THE METACOGNITIVE AWARENESS OF SELECTED TASKS AND STRATEGIES OF ADULT NON-PROFICIENT READERS

by

HELEN GABRIELLE GOUDY
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to the required standard

[redacted]

R. Vance Peavy, D.Ed.

[redacted]

Beverly A. Timmons, D.Ed.

[redacted]

Antoinette A. Oberg, Ph.D.

[redacted]

Robert H. Fowler, Ph.D.

UNIVERSITY OF VICTORIA

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Supervisor: Professor R. Vance Peavy,

ABSTRACT

In order to extend the knowledge of the reading process awareness of adult non-proficient readers, an interview study was conducted with 42 subjects on entry to an Adult Basic Education Level I course. A second interview using the same questions about selected aspects of the reading task and strategies was sought with each subject, either at the end of the academic year or when the subject left the program. Twenty-six second interviews were obtained. Initially, subjects with reading skill levels of over grade 5 were significantly more aware of reading strategies than those with lower reading skills. No significant differences were found in the responses of subjects matched on initial reading skill levels between those who made greater progress in their measured reading ability and those whose progress was less. Changes in responses to the questions over time indicated that subjects generally became more aware of meaning-generating strategies of reading as they developed their reading abilities. Implications of these findings for teachers of adult non-proficient readers and for research in

reading using a metacognitive perspective are discussed, together with suggestions for future research.

Examiners:

[redacted]

R. Vance Peavy

[redacted]

Beverly A. Timmons

[redacted]

Antoinette A. Oberg

[redacted]

Robert H. Fowler

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DEDICATION

To John

CHAPTER I

Statement of the Problem

Purpose of this study

To date, knowledge has been assembled on the awareness of the reading process of children of varying ages and reading abilities and of adults reading at or below the grade 5 level. Yet not all adults whose reading skills are measured to be above the grade 5 level are good readers. Adults who must have assistance to improve their reading ability may be considered "non-proficient readers". Little is known about the reading process awareness of adult non-proficient readers with reading skills above a grade 5 level, and in what ways their knowledge about reading differs to those adults whose reading skill level is lower. The purpose of this study was to extend the knowledge about what adult non-proficient readers know of selected aspects of reading, and to compare the results obtained in this study to those obtained by Gambrell and Heathington (1981), who used the same questions to study differences in knowledge of reading tasks and strategies between adult good readers and adults reading at and below the grade 5 level.

Introduction

In 1978, Myers and Paris developed a series of questions designed to elicit responses from children of grades 2 and 6 about their knowledge of some parameters of reading, such as the structure of the text and the influence of background knowledge of a story topic on the ease of understanding written material. The framework under which the questions were generated was that of a theory of metacognitive development proposed by Flavell (1978).

Metacognition refers to the awareness of, and conscious control over, one's cognitive actions. Basic characteristics of thinking efficiently in a wide range of learning situations involve predicting, checking, monitoring, reality-testing and co-ordination and control of deliberate attempts to learn or solve problems (Brown, 1980).

In order to execute efficient thinking in any cognitve enterprise, the performer will draw upon his or her metacognitive knowledge, that is, knowledge of or beliefs about which factors act and interact to affect how well one is performing. Three major categories of metacognitive knowledge have been identified as being of importance are those of "person", "task" and "strategy" (Flavell & Wellman, 1977; Flavell, 1978; Flavell, 1979; Flavell, 1982). Information which would be included in the "person" category would be all that the reader knows about her or his enduring characteristics and about transient conditions that influence performance. A person might be aware that he would rather be physically active than read, and that it is harder to concentrate on reading when he is tired. Such information is needed to appraise the potential for achieving the task and to select appropriate strategies to help in that end.

The second and third variables of "task" and "strategy" include the knowledge about the activity of reading and those actions which a reader might select to achieve a given goal. Good readers may be expected to be aware of the fact that both interest in and background knowledge of the subject of written material makes that writing both easier to understand and faster to read. Readers need

to know different modes of reading which they can use depending upon the desired outcome, and to have a repertoire of skills which can be used to resolve comprehension failure. Thus a reader may appreciate that it is easier to read to get a general idea of the meaning of the text than to read word for word. Yet even sophisticated readers may encounter unfamiliar words and need to be aware of what they can do to help themselves to deal with such difficulties.

Importance of this study

In spite of universal education for children in Canada and the United States, there are a substantial number of adults who lack the ability to read at a functional level. In order to operate in a modern society, these adults need assistance in developing and improving their reading abilities.

In 1976, there were approximately four and one half million adult Canadians who had less than a grade 9 level of education, approximately 850,000 of whom had less than the grade 5 level (Thomas, 1980). Yet those who have attended school for at least 10 years may not have acquired an appropriate reading level. Carnine (1980) cited a U.S. Federal Report which stated that one million American children between the ages of 12 and 17 could not read at a fourth grade level, and it has been estimated that 1.8 million 17 year old Americans are functionally illiterate.

According to Thomas (1980), most printed material in Canada is at a grade 10 level of reading and a requirement for job entry or admission to training programs is based on a minimum level of a grade 10 certificate. Literacy skills, once acquired, deteriorate

if they are not practised. This suggests that even among those Canadian adults who have received ten years of schooling or more, some may well find that their ability to read is insufficient to allow them to accept promotion in their work or to retrain themselves in the event of a disabling injury or other job loss. As Dreyer (1978) commented, "In an increasing technological society with a large proportion of workers fulfilling work roles associated with the delivery of services rather than with the manufacture of goods, the need for functional reading skill has increased dramatically." (p.159)

Counsellors and teachers in the area of adult education, particularly in the learning assistance field, must have a thorough knowledge of the process by which new knowledge is acquired. Yet teachers in literacy programs for adults lack preparation in understanding and teaching adults (Dinnan, 1980). A significant body of knowledge on the characteristics of the illiterate adult is required in order to meet their needs (Karale & Lindsey, 1977).

Peters, Johnson and Lazzera (1981) have suggested that an important factor in understanding the way in which adults think and learn is the context upon which their cognitive machinery operates. The ways of thinking and perceiving the world are based on what adults know, and that knowledge governs what they do. Di Vesta (1974) stated that adults tend to have highly structured and interdependent cognitive belief systems. These systems lead them to reject or explain away information which contradicts those beliefs. Since there is reason to believe that adults are less likely to try new approaches (Bowen & Zintz, 1977) and less ready to

accept having to learn things that are not clearly relevant to their needs (Kidd, 1973) than are children, it would appear to be all the more necessary to discover what adult non-proficient readers know about the reading process. It is to that end that this study is addressed.

CHAPTER II

Review of the Literature

The object of this chapter is to outline briefly the research and writings in three areas of enquiry. The first section is an overview of metacognitive development. Knowing what and how one knows what one does know is called metacognitive knowledge. The process of evolving cognitive activities of co-ordination and control of the thought processes is accompanied by increasing knowledge of the abilities and limits of the performer and of aspects of the task being performed, together with an increasing repertoire of strategies upon which the performer may call to achieve the desired goal (Flavell, 1978)

The remaining sections examine the metacognitive knowledge of readers. As the bulk of research in the development of reading and reading skills has been performed on children, the second section will draw upon some of that research to trace changes in what children know and do when reading at different ages and stages. The last section examines what is known about the adult non-proficient reader's knowledge of reading, both from self-reports and from an examination of adult non-proficient readers' use of reading skills.

Metacognitve Development

Children's metacomprehension, or the ability to know if and when something has been understood, becomes more developed with age. When children from grades 1 to 3 were given incomplete instructions to follow a task, the younger children could not appreciate they had not understood the directions until they tried to carry out the task

(Markman, 1977), whereas the children in the third grade were able to notice the inadequacies of the instructions with a minimal amount of probing. This increasing ability to detect not understanding and to recognise inconsistencies continues to be refined with age. Children in grade 6 are better able to notice inconsistencies in directions than are those in grade 3 (Markman, 1979). Older children are more likely than younger ones to demonstrate verbal and nonverbal signs of noticing inadequacies in directions, and more apt to show they understand the meaning and implications of those inadequacies (Flavell, Speer, Green & August, 1981). While adults are quite familiar with the "tip of the tongue" phenomenon, young children appear to lack the feeling of knowing something even though they cannot recall it. Adults are generally accurate in predicting what they know, but it is not until the mid-grade-school years that young children can reliably distinguish between what they know, but cannot recall, and what they do not know (Brown, 1980). Preschool and elementary children, when asked to study a list of items until they were sure they could remember them, showed differences with age in the accuracy of their predictive abilities (Flavell, Friedrichs & Hoyt, 1970).

Results such as these indicate that individuals assume greater awareness of and control over their cognitive activities, depending upon what and how much the individual knows about knowing and thinking. Flavell and Wellman (1977) have suggested that there are three main areas of knowledge which may be of importance in any cognitive enterprise; knowledge of oneself as a performer of the task, knowledge about aspects of the task itself, and knowledge of

skills and strategies, and how and when such strategies are effective.

Children's early knowledge about themselves as performers of a task becomes extensively qualified and organised during the school years. They become more accurate in their prediction of their own performance and hold increasingly realistic concepts of themselves as performers of tasks such as memorising and understanding (Flavell et al. 1970; Kreutzer, Leonard & Flavell, 1975; Flavell & Wellman, 1977; Levin, Yussen, DeRose & Pressly, 1977; Flavell, 1978; Fabricus & Wellman, 1983; Flavell, 1982).

The development of awareness of the "strategy" and "task" variables has also been seen to increase with age. Knowledge of a range of mnemonic strategies, and knowledge of their appropriateness increases with age, as does the spontaneous and effective use of those strategies (Kreutzer et al. 1975; Flavell, 1978; Flavell, 1979). However, Miller and Weiss (1982) noted that the appreciation of the effects of person and strategy variables develops earlier than the awareness of the effects of task variables. Whereas children in grades 1 and 2 attributed failures in communication to the listener, it is not until about the age of 10 that they appreciate that the message itself might be inadequate (Robinson & Robinson, 1976). Yet the ability to use information about a task variable appears to predate the ability to articulate that knowledge. Grade 6 children, for example, were observed to employ some forms of metacognition for memory abilities although they displayed apparently limited insight into these processes. They failed to acknowledge the assistance of prior knowledge when

making predictions of their memory ability (Hare, 1982).

The correlation between what children can tell about how they memorise and what their actual behaviour indicates they are doing is by no means firmly established. Flavell and Wellman (1977) have stated, however, that research reports generally indicate that children who possess a particular piece of metacognitive knowledge about the task to be performed are more likely to engage in a related strategy than those who do not.

Children's Knowledge of Reading

It has long been recognised that to begin with, children do not know what reading is, or how it is done. It is not clear from the behaviours which can be observed in readers why the reader does them. Downing (1973) posited that it is the normal condition of the beginning reader to be in a state of confusion, as he cannot see exactly what is done. The fundamental basis of learning to read is moving from this state of confusion to increasing cognitive clarity, and with increasing understanding of the purposes and mechanisms of the reading act.

Such a trend has been noted in what young readers can tell of the reading process. Young children in the first grade are reported as having a general lack of specific expectations of what reading is going to be like and what its purposes and uses are (Reid, 1966). They speak of reading in terms of physical, observable behaviours, such as looking at a book, or turning the pages (Huffman, Edwards & Green, 1980). Children reading at or below a third grade level tend to talk of reading in terms of classroom procedures (Johns, 1974), while those who are reading at a grade 5 level or more refer

to reading as concerning word recognition, decoding and the gaining of meaning (Johns & Ellis, 1976). Huffman et al. (1980) found that by grade 6, children can describe a variety of reader's purposes and motivations for reading, and are clearly aware that more is involved in reading than just sounding out words. These findings corroborated the research results of Myers and Paris (1978).

Just as in the development of memory and other cognitive activities, older students of reading can talk of a wide variety of reading strategies which may be employed (Huffman et al. 1980). The difference in awareness of skills used in reading between good and poor readers is apparent even among those who have obtained entrance to college. Hare and Pulliam (1980) found that self reports of college level students of what they did when they read was sufficiently acute as to discriminate significantly between those who scored highly on a reading achievement test and those who had low scores.

Researchers examining what readers do during reading have found older and/or better readers use increasingly sophisticated strategies to derive meaning from the text. Among those who have explored this aspect of reading are Olshavesky (1977), Garner and Reis (1981), Willows and Ryan (1981) and Holmes (1983) as well as those researchers cited by Golinkoff (1975-1976). Comparisons between the activities of good and poor readers of similar ages have raised speculation about what the poor readers know about reading. Researchers such as Di Vesta, Haywood and Orlando (1979) have interpreted their findings as suggesting poor readers have a limited knowledge of the role they play in comprehending text.

Other researchers have found, on questioning students of similar ages but of different abilites in reading (whether those abilities have been evaluated by overall reading level, scores on reading subtests such as comprehension or vocabulary tests, or by identification by the teacher as being "very good" or "poor" readers), that there is a difference in what the students can tell about aspects of reading. Elder (1981) found that children of the same age but at widely different reading levels held different perceptions of reading. Those who were reading below the grade 5 level understood reading to be decoding, while their age cohorts reading at a higher level held a meaning centred perspective. Paris and Myers (1981) found that the identified poor readers differed in their evaluation of reading strategies in terms of usefulness from the ratings of those strategies made by good readers. Maguire (1978) reported that very skilled and average readers at the secondary level appeared to be more cognizant of their abilities, their strategies, their limitations and their goals than poor readers of the same level. Poor readers appeared to have less of a conceptual grasp of the reading processes, and lacked independent and varied strategies for dealing with written discourse.

In reviewing research in backwardness in reading, Vernon (1957) concluded that underlying many studies was the implication that students who are slow in developing reading proficiency are basically confused about the purposes and nature of reading, an opinion re-iterated some 25 years later by Cambourne and Rouch (1982) and Costello (1982). As students develop a schema for

reading, the knowledge of what reading is should be a potent influence on how and when a person utilizes reading skills and strategies to extract information from the text (Canney & Winograd, 1979: Winograd & Johnston, 1982).

In summary, in reading as in other cognitive endeavours, such as memorising and understanding, those who are more adept at performing the task have a greater metacognitve knowledge than their less skilled counterparts. They are more aware of themselves as performers of the task, they have a wider range of independent strategies which they can use and a more accurate appreciation of the demands and goals of the task of reading.

Adult Non-proficient Readers

Compared to the information on young readers, little is known about the perceptions of the reading process of adult non-proficient readers. Although available research on the adult non-proficient reader is limited (Boraks & Schumaker, 1981), research on what they do which has been reported has indicated that their reading behaviour is different from that observed in children at a similar grade level whose reading development is appropriate for their age (Monroe, 1932).

Adults reading below the grade 5 level tend to rely heavily upon graphophonic cues, that is, upon words and the sounds they represent rather than employing their knowledge of grammar and the meaning of the text to help them in their reading (Boraks, 1978; Boraks & Schumaker, 1981; Malicky & Norman, 1982). College aged adults reading above the grade 5 level but not as proficiently as their age maturity would suggest also tend to use the shape and

sounds of words as cues (Raisner, 1978). The adult's linguistic age may be closer to the chronological age, whatever the skill in reading (Jones & Charnley, 1982), and readers at one level of skill who do employ their linguistic abilities through the use of syntactic and semantic cues while reading can read better than those who have superior levels of word recognition skills (Boraks, 1978). This reliance upon graphophonic cues observed among adult poor readers is reflected in the tendency for such readers to define reading as decoding or getting letters (Boraks & Schumaker, 1981).

Comparisons among adults reading at and below the grade 5 level indicate that the trend for increasing skill level to be associated with a more detailed knowledge about the task and the knowledge of the reader's ability is not restricted to children. West and Lagotic (1978) reported that among adults who were reading below the grade 5 level, those who became more able as readers also tended to be more accurate in their perception of their own ability and more able to identify their strengths and weaknesses in selected areas of reading skills. As adults continued in a basic reading program, their views of reading were likely to evolve from a decoding approach to an awareness that reading involved the generation of meaning (Boraks & Schumaker, 1981).

Dinnan (1980) has suggested that the preoccupation of those reading below a grade 5 level is that of learning the operations of the reading code, that is, the receiving and processing whole bodies of knowledge in written form. Gambrell and Heathington (1981) compared the responses of adult good readers with those of adults reading at or below the grade 5 level, and found the latter

to be significantly less aware of such aspects of the task of reading as the structure of the text, and to lack knowledge of independent strategies which they might use to deal with unknown words.

Mezirow, Darkenwald and Knox (1975) have pointed out that adults in basic education classes are far more diverse in background knowledge and experience than children in any classroom. Research on reading of adult students in such classes tends to be focused on those whose reading skills are at or below the grade 5 level. Little is known of the knowledge about reading of adults who are admitted to such classes to upgrade their reading skills and whose measured reading level lies between grades 5 and 10. Research on both children and adults indicates that readers of different levels will respond to questions about reading in different ways, reflecting their metacognitive knowledge of the person, task and strategy variables required by that activity.

There have been criticisms expressed, both in the area of metacognition (Cavenaugh & Perlmutter, 1982) and adult learning (Parsons & Johnson, 1978) that there is too little replication. The use of unique interview materials used in separate experiments makes for difficulties in drawing conclusions and limits the extent to which general conclusions may be drawn from the research. For that reason, questions which have been asked of an adult non-proficient reader sample reported by Gambrell and Heathington (1981) have been used for this study to investigate the following questions:-

(a) Do adults reading above the grade 5 level respond to

questions about reading differently to those reading below that level upon entry into an Adult Basic Education course? (b) Do those students who make more rapid progress in their reading program, whatever their reading level at entry, initially know more about reading than those whose progress is less? (c) What sort of changes in awareness of aspects of reading do these adults make during a reading program?

By comparing the responses obtained from the subjects in this study with those reported by Gambrell and Heathington (1981), it is anticipated that a core of information may be established about the knowledge of adult non-proficient readers of reading tasks and strategies.

CHAPTER III

Method

Subjects

The subjects for this study were drawn from adults who were attending the Adult Basic Education Level 1 course at a local community college. As the focus of this study was on reading awareness, the subject pool was restricted to those students participating in the reading and writing programs only. Initial interviews were obtained from 47 subjects who volunteered to participate in the study. The reading levels of the subjects ranged from 0 to 12.9, determined by the Woodcock Reading Mastery Test (WRMT). As the scope of this study was limited to include only those whose reading skills were at or below the grade 10 level, the five subjects whose reading level scores were above grade 10 were not included. The age range of the subjects was from 17 to 48, with a median age of 24. This sample included 30 men and 12 women.

Second interviews were sought from each subject when it was known that the subject would be leaving the course or after the final reading assesment was made at the end of the academic year. When subjects left the course without prior warning, attempts were made to contact them to conduct a second interview. Second interviews were obtained from 30 subjects. Four of these were excluded from the data analysis, as the subjects had an initial reading level of over grade 10. The number of second interviews included in the data analysis was 26, 17 of which were from men and 9 from women. Repeat interviews were not obtainable from the remaining 17 subjects due to a variety of reasons, such as a

breakdown in the subject's health, movement out of the area or an unwillingness to participate further in the research.

Of the 42 subjects, only two had learnt English as a second language, one of whom had received most of her education in the English language. All but two of the subjects attended school as children to at least the grade 7 level in North America, the majority in British Columbia.

Students were referred to the program either from the college intake assessment results or from other programs in the college. Priority entry to the program was given to students who had been in the program before; in this sample, eight students returned from the previous year, seven of whom were reading below the grade 5 level and one whose reading was measured as being equivalent to a grade 10 level. The remaining positions were then filled by new applicants. During the course of the year, students left the program as their skills reached a level appropriate for the next instructional level, providing there was room for them in that course. If the next level were full, the students remained in the Level 1 program but worked on material appropriate to their abilities until a space became available in the next level. Students also left the program during the year for personal reasons, to take up employment or because their existing job hours had been changed. As space became available in the program, prospective students on a waiting list were contacted and were enrolled in the course.

While some of the students were employed on a full or part time basis, most were not, either because of lack of employment

opportunities for them or because they had sustained injuries which prevented them from continuing their particular type of work. Most of the subjects were vague about their educational or career goals, although 29% of the students had specific goals in mind, such as entry into certain training programs, increasing their reading and writing skills in order to receive promotion at work or because they had the time and the opportunity to carry out their desire to be able to read and write more effectively.

To maintain a manageable class size, the students were assigned to either the morning or afternoon class. The morning class met five days per week, the afternoon class met on four days. This arrangement permitted some flexibility for students to arrange to attend a class which fitted in with other aspects of their lives.

After the intake interview and reading level assessment, the student and instructor planned the program which the student would follow, depending upon individual strengths and weaknesses identified from the results of the test and the student's goals for the program. The students worked either on their own or in small groups with others of a similar level.

Materials:

The interview questions used in this study were drawn from a questionnaire used by Gambrell and Heathington (1981). Those authors had adapted questions designed by Myers and Paris (1978). The original questions were intended to elicit responses from children about their knowledge of reading tasks and strategies and their awareness of personal variables which might be of importance in reading. The questions drawn from the adult version of the

questionnaire for this study were chosen on the basis that there were results of responses to those questions of adult proficient readers and adults reading at or below the grade 5 level available for comparison with the data to be collected in this study. A list of the 11 questions used in this study is given in Appendix A. In order to minimise possible sex bias which might arise if a male subject were asked questions about reading where the character of the scenario was female, and vice versa, male and female versions of the questions were used where appropriate.

Measurement of Reading Level and Verbal Fluency

In order to minimise the disruption to the students and to avoid increasing subject anxiety, the reading level assessment made by the instructor was taken for use in this study. The instrument used was the Woodcock Reading Mastery Test (WRMT). The WRMT was used as a diagnostic tool, to enable the instructor to evaluate the areas of strengths and weaknesses in the student's reading skills. The test comprises of five subscores, which include letter identification, word identification, word attack, word comprehension and passage comprehension. These subscores are weighted and combined to form a total "reading grade score". The split-half reliability of the test is given for grade levels 2.9 and 7.9 only. The reading grade score split-half reliability for both forms for grade 2.9 is .99, and .98 for both forms at the grade 7.9 level. The test-retest reliabilities for those grade levels range from a low of .16 in the letter identification subscore for the grade 7.9 level, and a high of .94 on the word attack subscore at the grade 2.9 level. The total reading score for the grade 2.9 level was

.97, while that of the grade 7.9 level was .83. The Eighth Mental Measurement Yearbook (1978) stated that this test is useful for research purposes, as well as clinical use, for its coverage of the range of reading levels from kindergarten to grade 12 level. While decoding skills are evaluated in the word identification and word attack subtests, less attention is given to the evaluation of contextual cue use. The student's reading speed is not evaluated by this test, nor does it cover a knowledge and use of syntactic information when reading. A further criticism of the WRMT is that there appears to be little attempt to measure higher levels of reading skills, such as inference, evaluation of logic or analysis.

Subjects were tested at the beginning of the academic year or on entry to the program by the instructor using the WRMT. Retesting was done after four and eight months. As 20 subjects left the program before retesting, the instructor's evaluation of the reading level achieved by the subject was used. The estimate of the reading level was based upon the material upon which the student was working at the time of leaving the program and the level of proficiency demonstrated in that work.

An informal assessment of each subject's verbal fluency was made by the instructor, based upon her perception of the command of the language demonstrated by the subject in teaching contact and in class discussion. A five-point scale was used; very poor, poor, average, good and very good. As there were only 42 subjects in this study, the categories were reduced to three levels for greater clarity in comparison between upper and lower level readers. The categories were collapsed by combining the "very poor" and "poor"

levels of verbal fluency to form the "below average" category and combining the "good" and "very good" levels to produce the "above average" category. A table showing the comparison of categories of verbal ability and the initial reading levels is given in Appendix B.

Procedure

Those students who were enrolled in the first level of an Adult Basic Education program for reading and writing skills development and who had indicated a willingness to participate in the study were interviewed upon admission to the program. Verbal assurances of confidentiality were given, and the subjects were told their reading level assessments would be used in the analysis of data. All the initial interviews were conducted in the classroom, as were all but two of the second interviews.

Each subject was told that people reading at different levels may respond to questions about reading in different ways. There were no "right" or "wrong" answers to the questions, and that it was important that they responded to the questions the way they thought best.

Background information about the subject, including his or her education and vocational plans, previous schooling, age and how the subject found out about the program was sought first, in order to establish contact with the subject before asking the questions on reading.

The questions were read to each subject in a conversational manner with clarifying questions where appropriate, using the same order of questions as shown in Appendix A. In the event of a clear

misunderstanding about the question, the question was repeated and rephrasing was used if necessary. Repetitions and clarifications were ceased if the subject exhibited signs of unease. The responses were recorded on tape and later transcribed for analysis.

A second interview was sought if the subject was known to be leaving the program, or after the final testing was done at the end of the academic year. Attempts were made to contact those subjects who had left before the second interview. After a brief conversation, the same questions about reading, and in the same order, were asked in the second interview. The second interviews were also recorded on tape.

The procedure for this study deviated somewhat from those reported by Gambrell and Heathington (1981). In that study, the good readers were not given a test of their reading level. As those subjects were drawn from a third-year college level course and were said to be exhibiting adequate reading and writing skills, it would appear reasonable to assume that they were reading above the grade 10 level. The adult non-proficient readers in that study were said to be reading at or below a grade 5 level, based on an informal reading assessment. Gambrell and Heathington (1981) reported that the questions used were read to the adult poor readers, but the adult good readers read the questions themselves and recorded their own responses. Directions to the interviewer given in the questionnaire used in that study also indicated clarifications should be made. No second interviews were reported.

The data for the present study were examined and the responses to each question were reduced to a summary phrase. Categories of

responses were established for each interview item, generally following those reported by Myers and Paris (1978) and Gambrell and Heathington (1981). Extra categories were developed where appropriate for these data. An example of an extra category can be seen for the responses to the question on which mode of reading is faster. A distinction has been made in the present study between those who indicated reading silently was quicker, because time was lost pronouncing words, and those who said that it was quicker to read silently because they felt embarrassed when reading aloud. Responses to the second interview were similarly treated, and notes made of any changes in response patterns.

As there were 42 subjects whose reading levels ranged from 0.0. to 10.0, the reading levels were combined to make four groups. The first group contained all subjects whose initial reading score fell between 0.0 and 2.5, the second group contained those subjects whose reading score fell between 2.6 and 5.0. These two groups were then combined for the purposes of statistical analysis, and are referred to as the lower level readers. The upper level readers included those subjects whose intake reading level fell between 5.1 and 7.5 and the remainder of the subjects, whose initial reading level lay between 7.6 and 10.0. The response patterns for the first interviews of the two groups were analysed, using a Chi Square analysis with a Yates correction factor applied if the expected frequency for any cell fell below five (Mendenhall, Ott & Larson, 1974). Where the numbers were too small to warrent the use of a Chi Square analysis, the Fisher's Exact Test was used.

Some subjects made large gains in their reading level scores,

while others made far less progress. It was decided to examine the initial responses of those who had made the greater gains in their reading, as measured by the WRMT, with responses given by subjects of the same intake reading level, but whose subsequent progress was less in terms of changes in reading level as measured. In order to attempt to control for the variations in the length of time a subject spent in the program and the differences in numbers of days of tuition per week between the morning and afternoon groups, a per diem rate of reading progress score was made for each subject.

This score was generated by the following formula:-

$$\frac{\text{(Final Reading Score)} - \text{(Initial Reading Score)}}{\text{Number of days in the program}}$$

No adjustment was made for absences while the subjects were enrolled in the program. It was not possible to adjust the per diem score to reflect the amount of extra studying time the subjects chose to do at home, nor to control for the amount of program time spent on mathematic skills, if any. A mean for the per diem rate of progress was found. Those subjects who were above the mean were considered to have made greater progress than those below. Each subject scoring above the mean was matched by intake reading level to within .5 of the measured reading grade to one below the mean, yielding 12 pairs of subjects for comparison. The reading levels of the matched pairs ranged from an intake level of 3.1 to 9.6. Three of the matched pairs were reading below the grade 5 level at intake, the rest above. The responses of the pairs to the questions were examined to determine if the responses given by those who made greater progress were indicative of more sophisticated

metacognitve awareness than their counterpart who made less progress. A sign test was used to determine significant differences between the two groups of readers. For all tests performed on these data, differences were not considered to be significant unless $p \leq .05$.

Because of the wide range in initial reading levels, the differing lengths of time spent in the program and the wide range in gains in reading levels achieved by the subjects, no statistical analysis was made for the data collected in the second interviews.

Limitations and weaknesses of this study

The findings of this study are valid for only one year's intake of students to the Adult Basic Education Level 1 course at one community college in British Columbia. Students attending the institution in that time period may have been different from those attending in other years and other places due to economic conditions in the community which increased the numbers of people who were unemployed and who were seeking alternative employment areas for which they needed additional literacy skills. That the college tuition costs for this type of program are lower than those of private educational establishments offering similar programs suggests that the subjects included in this study may be different from those who attend private schools or hire tutors. Finally, it should be noted that all the subjects in this study have been raised in a literate community, have attended school as children, yet have failed to achieve an adequate level of literacy skills. These findings may not apply to those who have not been introduced to reading until adulthood.

Weaknesses in this study included the fact that the researcher alone coded the data. In an effort to minimise investigator bias, the responses were categorized blind to the reading level of the respondents. In the two previous studies, there were two judges who summarized the responses to one or two word phrases prior to sorting them into categories. The percentage of disagreements on the summarization of responses was given as 2% for the Myers and Paris (1978) study and less than 6% for that of Gambrell and Heathington (1981). A further source of weakness to the reliability of this study comes from the use of an informal evaluation of the reading level of subjects who dropped out of the program. It is possible that the informed evaluation of the instructor did not exactly match the level which would have been obtained by the WRMT.

CHAPTER IV

Results and Discussion

This chapter is divided into five sections. The first section presents the responses of the subjects to the initial interview questions. Following the approach of Gambrell & Heathington (1981), the questions have been grouped under two variables of metacognitive knowledge, namely, "task" and "strategy". Within each variable, comparisons are made between the responses to the questions given by the upper level readers (those whose WRMT scores lie between 5.1 and 10.0) and the lower level readers (those whose WRMT scores are at or below the grade 5 level). The second section outlines the results of the comparison of initial responses to the questions of the matched pairs of subjects.

The third section of this chapter is a discussion of the relationship between the initial responses of subjects to one question on reading with their response to other questions. The fourth section compares the responses obtained from these subjects to those reported by Gambrell and Heathington, (1981) to the same questions. Such a comparison will help to establish what metacognitive knowledge about reading is common to adult poor readers of all reading levels, and what knowledge may be skill development specific. The final section is a discussion of changes which the subjects of this study made in their responses when interviewed a second time.

There were eight subjects in the present study who had been enrolled in the reading program the previous year. The responses to the questions of these subjects were examined in relation to

those of the remaining subjects who had been interviewed. Overall, the response patterns of the eight preregistrants were proportionately similar to those of their reading level peers. For each comparison between the upper and lower level readers, the inclusion or exclusion of the data of the eight subjects under discussion did not significantly affect the outcome of the statistical tests of difference performed upon the data. The responses of those eight subjects to the interview questions have been included in this report.

Knowledge of the Reading Task

The first group of questions to be examined was that which explored the subjects' awareness of task variables. The questions asked attempted to investigate their perceptions of the roles of motivation and opportunity in learning to read and the effect of prior knowledge, as well as what these adults knew about the structure of the text.

Motivation vs. opportunity. The first question was:

> Suppose there were two women (men) named Mary and Alice (John and Alan) who came from different homes. Mary (John) was wealthy and had lots of books. Alice (Alan) was poor and didn't have many books at home. Do you think one of the women (men) was a better reader? Why?

Table 1 indicates 60% of the subjects responded that there would be no difference between the two people, only 25% said that the rich person would be a better reader. One subject who gave this response justified the answer by explaining that those people

Table 1

Frequency of Subjects Reporting the Better Reader

Reading Level	Poor	No Difference	Rich
7.6-10-0	0	8	0
5.1-7.6	1	4	6
2.6-5.0	5	10	2
0.0-2.5	0	3	3
	6	25	11

Table 2

Frequency of Subjects Reporting Factors in Reading Achievement

Reading Level	Motivation	Individual	Opportunity	Other
7.6-10.0	5	3	0	0
5.1-7.5	4	2	5	0
2.6-5.0	8	6	2	1
0.0-2.5	1	2	3	0
	18	13	10	1

who grow up in homes where the parents are readers and where there are books around become inspired to read themselves from the example set. This answer was not typical, for the remainder who gave this response said that the rich person would be a better reader as he or she would have better opportunities, as indicated by such statements as "because she's got more books, she would learn more words" and "he would be able to read more books". Those who said that the poor person would be the better reader generally offered motivation as the reason, as in "the poor one would really have a drive on to work hard" and "he's got nothing, so he would work harder to get what he wants". One subject suggested the poor would be better readers because "they are free of pressures".

Of those who said that there would be no difference between the two characters in their reading ability, 52% were aware that wealth was not necessarily a factor in learning to read, as suggested by "being rich doesn't make someone a good reader","the rich one would have more rights or more power, but that doesn't mean he's a good reader" and "I can't tell you who would be a better reader unless you give me more information". Others suggested that individual differences might intervene as in "it depends if one has a problem or not". As can be seen from Table 2, the remaining 48% of those who said that there would be no difference all indicated motivation of the individual as being the critical factor, either directly, as "you can always go to the library or pick up a newspaper if you want to read" or indirectly as in "there's not necessarily a difference because the rich one might not look at her books either". There

was no significant difference between the upper and lower levels of readers who were aware that motivation was a critical factor in reading achievement.

Reader's interest. The knowledge of these subjects of the role of the reader's interest in the material being read, and the effects of that interest on the speed of reading and the ease of remembering was examined by asking:

> What type of story do you like best? If someone wanted you to read another type of story that you didn't like as much as ---, which do you think you would read faster? Which would be easier to remember?

There was no significant difference between the two levels of reading ability, for almost all the subjects said that it would be both quicker to read and easier to remember the material that they enjoyed, as shown in Table 3. It should be noted, however, that frequently the subjects said that they did not like reading stories, but preferred to read technical material in which they were interested even though they take more time to read to understand properly. When asked to decide between two stories, they all said they would read the more interesting one quicker. Other subjects acknowledged that they probably would not finish the story they did not enjoy. There were two readers at the highest level who said that when they were reading something they enjoyed, they preferred to think about what they were reading, which would slow them up. Their response of "other story faster" may be considered to come from a sophisticated awareness of their own reading process.

Table 3

Frequency of Subjects Reporting Effects of Interest on Reading and Memory

Reading Level	Story read faster			Story remembered easier		
	Liked	Same	Other	Liked	Same	Other
7.6-10.0	6	0	2	8	0	0
5.1-7.5	11	0	0	11	0	0
2.6-5.0	15	2	0	16	1	0
0.0-2.5	6	0	0	6	0	0
	38	2	2	41	1	0

Background knowledge. A factor which can influence reading is the background knowledge the reader has of the subject matter; prior knowledge can make the material easier to understand. In order to gauge the subjects' awareness of this parameter, they were asked:

> A group of people were reading a story about Chicago. Bob (Ann) was in Chicago last summer on his (her) vacation. Do you think the story might have been easier or harder for Bob (Ann) to understand than Karl (Jane) who had never been to Chicago?

From Table 4, it can be seen that there was almost unanimous agreement that the story would be easier for the one who had been to Chicago, although 8% of the 36 subjects who gave such a response qualified their answer by suggesting that there would be no difference if the other person had acquired background knowledge of Chicago from other sources, such as television or from having written a report on that city. One subject, highly aware of the problems of overconfidence, suggested that it might be harder for the one who had been there, since she might think she knew everything about that city, when in fact she did not.

While 43% of the subjects gave somewhat circular reasons for their responses, as "It would be easier for the one that's been there because she's been there", others (43%) substantiated their reply with more detail such as "because he's got a mental picture of it", "she can relate to it more than the other one" and "the one that's been there has got both the theory and the practice, the other one's just got the theory" There was a significant difference between the upper and lower level readers in the degree

Table 4

Frequency of Subjects Reporting Ease of Understanding with Prior Knowledge

Reading Level	Easier		Same	Harder	Don't Know
	Detailed	Circular			
7.6-10.0	6	1	0	1	0
5.1-7.5	6	4	1	0	0
2.6-5.0	5	10	1	0	1
0.0-2.5	1	3	1	0	1
	18	18	3	1	2

of detail with which they justified their response $\chi^2(1) = 4.012$; $p < .05$. These results suggest that the upper level readers were more more aware of the interaction between the reader and the material being read.

As there was a larger proportion of upper level subjects who were adjudged to have superior verbal fluency, it is possible that the differences noted might have occured as a result of the greater fluency in responding to questions rather than reading related awareness. In order to test this as a possible explanation for the differences in responses found between the uppper and lower level readers, the frequency of responses for "easier, detailed" and the combined categories of all the other responses were entered into a 2 x 2 Chi Square table by verbal fluency (i.e. "above average" and a combination of "average" and "below average" verbal fluency). There was no significant difference between the types of responses by verbal fluency. It is possible that the results may reflect a greater awareness among the upper level readers of the interaction between the reader's knowledge and the material being read.

Structure of the text. Knowledge of the structural features of prose may be used as a guide to comprehension by the reader. A reader who knows that sentences in a paragraph share a common topic, and that the first sentence usually introduces the concept which is to be developed in subsequent sentences of the paragraph may use that knowledge to gain a general idea of the arguments presented before reading for the detail. Three questions were posed about the structure of the text. The first question was: "Is there

anything special about the way sentences go into a paragraph or story?"

From Table 5, it is apparent that few of the subjects could tell much about the arrangements of sentences in a paragraph or story. There were no significant differences between the upper and lower level readers. Sixty-seven percent of all subjects said that they did not know, or thought that there was nothing special about the way sentences go into a paragraph or story. Five percent of the subject focused on orthographic features of the text with "you have to use the right words" and "they start with a capital". Of the remaining 29%, only three (7%) indicated that the sentences had a common topic, while the rest knew that the sentences would have to be in the right order to make sense.

Two further questions were asked about the structure of prose, being "What does the first sentence usually do in a paragraph or story?" and ""What does the last sentence usually do in a paragraph or story?" The data presented on Tables 6 and 7 indicate that generally the subjects were more aware of these dimensions of prose. Twenty-one percent of all the subjects were able to report that the first sentence is an introduction to the writen piece. as indicated by "tells you what it's about" and "it's an introduction to what it's going to say". An equal proportion suggested orthographic features of the first sentence, such as "starts with a capital" or gave some opening words which might be used in a letter or story,

Table 5

Frequency of Subjects Reporting on the Characteristics of Sentences in a paragraph or story

Reading Level	Common Topic	Order	Orthographic	Don't Know
7.6-10.0	0	4	0	4
5.1-7.5	1	2	1	7
2.6-5.0	2	2	0	13
0.0-2.5	0	1	1	4
	3	9	2	28

Table 6

Frequency of Reported Characteristics of First Sentences

Reading Level	Semantic Characteristics		Non-Semantic Characteristics	
	Introductory	Temporal	Orthographic	Don't Know
7.6-10.0	2	4	1	1
5.1-7.5	3	5	3	0
2.6-5.0	4	7	3	3
0.0-2.5	0	1	2	3
	9	17	9	7

Table 7

Frequency of Reported Characteristics of Last Sentences

Reading Level	Semantic Characteristics		Non-Semantic Characteristics	
	Summary	Temporal	Orthographic	Don't Know
7.6-10.0	3	3	1	1
5.1-7.5	2	7	1	1
2.6-5.0	2	9	0	6
0.0-2.5	0	2	0	4
	7	21	2	12

such as "Dear Sir or Madam" and "Once upon a time". A further 40% mentioned temporal characteristics: "the beginning", "starts you off". Analysis of the frequency of response for semantic characteristics (the combination of "introductory" and "temporal") with those for the non-semantic characteristics ("orthographic" and "don't know") showed there is no significant difference between the upper and lower levels of readers.

The proportion of subjects who mentioned semantic characteristics of the last sentence in a paragraph or story was higher than that for the first sentence, 67% as opposed to 62%, but more of these subjects referred to the temporal characteristics of the last sentence rather than the summary aspects of it. There was again no significant difference in the response pattern between the upper and lower level readers concerning the characteristics of the last sentence.

Perhaps one reason why so few of these subjects referred to the commonality of the topic of sentences in a paragraph is that 76% of them appeared to be confused about what a paragraph was. The responses of the subjects to the last three questions were examined and, as shown in Table 8, only 24% referred to a paragraph in their responses. Fifty-two percent referred to a story, as indicated by statements such as "introduces you to the characters in the story", "gives you the punch line, or in a mystery, the answer". There was a significant difference between the upper and lower levels readers in their reference to paragraphs as opposed to a combination of "story" and "don't know" $\chi^2(1) = 6.3902$; $p<.03$. This association

Table 8

Frequency of Subjects Referring to Paragraph

Reading Level	Paragraph	Story	Don't Know
7.6-10.0	5	2	1
5.1-7.5	3	7	1
2.6-5.0	2	12	3
0.0-2.5	0	1	5
	10	22	10

was independent of verbal fluency. However, even though the two subjects below the fifth grade level who spoke of paragraphs also mentioned the commonality of the topic of sentences, as well as the introductory and summary roles of the first and last sentence, this knowledge was not always indicated by the upper level readers who referred to paragraphs.

That the subjects of this study were unaware of the semantic and summary roles of the first and last sentences in a paragraph may reflect the criteria for admission into the Adult Basic Education Level 1 course at one institution. The decision to place a student in that course was dependent upon performance on a written test. Failure to achieve a satisfactory standing may indicate inadequacies in reading, but would also reflect limitations in writing skills.

Knowledge of Strategy Variables

The second category of metacognitive knowledge which Flavell and Wellman (1977) suggested as potentially having influence on the execution of task relevant skills is that of the strategy variable. Among children, good readers are said to be aware of more strategies which they use in their reading, and to be more accurate in their assessment of the appropriateness of those strategies. In order to discover if such differences are apparent among adult poor readers of different skill levels, the subjects were asked a series of questions designed to assess their knowledge of the role of selected strategy variables in reading.

Meaning construction in reading. Young children appear unable to differentiate between extracting the meaning of material they

have read and relating that material verbatim. To determine whether adult poor readers of higher reading skills would differ from those of lower skills in that fashion, the subjects were asked: "If you are telling someone about something you've read, what do you try to tell them, all the words, just the ending or what? There is a change in the type of response from that of "all the words" or "as much detail as you can get" among the least skilled readers, to that of giving a summary of the material read which was more typical of the most skilled reader, as shown on Table 9. There is no significant difference between the upper and lower level readers in the proportion of subjects giving a meaning construction response to this question.

The differences in response patterns between the upper and lower level readers is significant when the frequency of those responding with "summary" is compared with that of the combined categories of "detailed", "verbatim" and "don't know" (χ^2,(1) = 5.03; $p < .03$), which are not attributable to verbal fluency. Yet there is no significant difference in the proportion of subjects in the two reading levels who gave responses of "summary" and "selections" to this question

While 81% of the subjects were alert to the goal of relaying meaning as indicated by their rejection of the idea that it would be desirable or even feasible to give all the words, 39% did not refer to the main idea or gist of the piece. These subjects appeared to

Table 9

Frequency of Subjects Indicating Meaning Construction in Reading

Reading Level	Meaning Construction			Decoding Approach	
	Summary	Selections	Detailed	Verbatim	Don't Know
7.6-10.0	6	2	0	0	0
5.1-7.5	5	5	0	1	0
2.6-5.0	8	4	2	3	0
0.0-2.5	0	1	1	3	1
	19	12	3	7	1

have a personal and subjective appproach to the meaning of the written material. They spoke of telling the "most exciting parts", "the funny bits" and "cut out all the boring parts" as well as those who said they would just give the beginning or end. It is possible that, although a goal of reading was given to the subjects, it was not sufficiently narrow as to exclude different interpretations. For example, the subjects appear to hold differing purposes of retelling something they have read. While the more skilled readers offered the general approach of a summary, as indicated by "give them a general idea" and "just the gist of what you've read", others appeared to have specific purposes for re-telling someone something they had read. From such statements as "cut out the boring bits", "I wouldn't tell them the end because it would spoil the story for them" and "tell them all the words so they would quickly know what's what and how to do it", it is possible that these subjects assumed the purpose of relating something they had read would be to entertain or to relay specific instructions to someone. It is not clear from these results whether the upper level readers were better able to paraphrase and summarize material for different purposes than the lower level readers or merely were more familiar with the abstract term of "main idea" or "the gist".

Manner of reading. When these subjects were asked "Which would be easier to do, read word for word or for a general meaning?", 64% of the subjects reported it would be easier to read for a general meaning, with no significant difference between the two levels of readers as shown in Table 10. Readers at the lowest level were most likely to consider reading word for word to be easier, although even

at the highest level, over 30% of the subjects were of that opinion. Of those who said that reading word for word was easier, 38% indicated that either they did not know how to do otherwise, by statements such as "some people just go through and pick out the important words. That's speed reading, and I don't know how to do that" and "word for word, I have to", or that they considered that they got more meaning out of what they were reading by going word for word. Even among those who said that reading for the general meaning would be easier, there were those who indicated that they themselves read word for word. Others thought it would be better, if not easier, to go word for word lest something important might be missed.

Mode of reading. To find out if these subjects were aware of the difference in speed between reading aloud and reading silently they were asked: "Which is quicker, reading to yourself or reading aloud?" The data, presented in Table 11, have been divided into three major categories of responses, being "silent", "no difference" and "aloud". The "silent" category has been further divided. The first section included those who were aware that reading silently was a faster process, because reading aloud demanded pausing for punctuation and silent reading permitted the reader to scan the material without pronouncing each word. The second section was developed to distinguish those who said that reading to themselves was quicker yet indicated that they gave this response from an

Table 10

Frequency of Subjects Reporting the Easier Manner of Reading

Reading Level	General Meaning	Word for Word	Don't Know
7.6-10.0	5	3	0
5.1-7.5	8	2	1
2.6-5.0	13	3	1
0.0-2.5	1	5	0
	27	13	2

Table 11

Frequency of Subjects Reporting Faster Mode of Reading

Reading Level	Silent		No Difference	Aloud
	Quicker	Embarrassed		
7.6-10.0	7	0	1	0
5.1-7.5	9	1	1	0
2.6-5.0	5	6	0	6
0.0-2.5	2	1	1	2
	23	8	3	8

emotional rather than cognitive basis; they felt embarrassed when reading aloud. Of those who claimed that it was quicker to read aloud, 25% said that when they tried to read silently, they lost their place and got muddled, or found that actually hearing the words helped them to understand the meaning of what they were reading.

Comparing the responses of those who appear to realise that indeed silent reading is a faster process with the combination of all other categories, there is a significant difference between the upper and lower level readers $\chi^2(1) = 10.091$; $p < .01$. Again, the differences are not related to differences in verbal fluency.

Reading skills. Subjects of different skill levels may perceive the strategies of reading differently. To test this possibility, they were asked "What makes someone a really good reader?"

From Table 12, it is apparent that there is no significant difference by skill level. Only 19% of all subjects suggested that comprehension might be a central feature of reading, with such comments as "if he reads a lot and understands what he is reading" and "it's the skill to comprehend, to understand first, and I guess for his ability to understand the meaning behind it". Seventy four percent of all the subjects suggested that practise or other special skills, such as "pronouncing words well", "using a dictionary" or "reading quickly" were characteristics of the good reader. It is possible that those who responded with "practise" may have differed in the specifics of what would be advantageous to practise, depending upon the strategies which they themselves were finding

Table 12

Subjects' Perceptions of Factors Involved in Good Reading

Reading Level	Comprehension	Practise	Interest	Other	Don't Know
7.6-10.0	4	4	0	0	0
5.1-7.5	1	7	1	2	0
2.6-5.0	3	5	2	4	3
0.0-2.5	0	5	0	1	0
	8	21	3	7	3

difficult to master. For example, one subject suggested that listening well would make someone a good reader. He expanded his answer with "I'm hopeless unless I listen good when they tell you what to read." Such a response suggests that he was well aware of the importance of meaning generation, yet he did not know how to generate questions to guide himself in processing the text.

Unknown word strategy. Even very good readers can come across a word with which they may not be familiar. All readers must develop means of dealing with such problems. It can be seen from Table 13 that the responses to the question "When you are reading, what do you do if you don't know a word?" tend to vary with the skill level of the subjects. There is an increasing awareness of independent strategies (i.e. phonic skills, using the context or a dictionary) with higher reading levels. Forty percent of the subjects mentioned more than one independent strategy, the upper level readers being significantly more likely to indicate this knowledge (χ^2 (1) 4.3696; $p < .05$). Such differences in response were independent of the subjects' verbal fluency.

There is a significant difference between the first-mentioned strategy of the upper level readers, who would use a dictionary, and the lower level readers, who would use a phonic approach, as indicated by "sound it out" and "spell out the letters" (Fisher's Exact Test. $p < .01$). It is possible that the dependency upon phonic skills to deal with an unknown word might indicate a disregard for comprehension, as suggested by one subject who, having said he would sound out a word he did not know, went on to say "if it sounds all right I'll go on. Well, I don't know what it means." For other

Table 13

Frequency of Stated Strategy for Dealing with an Unknown Word

Reading Level	Independent Strategy						Dependent	Default
	Phonics		Context		Dictionary		Ask	Skip
7.6-10.0	(1)	1	(3)	3	(3)	3	1	0
5.1-7.5	(2)	4	(0)	1	(2)	4	2	0
2.6-5.0	(6)	12	(0)	2	(0)	1	1	1
0.0-2.5	(0)	0	(0)	0	(0)	0	5	1
	(9)	17	(3)	6	(5)	8	9	2

Note: () denotes number of subjects who gave more than one independent strategy, i.e. of the 17 subjects who reported using phonics, 9 added that they also used either the context, a dictionary or both.

subjects it was clear that using phonics does not necessarily indicate a lack of appreciation of meaning. These subjects stated that sounding out the word helped them, for on hearing the word, they realised they had heard it before and knew its meaning, even if they had not see it in print. Such comments, however, were more common from the upper level subjects, who acknowledged that in the event of not being able to make sense of the word after sounding it out, they would read around, using the context in which the word appeared to help them with the meaning, or failing that, they could consult a dictionary.

There are significant differences in the responses of the upper level subjects to several questions about strategy dimensions of reading. Those with more reading skills are more likely to have independent and varied ways of dealing with unknown words, are more likely to refer to retelling the general idea of a piece they have read rather than try to reproduce all the words and they are more likely to be aware that reading silently is a faster process than reading aloud.

Response Patterns of Matched Pairs of Readers

When the responses of the matched pairs of readers were examined, no significant differences were found between the responses of those of the higher per diem rate of progress and those of the lower rate. For the questions on both the "task" and "strategy" variables, about half of the responses of the pairs were similar. Where there were differences in response, those differences were random. As an illustration of this, in half of

the matched pairs, the same response was given to the question of the role of the last sentence in a paragraph or story whether it was of the "summary", "temporal", "orthographic" or "don't know" category. In the remaining pairs, those who made greater progress were not significantly more likely to indicate initially a greater knowledge of structure of the text than the control, and in most questions, were equally as likely to indicate a less sophisticated awareness than their control.

Relationship Between Questions

It was decided to examine the relationship between the responses of subjects to one question with their response pattern to another question independent of the skill level. With some exceptions, there appeared to be little association between responses. Subjects who said that it was easier to read to get a general idea would not necessarily retell the main idea of something they had read. Those who said that a person became a good reader because they were motivated were no more likely to give "practice" as being characteristic of good readers as any other response. Conversely, those who said that the person with opportunity would be a better reader were significantly more likely to say the characteristic of a good reader was practice than any other quality (Fisher's Exact Test $p < .04$).

The exceptions to the lack of association between the variables centred on what the subjects could tell about the strategies they would use to help them deal with an unknown word. Those who mentioned using more than one independent strategy were

significantly more likely to say that they would retell the main idea of something they had read ($\chi^2(1) = 7.4102$; $p < .01$) than to give any other response. Responses to all other questions, however, were found to be independent of the mention of more than one independent strategy.

Upon a closer examination of the types of strategies mentioned, it was found that 36% of the 42 subjects mentioned using the context to help them with unknown words. This response was given either on its own, with other independent strategies or with the dependent strategy of "ask". These subjects were from both levels of reading ability, being 42% of the upper level and 30% of the lower level readers. When the responses of these subjects to other questions were examined, it was found that they were significantly more likely to say that it was easier to read for a general meaning than word for word ($\chi^2(1) = 7.1302$; $p < .01$), significantly more likely to report giving a gist or summary of something they had read rather than any other response ($\chi^2(1) = 6.1947$; $p < .03$) and significantly more likely to say they would give the main idea rather than selections of something they have read ($\chi^2(1) = 4.5414$; $p < .05$).

Comparison of the Results of Two Studies Using the Same Questions

The findings of this study have indicated that there are some significant differences in the way adults reading at or below the grade 5 level respond to questions about reading compared with responses given by those of a higher skill level. Such differences are particularly pronounced with regard to questions about strategy variables. Where there are no significant differences, it is

possible that such responses are common to non-proficient readers of all levels, yet not of good readers. Conversely, they may bear no direct relationship to reading ability but reflect a mature level of general metacognitive awareness. In order to investigate which responses are common to reading abilities among adults, the results of this study are compared with those reported by Gambrell and Heathington (1981). In that study, the same questions were given to adults reading at or below the grade 5 level and to junior year college students said to be exhibiting reading and writing skills adequate for their level. By placing the responses received in this study within the context of responses obtained and reported in the previous one, it should be possible to identify which questions have evoked reading related responses and which indicate a more general awareness. To facilitate comparison, the responses to questions on task variables for the two studies are given in Table 14 and on strategy variables in Table 15.

Comparison of responses to task variable questions.

From Table 14, it would appear that adults of all reading levels are aware that an interest in the material being read makes it both quicker to read and easier to remember. Likewise, adults of all reading levels also appear to know that a background knowledge of the topic of the text makes it easier to understand what is being read. However, the more detailed analysis of responses reported in this study indicates that there may well be differences between readers of differing abilities in their appreciation of this fact. Interpretation of the responses to the question on motivation and opportunity as factors in reading ability

Table 14

Comparison of Percentage Responses to Questions on Task Variables in Reading from Two Studies on Adult Readers.

	Reading Levels			
	Study 1		Study 2	
	0.0-5.0	over 10	0.0-5.0	5.1-10.0
Motivation				
Poor Better Reader	64	18	22	5
Reader's interest				
Quicker to read	N.s.d.	N.s.d.	91	89
Easier to remember	N.s.d.	N.s.d.	96	100
Background knowledge				
Easier	N.s.d	N.s.d.	83	89
Structure of the text				
Feature of sentences-Common topic or order	43	96	22	37
First sentence Semantic role	N.s.d.	N.s.d.	52	74
Last sentence Semantic role	N.s.d.	N.s.d.	57	79

Note: N.s.d. indicates No significant difference. Data for Study 1 drawn from Gambrell and Heathington (1981), data for Study 2 from this report.

Table 15

Comparison of Percentage Responses to Question on Strategy Variables in Reading from Two Studies on Adult Readers.

	Reading Levels			
	Study 1		Study 2	
	0.0-5.0	over 10	0.0-5.0	5.1-10.0
Purposes of reading				
Main idea	all	all	35	57
Manner of reading				
General meaning	43	89	61	68
Mode of reading				
Aloud	36	4	35	0
Reading skills				
Meaning centred	21	79	13	26
Unknown word strategy				
Independent	about 2/3	all	65	84

Note: Data for Study 1 drawn from Gambrell and Heathington (1981), data for Study 2 from this report.

requires some caution. Only the percentage of those claiming the poor person would be the better reader have been reported by the authors of the previous study. In the present study, it was clear that even if subjects did not expect the poor person to be a better reader it did not necessarily indicate that they thought opportunity was the critical factor in reading ability. There appears to be no indication then that awareness of motivation as a factor in reading is related to reading ability.

Adult non-proficient readers appear to be significantly less knowledgeable about the structure of the text than good readers, but such a conclusion must be a tentative one. Although this study confirmed the earlier reports of a lack of understanding of the structure of a paragraph or story among adult non-proficient readers, it will be recalled that in the earlier study, the adult good readers were given a copy of the questionnaire to read and complete on their own. It is possible that the initial reactions of the adult good readers were similar to those of the non-proficient readers of all reading levels, but the method of presenting the questions in writing permitted them to return to that question having been cued by the subsequent questions on the role of the first and last sentences in a paragraph or story. However, good readers may be more likely to refer to the introductory role of first sentences and the summary role of last sentences rather than their temporal nature. In the present study, the majority of the adult non-proficient readers who mentioned semantic characteristics of sentences in response to these questions referred to the temporal aspects of them.

Comparison of responses to strategy variable questions.

The response patterns for the questions on strategy variables obtained in the two studies are shown on Table 15. Although 81% of all the subjects in the present study were aware that it was not necessary to give all the words to relay meaning, they did not indicate they would relay the main idea of something they had read, as has been reported for both good and non-proficient readers by Gambrell and Heathington (1981). It is possible that the difference is an artifact of different coding decisions, yet Coomber (1971) noted that among adults, poor readers are least able to perceive the main idea and are often prone to emphasize isolated details at the expense of the main idea.

Although all the non-proficient readers in the earlier study indicated that they would retell the main idea of something they had read, only 43% said it would be easier to read to get a general idea of the material rather than to read word for word. In the present study that trend is reversed (although not significantly so); fewer subjects said that they would retell the main idea than said that reading for a general meaning is easier. From both studies, it would appear that the awareness of different speeds of reading is more closely related to the skill level of the reader. Those reading at and below the grade 5 level were significantly more likely to consider reading aloud to be faster than reading silently than subjects of higher skill levels. However, 50% of the lower reading level subjects in this study who said that reading silently was a quicker process gave this response based on their embarrassment over reading aloud. Such findings from this study

indicate the proportion of adult non-proficient readers in the previous study who realised that silent reading is a faster process in itself may be overestimated.

Good readers were significantly more likely to suggest that comprehension is the central skill needed in reading than are identified non-proficient readers of any skill level. These results may indicate that for the experienced good readers, for whom the decoding process of reading has become so automatic as to be performed below the level of awareness, the problems of comprehension are more readily acknowledged. Higher reading skill levels are associated with an increasing proportion of subjects who have some independent strategy they would use to deal with an unknown word. Yet superior decoding ability and increased awareness of ways of dealing with an unknown word do not appear to lead automatically to an appreciation of the need for comprehension, for so few of the upper skill level non-proficient readers gave a meaning centred response to this question.

The comparison of the findings of the two studies indicates that the questions failed to identify aspects of the task of reading which are known to good readers but not to non-proficient ones. Of the questions regarding strategies, some strategies appear to be associated with developing skill level, such as the awareness that it is quicker to read silently rather than aloud, or the increase in knowledge about decoding strategies. Other questions which sought to elicit the meaning construction strategies, such as the ease of reading for a general meaning and the way in which one would convey the meaning of something read are less clearly related to the

reading level.

Changes in Responses Over Time

Of the 42 subjects who were interviewed on admission to the reading program, 26 repeat interviews were obtained, either when the subject left the program or at the end of the academic year, whichever was the later. Second interviews were held with 12 of the 19 subjects with reading skill levels above the grade 5 at intake and with 14 of the remaining 23 subjects. Reading progress of these subjects as measured by the WRMT scores ranged from 0 to 6.3 grade levels, while the length of time in the program varied from 6 to 40 weeks. As the subjects varied so widely in their measured progress and length of time in the program, this section presents general trends of change. All but one of the subjects changed responses to at least one question. However, the amount of change and the direction of the change correlated with neither the reading progress as measured nor with the length of time in the program.

Changes in responses to task variable questions.

It has already been noted that those who entered the program reading above the grade 5 level were significantly more likely to be aware of the interaction between the reader's prior knowledge and the material being read than those reading at or below that level. Among those upper level readers with whom a second interview was held, 50% initially gave the more detailed response to the question on background knowledge, while only 21% of those below that level initially gave that response. By the second interview, all those

above the grade 5 on intake gave the more detailed reasons for why someone with prior knowledge should find reading easier to understand, 36% of those at the lower level still were only able to give the circular response of "he would find it easier because he's been there."

As in the task variable of prior knowledge, more of the upper level subjects appeared to become conscious of aspects of the structure of the text than those who started their program at a lower skill level, but such changes appeared idiosyncractic. It is possible that changes in this area reflect the type of focus the subjects selected during their time in the program. Not all were interested in improving their writing skills. For example, one subject of high reading skill level who had chosen to concentrate on improving spelling skills still appeared to be confused about the role of sentences in a paragraph. Changes among the lower level readers to these questions were also idiosyncratic; 83% still referred to a story rather than a paragraph in their response.

Changes in responses to strategy variable questions.

The changes observed in responses to the question of what the subjects would retell were in the direction of giving the main idea. Those above the level 5 on intake all mentioned "summary" or "gist" in the second interview, while those below that level did tend to change in that direction. Those who initially said they would give all the words suggested that "as much detail as you can" would be appropriate, yet 29% still said they would give "selections" with its concomitant implication of personal bias.

Changes in responses to the question of whether reading for a

general idea would be easier than reading word for word was more marked for those initially at or below the grade 5 level than for those above, most of whom already were aware of this piece of information. By the second interview, 50% of the lower level readers still thought it was easier to read word for word. However, the additional comments of "well, you don't know how much you have to get for a general meaning" and "it would be wiser and easier to go word for word, you get more of an understanding" suggests that such readers may be unsure about their ability to discriminate times when a general meaning would be sufficient and when they would need a more detailed knowledge of the material.

All the upper level readers said that reading silently was quicker than reading aloud by the second interview, a change for two of the subjects only. Among the less skilled, 23% first gave this response. These were joined by another 29% by the second interview. Other subjects, who initially responded that it was quicker to read silently because they were embarrassed when reading aloud had had an opportunity to observe their own reading behaviour during their time in the program. For some, once they had overcome their embarrassment, reading aloud was quicker, as they did not lose their place so easily. Others found that they understood what they were reading a little easier if they heard the words rather than just saw them. One subject who had reached a grade 10 level by the end of the course reported he still sounded out the words sub-vocally as he was reading. Yet not all found that reading aloud helped their understanding. One subject noticed that "when I'm reading aloud, I'm just saying the words. I'm not thinking, I'm

so busy hearing myself read. I sometimes pronounce the word right, but I don't have time to understand the meaning."

There were few signs of changes toward a meaning-centred response to the question of the characteristics of a good reader from either group. For example, one subject who had reached a level of reading skills equivalent to college entrance who was preoccupied initially with "learning more words" still said that the good reader was one who knew more words.

All but one of the upper level readers interviewed a second time initially mentioned at least one independent method of dealing with an unknown word, and that subject indicated that he would use phonic skills at the second interview. However, the focus for two of these subjects was still on the refinement of their phonic skills. One subject said:

> I'm getting to the point where I try and sound it out. I'm not easy on myself any longer.... With coming to school now and knowing that certain combinations of letters have a certain sound, you can draw on than and it helps you get the whole word.... Well, if I don't know the word I can always look it up in the dictionary or I could skip over it and still get the gist of the sentence.

Among the lower level readers, all had some independent strategy, even those of the lowest level who had been dependent upon others spoke of using their phonic skills to work out the unknown word. However, the biggest change was to a meaning oriented approach, as indicated by the use of the context of the word, a shift observed in the response of 50% of all subjects.

Overall, the subjects appeared to become more aware of reading as a meaning-generating process as they developed their reading abilities. Yet changes in the responses did not appear to be

entirely consistant with the achieved reading level. Subjects who were reading at a high level by the end of their time in the program did not necessarily indicate a meaning oriented approach, while some of the subjects whose reading skills were below the grade 5 level had evidently come to that realisation.

CHAPTER V

Conclusions and Implications

This chapter is divided into four parts. The first section provides an overview of the findings of this study. The second section suggests some of the implications of this study for teachers and counsellors working in the field of Adult Basic Education. The third section outlines some problems experienced during the course of this investigation with the application of the theory of metacognitive development proposed by Flavell (1978), and the implication for research in reading using a metacognitive perspective. The last part offers suggestions for future research.

Overview of the Findings of this Study

The subjects interviewed for this study were drawn from an Adult Basic Education Level 1 course offered by a community college in Canada. This group of non-proficient readers were widely diverse in age, interests, goals and background reading skills, as were the Adult Basic Education students in the United States examined by Mezirow et al.(1975). The main body of the research on the Adult Basic Education student is focused upon those who are at or below the grade 5 reading level equivalent, yet in this study, 46% of the subjects had reading skills over the grade 5 level upon entry into the program.

As a group, the upper skill level subjects were found to be significantly more aware of several aspects of reading than the lower skill level non-proficient readers. Specifically, they were more likely to be aware of some of the terminology used in reading such as "a paragraph", although few of them indicated the

introductory and summary properties of the first and last sentences. They appeared to be more conscious of the interaction between the reader and his or her background knowledge of the material being read than were those of lower skill levels.

The superior skill levels of these subjects were reflected in their responses to questions on strategies of reading. They were conversant with more than one independent method of dealing with an unknown word which they might come across when reading, such as applying their phonics skills or using the context in which the word appeared to deduce its meaning. They were more likely to refer to using a dictionary as one of those methods than were the subjects of lower reading skill levels. Their level of reading skills were such that their reading speed allowed them to appreciate that reading silently was faster than reading aloud.

The upper level non-proficient readers showed little differences from the lower level readers in their responses to questions which sought to explore the dimensions of meaning construction in reading. While few subjects indicated that understanding what was being read would characterise the good reader, most of the subjects indicated a meaning oriented approach to retelling something they had read. However, those in the upper reading levels were not significantly more likely to state they would give a summary of the material rather than selections of the piece based on subjective criteria than were those subjects of lower reading skill levels.

No significant differences were observed between the initial responses to the questions about reading given by those who

subsequently made greater than average progress in their reading and the initial responses of those whose rate of progress was below the mean. One possible interpretation is that at any time, the current knowledge about a task, and current awareness of strategies which can be used is no predictor of future performance. However, due to the small number of pairs over a wide reading ability range, such a statement may be premature. First, the researcher did not control for such variables as subjects leaving the course after a short time, the amount of time spent by each individual on reading as well as the potential differences in individual learning abilities, all of which would influence the progress rate. Secondly, over half the questions used in this study failed to discriminate between non-proficient and good readers, which suggests the questions themselves may have failed to tap critical aspects of reading knowledge.

The responses to the questions about reading of the subjects reading at and below the grade 5 level were compared with responses of other adult non-proficient readers of equivalent reading levels reported by Gambrell and Heathington (1981). The response patterns of the subjects of the present study were generally found to be similar to those reported for the earlier study, although indications from the present research are that such adults may be less conscious of the requirement to extract the main ideas from the written text than suggested by the previous findings.

The comparison of the finding of the two studies indicate that some of the questions used reflect a general rather than reading specific knowledge, particularly those intended to evaluate the

knowledge of task variables. It is possible that like the knowledge of meaning construction strategies, the knowledge of factors involved in the task of reading may be less closely connected to measured reading levels. Further research on the extent of adult non-proficient readers' knowledge of goals and factors which influence reading needs to be performed.

Implications for Teachers of the ABE Student

The findings of this study suggest that for those students in an ABE Level 1 program whose reading skills are above the grade 5 level, the main task is to increase their awareness of the purposes and goals of reading and to develop means of monitoring their comprehension of the text. That most of the subjects of this study appeared to be unaware of the structure of the text suggests they are unable to use the format of the text itself to help them generate a basis for understanding the material they are reading, although the subjects were well aware that having a background knowledge about something one is reading helps in comprehending that material.

An important foundation to the development of meaning in reading appears to be the knowledge of and practice in using the context of the material to help deal with an unknown word, but only 36% of all subjects in this study mentioned such a strategy. Yet those subjects were significantly more likely to indicate a meaning generating approach to reading in their responses to other questions about reading than were those who did not mention this strategy.

Adult non-proficient readers may need to be taught how to integrate and apply the discrete reading skills which they have

already developed. While the knowledge and effective use of strategies in reading presupposes the reader has developed the prerequisite skills, the acquisition of skills alone does not necessarily mean the reader will automatically develop and use strategies employing those skills.

It was noted that only about half of the pairs of subjects who were matched on their measured reading skill level responded in the same manner to questions about reading. This diversity of knowledge about reading among students of similar reading skill levels may limit the effectiveness of group instruction. For example, subjects of similar reading levels gave varied responses to the question of which manner of reading was easier. While some subjects not only knew that it was easier to read to get a general meaning than to read word for word, they also indicated that they were aware of the occasions when they would skim the material and when they would choose to read for detail, other subjects said that they knew that it was easier for other people to read to get a general meaning, but that they themselves read word for word. Finally, some subjects appeared to consider it better to read word for word lest something important be missed, expressing hesitations about reading for a general meaning as they were unsure of what constituted a general meaning.

Adult non-proficient readers are more likely to develop the fundamental reading skills and to use them in strategies for reading once they understand how those skills and strategies will help them in their desire to understand the material they are reading. Sherer (1975) and Flynn (1980) both suggested that students who

believe that they must read every word to understand something are unlikely to develop the skills required for skimming and scanning, or to use those strategies to help develop an overview of the material until the reservations about their use had been addressed.

Implications for Research Using a Metacognitive Perspective

The questions used in this study were generated under a theory of metacognitive development proposed by Flavell (1978) which suggests that efficient cognitive activity is mediated by the knowledge of factors which act and interact to influence one's performance. Flavell (1978) indicated three major categories of such knowledge would be all that an individual knows about himself as a performer of the task (person variable), knowledge about the goals and factors which make goal attainment easier or harder (task variable) and ways in which those goals may be achieved which can accomodate the limitations imposed by both the person and task variables (strategy variable).

Two problems in operationalizing the theoretical constructs have become apparent during the course of this study. The first problem is that a question developed by one researcher to evoke a subject's knowledge of one class of variable may be considered by another to indicate a subject's awareness of a different variable. For example, Myers and Paris (1978) first developed the questions used in this study. The question on the mode of reading which asked "which would be easier to do, read word for word or for the general meaning?" was initially classed as a task variable. Gambrell and Heathington (1981) used the same question, but considered it to reflect a subject's knowledge of strategy variables in reading.

The second problem is that notwithstanding the researcher's designation of a piece of information representing knowledge of a particular class of variable, the responses obtained in this study to any one question about reading were varied. An examination of the different responses to the question which asked which was quicker, reading aloud or reading silently may serve as an illustration of this. Some subjects said it was quicker to read silently because reading aloud demanded pausing for punctuation, knowledge which might be classed as a strategy variable with the implicit goal of speed which they knew from their own experience. Other subjects also cited their experience, that reading aloud was quicker, because they could not keep their place reading silently, the introduction of a monitoring goal. Then there was the response that reading aloud was quicker because the subject understood the material better, a shift in focus from the importance of speed alone to the inclusion of a goal of understanding the material. Finally, there were those who said that reading silently was quicker because they were embarrassed to read aloud. This does not necessarily indicate that such a subject finds silent reading faster, but the cognitive judgment is clouded by emotional judgment. In terms of the theory, what they believe about themselves as performers of the task, that is, the personal variable, is attended to rather than the objective consideration of the task. Such distinctions have importance for those involved in teaching the adult non-proficient reader, since each case demands a separate teaching approach.

Suggestions for Future Research

The varied responses to questions about reading noted above

indicate clearly that more is involved in a reader's control over cognitive activities than the presence or absence of a piece of information about reading. Flavell (1978, 1979, 1982) has suggested that an important factor in the metacognitive process is the interaction between the different classes of knowledge. That the subjects in this study gave similar responses to questions about reading but from apparently different perspectives suggests that such differences may be reflected in what they actually do when reading, as well as having implications for how and what the subjects need to learn. The focus of this study was on what readers could tell about reading tasks and strategies. No evaluatation of the relationship between what was said and what was done has been made. In order to clarify the process of learning, future research must involve both what subjects say and what they do when reading.

It is clear that the population of adult non-proficient readers encompassess an extremely wide range of reading skill abilities, background knowledge, reading goals and interests. At the same time, the pool of subjects of this population willing to be involved in research and available to the researcher may be small compared to the large samples of child readers available through the schools. Since reading is in part dependent upon the level of basic skills the reader has and the learner's goals may influence what is learned, the samples of this population available to the researcher may not be sufficiently large to reduce the influences of such variables to self-cancelling random error.

In the author's opinion, the development of a body of knowledge

on the adult non-proficient reader of higher reading skills using a metacognitive framework may be served better by an accumulation of case studies of this population. It is anticipated that the use of the case study method may help to overcome some of the problems encountered in this research and the accumulation of such studies may permit the identification of critical variables which influence the process of overcoming faulty learning in reading.

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APPENDIX A

List of Questions used in this Study

Suppose there were two women (men) named Mary and Alice (John and Allan) who came from different homes. Mary (John) was wealthy and had a lot of books. Alice (Allan) was poor and didn't have many books at home. Do you think one of the women (men) was a better reader? Why?

What type of story do you like to read best? If someone wanted you to read another type of story that you didn't like as much as -----, which do you think you would read faster? Which one would be easier to remember?

A group of people were reading a story about Chicago. Bob (Ann) was in Chicago last summer on his (her) vacation. Do you think the story might be easier or harder for Bob (Ann) to understand than Karl (Jane) who had never been to Chicago?

Is there anything special about the way sentences go into a paragraph or story?

What does the first sentence usually do in a paragraph or story?

What does the last sentence usually do in a paragraph or story?

If you were telling someone about something you've read, what do you try to tell them, all the words, just the ending or what?

Which would be easier to do, read word for word or for the general meaning?

Which is quicker, reading aloud or reading to yourself?

What makes someone a really good reader?

When you are reading, what do you do if you don't know a word?

APPENDIX B

Comparison of WRMT Reading Levels and Categories of Verbal Fluency of 42 Adult Non-Proficient Readers

Reading Level	Verbal Fluency		
	Below Average	Average	Above Average
7.6-10.0	0	1	7
5.1-7.5	1	4	6
2.6-5.0	5	4	8
0.0-2.5	4	0	2
	10	9	23

VITA

Surname: GOUDY Given Names: HELEN GABRIELLE

Place of Birth:DISS, NORFOLK, ENGLAND. Date of Birth:June 28, 1940

Educational Institutions Attended, With Dates of Entering and Leaving:

Mount St. Vincent University, Halifax, N.S.	1967 to 1971
University of Victoria, Victoria, B.C.	1971 to 1976
University of Victoria, Victoria, B.C.	1979 to 1981
University of Victoria, Victoria, B.C.	1982 to 1985

Degrees, Diplomas, Etc., Awarded, with Dates and Names of Institutions:

B.A., 1976. University of Victoria

Honours and Awards:

Fellowship, 1979-1980, University of Victoria

Fellowship, 1980-1981, University of Victoria

Publications:

The Year that British Columbia Went NDP: NDP Voter Support Pre- and Post-1972
Daniel J. Koenig, Gary R. Martin, H. G. Goudy and Marlene Martin.
B.C. Studies, No. 24, 1974-1975, 65-86.

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Title of Thesis

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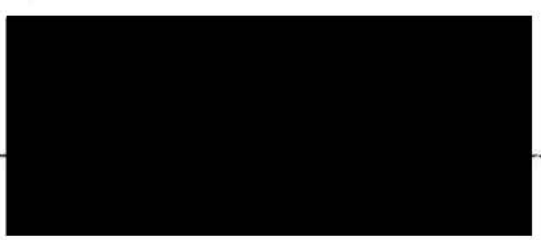
Author



Helen Gabrielle Goudy
Name

15th April, 1985
Date