, follow-up or assessment involve more than giving a unit test at the end of a chapter. A variety of assignments should be given, in addition to a test, that not only assess student achievement but enrich the material that

was supposed to have been learnt as well. Many of these assignments can be given while the chapter is being studied rather than after the chapter has been completed. Some possibilities would be the following:

(a) Find a piece of writing (poem, essay, short story, letter, etc.) which expresses how people felt during the depression.

(b) Do a montage of pictures depicting various aspects of the depression.

(c) Do a written report explaining the causes, course of and effects of The Great Depression.

(d) Write paraphrases of the following paragraphs (specific paragraphs can be assigned).

For many it may seem that this plan is too time consuming and indeed it can be. However, there is enough flexibility that it can be adapted to fit particular situations. Some aspects of certain steps can be done simultaneously while some steps can be eliminated all together depending on the assignment and the class. Finally, not every reading assignment is important enough to warrant such a detailed plan of procedure. Such strategies as those mentioned previously would suffice. In the final analysis teacher flexibility and sensitivity are the most important considerations when using the Directed Reading Activity.

When all is said and done, probably the most effective strategy for developing comprehension is questioning. At the best of times, teachers use questions for mainly one purpose

and that is for comprehension assessment. However, the skillful teacher can use questions as an instructional strategy that will help develop comprehension in addition to measuring how well or poorly a student has handled a particular reading assignment.

The basis of using questions as an instructional strategy is the teacher's familiarity with the textual material. Textual material will pull students in one of two directions: either towards the text, convergent thinking, or away from the text, divergent thinking. In convergent thinking the individual student focuses his attention on the text and gets answers from it. In divergent thinking the student goes beyond the text and develops answers that are not text dependent. When a text pulls the student strongly in one of these directions the teacher can decide either to balance the two kinds of thinking or to reinforce the natural textual orientation. Whichever he decides he is concerned with developing comprehension (Carl B. Smith, 1978, p. 239).

Sometimes however, teachers are not particularly sensitive to the natural orientation of their textual material. A number of problems can arise here. If the text material is primarily informational and the teacher does not try to get the student away from the text he may not be doing justice to a particular topic. Similarly, if the textual material is primarily non-informational forcing the student to construct

personally elaborated responses, the teacher must make sure that the student has a basis from which to construct his responses.

Let's look at a possible application of this with the topic "The Credit System" or "The Truck System" as it was also called. In one of our high school social studies texts, The Fishery of Newfoundland and Labrador, the truck system is dealt with this way:

> The problem of isolation was to affect the development of the fishery particularly with regard to supplies. Some goods such as certain foods, dry goods, building materials or fishing gear could not be locally provided and were not readily available in communities. This meant a long and often arduous trip by boat to a larger settlement. Gradually, merchants opened stores to supply the small communities and a system of merchant paternalism, commonly known as the "truck" system, evolved. (This system was not indigenous to Newfoundland, but was, in all likelihood, adapted from the truck system which was found in English and Welsh coal mining villages until the mid-1800s.)
>
> Under the truck system, the merchant would equip fishermen with the necessary fishing gear and supplies each spring on credit. In the fall, the fishermen would pay their account in fish. If the fishermen had a good season, the merchant did well, especially as the merchant determined the price to be paid for the fish. When the fishery was poor, many merchants would carry the fishermen over the winter, again on credit. Of course, successive failures of the fishery led to the fishermen's total indebtedness to the merchant, but it also often led to the merchants' bankruptcy. This truck system was to survive well into the twentieth century.

As one can easily see the orientation here is towards the text, scanty though the information may be. The teacher would be expected to do more than this with such an important aspect of Newfoundland history and culture. He should try to construct a series of questions that the class could discuss which hopefully would lead the students beyond a mere accounting of what the system was to a deeper understanding of what its implications were for the development of the Newfoundland fishery. At times the text will provide the teacher with questions that will achieve this purpose, however such is not the case with this particular text. The only question is "What was the truck system? Why do you think it evolved?" While the latter part of the question can be considered the type of question requiring a personally elaborated response, it is not sufficient. Actually, I would surmise that part two of the question would cause difficulty for many students, because it requires the student to go beyond the text when the textual material itself discourages such divergent thinking. Unless the teacher has encouraged the students to go beyond the text during a discussion of the topic, students will have difficulty with this question.

In the textbook Our Newfoundland and Labrador Cultural Heritage/Part Two the "Credit or Truck System" is also discussed:

## The Fishery and Fish Merchant

The Newfoundland fishery and European settlement here was organized and dependent upon fish merchants. Without their organizational abilities and skills Europeans could not have sailed to Newfoundland, fished, and settled here.

Try to imagine how Newfoundland and its fishery must have looked to the people of western Europe in the early days of settlement, the seventeenth century, for instance. Newfoundland's huge supply of fish could feed a good proportion of Europe's people, but Newfoundland and Europe were 3,218 kilometres away from each other. Newfoundland was an island and was useful as a fishing stage. It was also capable of supporting settlers once they learned how to exist in the harsh frontier conditions of the time. The merchants were the channel through which capital and people were assembled in Europe and the people shipped out to Newfoundland to fish. The merchants either sustained the people in their year-round living here or organized their annual migrations to and from Europe. The merchants (or "money men" as they were called in the West Country) were the "princes" of the fishery and long continued to be so in Newfoundland.

Imagine you are an outport merchant supplying fishermen involved in the inshore and Labrador fishery of Fogo Island. It is November 1889 and already you must order supplies for the 1890 fishing season from larger merchants in St. John's or directly from manufacturers and exporters in Britain or the United States.

On October 20th you squared the accounts of the fishermen you dealt with, thus settling the past summer's fishery. Some fishermen did not do very well, and owe you money; others did very well and have supplied you with so much fish and oil that you owe them money. No money changes hands in either case. The fishery is conducted through the credit or truck

system. The fishermen who owe you money appear in your ledgers as debtors; those you owe money are entered as creditors. All, however, have been issued with the basic materials and foodstuffs which their families need to live through the winter. These debts appear in your ledgers as part of the new 1890 account. The debts will be offset against whatever the fishermen might be able to catch in 1890. In May 1890, you will make further extensive loans to the fishermen in the form of food and fishery supplies and tackle.

Not until the following September or October will you know how much fish has been taken and handed over to you by the fishermen. By then you have paid out large sums of money over the past year to the merchants and manufacturers from whom you bought the supplies which were advanced to the fishermen. As yet you have received no money at all with which to pay these creditors. All you have is fish. But they do not want fish. They want cash. To convert fish into cash it is exported to foreign markets and sold. The proceeds of these sales are sent from the foreign country to your bankers who credit you with the money. This process may not be complete until March or April 1891.

Thus the merchant has to advance money eighteen months before he can hope to get it back - and he never knows how successful the fishery is going to be, nor can he prophesy what the price of fish is going to be in the markets. Both are outside his control. No wonder the merchants of Newfoundland traditionally put on a gloomy and pessimistic air. Basically they were, as the great firm of Newman and Company of Harbour Breton put it, "Not in Newfoundland to buy fish, but to sell goods." Yet the only thing that the fishermen had with which to purchase goods was fish or other staple produce. Thus the merchant had to be in the fish business, not because it was profitable, but because it was the only business around.

Setting the stage

1. Why were the fish merchants called the "princes" of the fishery?

2. How were the fish merchants essential to the growth of European settlement in Newfoundland?

3. Fishermen and merchants tried to square accounts after the fishing season was over. What did it mean for a fisherman or merchant to have his account "square"?

Thinking it through

4. What power would you, as the fish merchant in Fogo, have over the fishermen you supplied? Why?

5. Why were Newman and Company in Newfoundland not "to buy fish, but to sell goods"?

6. Some fishermen in Newfoundland and Labrador were known as "fish killers" because they caught more fish than most fishermen. Why would a merchant be anxious to outfit such men?

7. The cod fish has been referred to as "Newfoundland currency". What reasons can you suggest for this?

Researching

8. Imagine that you are an outport merchant in nineteenth century Newfoundland. Write a report to explain.

   a) What you did to prepare your business for the coming business year;

   b) How you supplied fishermen for the inshore and Labrador fishery;

   c) How you pay creditors and handle debts;

   d) What risks you had to take to keep your business solvent.

Not only is the topic treated in more detail but the orientation of the text is also quite different. Whereas the brief treatment in The Fishery of Newfoundland and Labrador was primarily informational preventing the student from going beyond the text the treatment in the latter constantly forces the student to construct personal responses to various issues. The activities at the end of the reading materials are in keeping with the text and the teacher can use the questions provided. He might want to provide a little more factual information here, just as the teacher must provide opportunity for the student to go beyond the text in the former case.

Too many of us as teachers pay little attention to the types of questions we ask and hence to the type of instruction we provide. One has only to think back to some of the studies reported earlier to verify the truth of that statement. We discovered that teachers were mainly concerned with management instruction, and comprehension assessment as opposed to comprehension instruction. Similarly, most of the questions teachers asked were of the recognition and recall variety. While it's true these studies, reported in Chapter Two, were not conducted in Newfoundland one wonders if we are the only corner of North America where such a situation does not exist.

How then can teachers develop instruction that is comprehension based? This is indeed a difficult problem for

the average teacher but not an impossible one. Being sensitive to the textual orientation of content materials, using instructional strategies such as those mentioned earlier in this chapter and paying more attention to the types of questions asked can do much to rectify the situation. The idea is for teachers to ask questions that will broaden student thinking during reading rather than limit it.

Most writers agree that there are three levels of comprehension, namely: the literal, inferential and critical. While some may use different names such as interpretative instead of inferential or elaborative instead of critical they still mean the same. Also, some writers have developed taxonomies which they feel can help teachers classify and vary the kinds of questions they ask. Therefore, if one could relate the levels of comprehension to the various taxonomies and take time to make sure that the questions asked spen the three levels more comprehension instruction will take place. The following table from Cheek and Cheek (1980) by relating the levels of comprehension with the various taxonomies can help teachers do this.

Relating Levels of Comprehension to Taxonomies

| Levels of Comprehension | Taxonomies | | | |
|---|---|---|---|---|
| | Bloom (1955) | Sanders | Barrett (1970) | Guszak (1967) |
| Literal | Knowledge<br>Comprehension | Memory<br>Transition | Recognition<br>Recall | Recognition<br>Recall |
| Interpretative (Inferential) | Application<br>Analysis<br>Synthesis | Interpretation<br>Application<br>Analysis<br>Synthesis | Inference | Conjecture<br>Explanation |
| Critical (elaborative; evaluative) | Evaluation | Evaluation | Evaluation<br>Appreciation | Evaluation |

Just as one must be concerned with types of questions if instruction is to be comprehension based similarly one cannot possibly forego a discussion of study skills when discussing content area reading generally or the development of comprehension specifically. The reasons for this are obvious. First, students receive most of their information through reading material with varying degrees of difficulty and should be able to apply whichever skills the particular assignment requires. Secondly, most of this reading has to be done outside of school; thus, students need to know how to work independently. Finally, the high correlation between successful reading and the appropriate use of various study skills, mentioned in Chapter Two. Therefore the content area teacher must concern himself with study skills.

The problem, however, is how does a content teacher help his students develop adequate study skills and apply them to their reading assignments? Cheek and Cheek (1980) state that:

> Perhaps the most effective way to instruct students is to demonstrate the skills, although many teachers use inductive approaches such as inquiry, discovery, and problem solving. (p. 309)

While agreeing that demonstration may be the most effective method of teaching study skills one wonders as to what form this teacher demonstration should take. For example, should a block of time be set aside for study-skills teaching at the beginning of the year? This is not in keeping with the idea

of content area reading because it may mean using content materials not relevant to the student in addition to forcing the student to transfer what he has learned from one reading assignment to another. The best way then is for the teacher to spend time with the study skills when the need arises for real reading assignments. Obviously not all the skills will need to be dealt with, nor will all students be in need of such help. Carefully assessing both the student and reading assignment will guide the teacher in the right direction - away from the "assumptive" method of teaching toward a more critical assessment of what students can and cannot do.

However, we are probably getting ahead of ourselves because we have not yet identified what the various study skills are. Cheek and Cheek (1980) divide the study into three categories, namely reference skills, organizational skills and specialized study skills. The following chart summarizes the three categories of study skills and their related subskills: (Cheek and Cheek, 1980, pp. 310-314)

Study Skills

I. REFERENCE SKILLS - Those skills primarily concerned with locating information in various sources.
   a) Using the dictionary and its subskills
   b) Using encyclopedias
   c) Using specialized reference materials (Atlas, Almanac, etc.)
   d) Using the library card catalog

II. ORGANIZATIONAL SKILLS - Those skills concerned with synthesizing and evaluating the material read so that it can be organized into a workable format.

a) Developing outlines

b) Underlining important points or key ideas

c) Taking notes during reading

III. SPECIALIZED STUDY SKILLS - In this particular skill area, all parts of a book or materials are analyzed to determine what information can be obtained from them and how best to understand the information presented.

a) Previewing

b) Scanning and skimming materials

c) Reading maps, tables, graphs, and diagrams

d) Adjusting rate according to material and purpose

e) Using appropriate study techniques such as SQ3R

It goes without saying that reference skills are important if students are to gain information necessary to supplement content materials. At the junior and senior high level, students are given research assignments regularly and frequently and this, all too often, in schools whose libraries are poorly organized and sadly deficient in terms of resources. Thus, the indispensable role of reference skill becomes obvious.

The prescriptive techniques that might be utilized for helping students develop the various reference skills will be presented later. However, since these techniques are mainly concerned with use of the various reference materials after they have been located, it would seem that something needs to be said about what may be labelled "location skills" for want of a better term. Since teachers obviously cannot locate the various sources for students, they have to be taught to do this for themselves. Bond and Wagner (cited in Cheek and Cheek, 1980, p. 311) suggest locating information properly requires that students possess certain abilities which they specify as (1) being able to appraise the problem; (2) having knowledge of appropriate sources; (3) locating the possible sources; (4) using the index and table of contents, and (5) skimming. Therefore, any attempt to teach the various reference skills must start with a consideration of whether the student has the ability to locate the information before he can attempt to utilize it. This can be done fairly easily with a few assignments where students are required to actually locate certain sources of information on a specified topic. The intent here is not for students to do research but to demonstrate a facility for locating the sources. If there are no difficulties the teacher can concentrate on the materials themselves but if there are problems, Bond and Wagner's list outlined above can help teachers identify and thus remediate the problem.

Assuming that students possess the required abilities for locating information and that any weaknesses which were diagnosed have been remediated, the teacher can now teach the reference skills themselves. Some types of activities which teachers can use are presented below. These are broad prescriptive techniques which may suggest other assignments or they may be utilized as they are. These suggestions are taken from Cheek and Cheek (1980, p. 316):

| Skill | Prescriptive Technique |
|---|---|
| Reference Skills | |
| Use dictionary | Divide the group into teams. Call out a word and see which group can locate the word first. They must give the guide words in order to score a point. |
| | Give students a pronunciation key from the dictionary and a list of words spelled using the symbols from the pronunciation key. Take turns pronouncing the words using the appropriate accent. |
| Use encyclopedia | Put various topics on slips of paper and let students select one. Ask them to find the appropriate encyclopedia to locate information on the topic. Then identify five important facts about the topic. |
| | Play a game with the students taking turns being the librarian. The other students select prepared questions or make up questions to ask the librarian. When the librarian locates the answer in the encyclopedia, another student becomes the librarian. |

| Skill | Prescriptive Technique |
|---|---|
| Reference Skills | |
| Use specialized reference materials | Give students cards that tell about a trip they have won. Use an atlas to determine the roads they should take to get to their destination. |
| | Use questions that students prepare and that can be answered with an almanac. Let a student ask a question and see who can locate the information first. The winner gets to ask the next question. |
| Use library card catalog | Give assignments that can be answered from the card catalog. Let students work in teams to locate the information requested. |
| | Ask students to prepare questions that other students may answer using the card catalog. Different classes may exchange their questions and have contests. |

After the appropriate sources have been located and relevant sections found, the student must then be able to use the information. This involves the various organizational skills mentioned previously and probably more difficult to get at than reference skills. It is also the area of study skills most neglected by teachers who often assume that either students have the skill or that it is not really worth bothering with. However, if you speak to many teachers they will tell you that when students do research, a great many of them find one source and then copy verbatim whatever material is related - regardless of how vague - to the topic in an attempt to satisfy the assignment. This obviously demonstrates

a weakness in organizational skills which must be dealt with.

Having students do paragraph outlines is an important organizational skill because it forces students to locate the main idea and supporting details. Some people recommend teaching the use of outlines prior to teaching note-taking skills (Cheek and Cheek, 1980, p. 312). One possible reason for this is that actually writing the details in point form such as one does in an outline forces the student to be a little more specific. In addition, there is more involved in note-taking than simply picking out main ideas and supporting details, as we shall see later.

Probably an intermediary step between doing outlines and note-taking would be underlining. Once again the purpose of underlining is to force students to highlight relevant information. The interesting thing about underlining is that research studies support underlining as a more valuable study skill than is outline (Cheek and Cheek, 1980, p. 313).

Finally, note-taking is an important skill for helping students distinguish relevant from irrelevant information. Hafner (cited in Cheek and Cheek, 1980, p. 312) suggests the following procedures for note-taking:

a) List the main points with necessary clarifying statements.

b) List illustrations (graphic and verbal) and experiments useful for clarifying points.

c) List important terms and their definitions.

d) List terms or concepts that need further clarification.

Research indicates unequivocally that training in organizational skills just mentioned improves success in content area reading (Cheek and Cheek, 1980, p. 314). Toward this end some prescriptive teaching techniques for the organizational study skills are outlined below (Cheek and Cheek, 1980, p. 317):

| Skill | Prescriptive Technique |
|---|---|
| Organizational Skills | |
| Develop outlines | Prepare a large model of an outline, omitting the words. Tape it to the floor or the wall. Give students the information that could complete the outline. Let them fill in the blanks. |
| | Give students sentence strips containing information that could be put together to form an outline. Ask them to develop the outline. Two groups may compete to see who can finish first. They may then write a story from the outline. |
| Underline important points or key ideas | Give each team a short selection and a red pen. Get them to discuss and agree upon the important points that should be remembered and underlined. |
| | Use several copies of a selection and ask students to underline the key ideas. Then compare what each student marked. For any points that differ, ask the student to explain why they were underlined. |

| Skill | Prescriptive Technique |
|---|---|
| Organizational Skills | |
| Take notes during reading | Ask students to take notes as they read by listing important points. Then ask them to use their notes to report what they read to another student. Let them check one another to be sure all important points were covered.<br><br>Let students read different sections of a chapter and take notes. Then combine the notes to see if the most important information is included as they use the notes to answer questions. |

In the skill-area labelled specialized study skills all parts of a book or other reading material are analyzed to determine what information can be obtained from them and how best to understand the information presented (Cheek and Cheek, 1980, p. 314). The skills of previewing, scanning and skimming are useful in determining if information is useful, locating detail and determining main ideas. It goes without saying that helping students interpret maps, tables, graphs, and diagrams is especially important for subject areas such as social studies. Similarly, encouraging students to adjust their rate for certain reading assignments has been proven beneficial. Finally, having students follow an individual study plan such as SQ3R can do much to help them handle their reading assignments independently.

The SQ3R technique, developed by Robinson, probably needs further clarification. The technique, developed in the

1940's by Robinson and his colleagues, has given rise to numerous other related study strategies. However, our concern here will be with SQ3R because it was the forerunner and because the writer believes in the superiority to other techniques. Probably more to the point is that SQ3R or variations of it can be used with any type of student from the high academic university student to the low ability junior high student. Lamburg and Ballard (1974) tested the SQ3R technique and found it useful for remedial elementary and secondary students, beginning readers and as a preparatory exercise or textbook-reading techniques.

The SQ3R System can be summarized quite simply (Lamburg and Lamb, 1980, pp. 88-89; Tonjes and Zintz, 1981, pp. 248-249):

> Survey. Students survey or preview the text in order to gain a general idea of the content and organization of the material. The reader surveys textbook aids such as chapter titles, subheads, charts, graphs, and other visual aids; tables of contents, introductions and summaries; italicized words, numbered points; and the chapter exercises.
>
> Question. With the general idea in mind, the readers can pose questions which they believe the text answers. These questions are suggested by whatever information was picked up in the survey and by the students post-experience. One good question forming technique is the idea of changing subheadings into questions which has been mentioned earlier. These questions are then used as a reading guide.

Read. Students then read the material to answer their questions. How closely they will have to read depends on the nature of the reading material. Looking for answers to personally developed questions helps students to keep their minds on what they are reading. Remind students that maybe their questions didn't cover all the main points and therefore they may have to redefine a question or so or maybe add questions after reading.

Recite. Students are asked to cover up what they have read under the first subheading and try to answer the related question from memory. Students must master each section before moving on to the next one and must repeat steps 2, 3 and 4 for each section.

Review. When students have completed the chapter they should spend a few minutes going back over the text and their notes to try and get the overall picture.

Hopefully, after reading the discussion of comprehension strategies one has gotten the idea that instruction must be comprehension based and not simply concerned with management or comprehension assessment. The particular strategies mentioned such as advance organizer, DRA, questioning and development of study skills will help teachers focus their instruction on comprehension development. There will never be a panacea but just a group of concerned teachers doing the best they can by using as much material and as many different strategies as their time permits. Effective instruction is not necessarily based on time but rather on how time is utilized and towards what end.

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