SECONDARY SCHOOL STUDENTS AND THE INFORMATION SEEKING PROCESS

by

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ABSTRACT

The purpose of this study was to discover what perceptions secondary school students held of the information seeking process and what behaviours the students used to initiate and carry out an information search.

The study was conducted in a secondary school in North Central British Columbia, with students from Two Grade 8 and two Grade 10 Humanities classes. Data was collected by means of student journal writings, recorded interviews with randomly selected students and by participant observation.

The study revealed that students held five principal perceptions about information seeking: that it provided active involvement for them in their own education; that it was a positive experience; that it made them aware of the importance of practising self discipline; that it taught them skills they needed to locate and select information as well as analyze, record and classify information; and that an information search involved varying degrees of student frustration. The study further revealed that student behaviours during a search for information were grouped into three areas: initiating behaviours; recording, analyzing and classifying behaviours; and organizational behaviours.

Two further findings were stated: the importance of previous student practice with cooperatively planned projects; as well as the significance of locating computer facilities visibly adjacent to the School Library Resource Centre in elementary and secondary schools.
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CHAPTER 1.

INTRODUCTION

This study addresses the perceptions and behaviours of students seeking information in a world now full of information. A single quotation illustrates the extent to which computers have changed the status and availability of information. "If the automobile had undergone the same evolution over the past 20 years as the computer, your car would travel at 500,000 miles an hour, would go a million miles on one gallon of gasoline and would cost less than $1000.00!" (L'Actualité, 1993.) A better understanding of the ways in which students perceive information seeking and their behaviours during information seeking would enable educators to devise information seeking strategies which will assist students in coping with this new and challenging world.

PURPOSE OF THE STUDY

The purpose of this study is to gather, examine and analyze information about the perceptions and behaviours of secondary school students during the information seeking process.
RATIONALE FOR THE STUDY

Information seeking perceptions of adults have been investigated and theories concerning the way they proceed through information seeking have been formulated, yet there appears to be little research on the information seeking perceptions of adolescents. (Ingwersen, 1982; Jakobovits & Nahl-Jakobovits, 1987; Taylor, 1968; Wilson, 1981.) Similarly, little is known about children and adolescents as information users. (Hiland, 1988; Leisener, 1985; Moore & St. George, 1991.) Data in these areas, looking at the user rather than the system, would help teacher librarians and other librarians who work with adolescents design better information skills curricula, more suited to the needs of this age group. (Derwin, 1992; Hiland, 1988; Kuhlthau, 1988a; Kuhlthau, Turock, George & Belvin, 1990.)

A look at adolescent perceptions of the information seeking process and adolescent behaviours during this process should yield insight into the application of planning and monitoring strategies to the information seeking process by adolescents. (Allen, 1991.) Planning and monitoring strategies are collected under the term "metacognitive strategies" and include such mental operations as connecting new knowledge to present knowledge. (Flavell, 1979.) Some consideration of this area would again yield information which would assist teacher librarians and others in designing appropriate lessons for different grade levels. (Bertland, 1986)

Adolescents are partners in their own education and a look at their
perceptions and behaviours as they engage in information seeking could also help teacher librarians and teachers in understanding where difficulties may arise during information seeking and where assistance through the process is most needed but often not sought. (Durrance, 1989; Keefer, 1993; Swope & Katzer, 1972.)

The data gathered from this study will add to the existing body of knowledge about the information seeking perceptions and behaviours of adolescents and will be available for use in examining the manner in which the information seeking process contributes to the education of secondary school students.

BACKGROUND TO THE STUDY

During the last few years computers have become almost a necessity in homes, schools and businesses. The 1980's changed society from an industrial one to an information one in which the volume of information available, the speed with which it can be transmitted and the theoretically unlimited access we have to this information are exceptional. We read of executives who "are discovering that the only thing as difficult and dangerous as managing a large enterprise with too little information is managing one with too much" (Meyer, 1987, cited in Eisenberg & Brown, p.100.)

A Legacy for Learners, the foundation document which set the course for education in British Columbia for at least the next few decades,
states that "Being knowledgeable will become less important than being capable of quickly and efficiently processing and assessing information effectively to solve problems and make sound decisions." (1988, p. 34.)

The realization that there will be almost unlimited access to practically unlimited information and that students need to learn how to process, as well as access, information to deal with their world of the future brings the information seeking process to the forefront in students' education. Consequently, with increased knowledge of the processes of information seeking, teacher librarians and teachers can be of greater assistance to students who will be dealing with ever increasing amounts of information. An examination of student perceptions of the information seeking process would also provide a better understanding of how students process information and whether they recognize the importance of learning how to find and use it.
RESEARCH QUESTIONS

The two major research questions examined in this study are as follows:

1. What are the perceptions of Grade 8 and Grade 10 students about the information seeking process and do their perceptions differ?

   This research question involves eliciting the students' feelings about the information seeking process, thereby gaining an insight into what they think about the information seeking process.

2. What are the information seeking behaviours of Grade 8 and Grade 10 students when engaged in the information seeking process?

   This research question is analyzed by looking at what the students do first, how they proceed after their first step and how they know or decide when they have completed their information seeking. Inner behaviours will also be considered by examining any use of strategies for monitoring and evaluating their progress as they engage in information seeking.
DEFINITION OF TERMS

**Attitudes** - Personally held principles or beliefs that govern much of one's behaviour. (Marzano, Brandt, Hughes, Jones, Presseisen, Rankin & Suhov, 1988, p.143.)

**Cognition** - An umbrella term for the processes of perception, discovery, recognition, imagining, judging, memorizing, learning and thinking through which the individual obtains knowledge and conceptual understanding or explanation. Cognition is distinct from emotional processes. (Page, 1977, p. 70.)

**Critical Thinking** - The use of specific dispositions and skills such as analyzing arguments, carefully seeking other points of view and reaching sound conclusions. (Marzano et al., p.143.)

**Elementary Feeder School** - Any elementary school which sends its students on to a specific secondary school is commonly known as a 'feeder' school.

**Information Seeking Behaviours** - Behaviours engaged in by people when seeking for information.

**Journal** - A notebook in which students record comments pertaining to work in progress.

**Journal Prompts** - Comments provided by the teacher to encourage reflective journal writing.

**Library Anxiety** - A term used to describe a grounded theory which states
that when confronted with the need to gather information in the library for a research paper many students become so anxious that they are unable to approach the problem logically or effectively. (Mellon, 1986.)

**Metacognition** - Metacognition has three basic components: 1) new information is connected to present knowledge; 2) thinking strategies are carefully selected; 3) thinking processes are planned, monitored and evaluated. (Blakey & Spence, 1990, p.11.)

**Observation** - A data gathering tool which is planned and systematically recorded.

**Research Paper, Project or Assignment** - in a secondary school setting refers to a type of assignment which involves the gathering of information and the organizing of the information gathered in some orderly form by the student.

**Schema Theory** - An informal, private, unarticulated theory about the nature of the events, objects, or situations. (Kulleseid, 1986, p. 41.)

**School Library Resource Centre** - Refers to the area in a school where a full range of information sources, associated equipment and services from library staff are accessible to students, school personnel and the school community. Media centre, Learning Materials Centre, Learning Resource Centre and other such terms will only be used in a direct quote or in a title.

**Semi-structured Interview** - An interview guided by a set of questions and issues to be explored but neither the exact wording nor the order of the questions is predetermined. (Meriam, 1990, p.86.)
Teacher Librarian - A person who holds a professional teaching certificate, who has also had training in school librarianship and who is in charge of the library in a school. Teacher librarian will be used instead of terms such as Media Specialist, Media Centre Director and Resource Centre Teacher, except when these terms are used in a direct quotation or in a title.

Thinking Skills - Relatively complex and time consuming cognitive operations, such as concept formation, problem solving and composing, that commonly employ one or more core thinking skills. (Marzano et al.)
CHAPTER 2.

LITERATURE REVIEW

This literature review, after an introduction to the teaching of information seeking skills within the context of cooperative planning between teacher librarians and classroom teachers, examines literature dealing with students perceptions of and behaviours during the information seeking process, as well as literature on the critical thinking processes of adolescents. The planning and evaluation techniques used by adolescents to monitor their thinking will also receive attention.

INFORMATION SEEKING SKILLS

There was general agreement in the literature that information seeking skills should be taught to students through the use of curriculum based, cooperatively planned, school library resource centre projects. (British Columbia Teacher Librarians' Association, 1986; Haycock, 1981; Lundin, 1983.) Practitioners have long articulated that unless these skills were integrated with classroom instruction, there was little possibility that they would be retained by the students until such time as they were needed. (Haycock, 1985; Haycock, 1989.)

There was also general agreement in the literature that information
seeking skills, taught by means of cooperatively planned, curricular projects should be taught in a sequential order, moving beyond the teaching of location skills to encompass the whole range of information skills which students needed to make informed decisions and to lay the groundwork for lifelong learning. (Alberta Education, 1985; Ontario Ministry of Education, 1982; Saskatchewan Association of Educational Media Specialists, 1986.)

Numerous sequential skill programs have been designed, outlining in detail the information skills to be taught and placing them in a logical teaching order, building the skills one upon another and enabling them to be incorporated into curriculum based, cooperatively planned, information seeking projects. These sequential skill programs were used by teacher librarians and classroom teachers as guides when planning projects and as assessment tools when reflecting upon school library resource centre and classroom progress in teaching information seeking skills. (Coquitlam School District No. 43, 1988; Prince George School District 57, 1987.)

Extending beyond scope and sequence charts or sequential skill programs were research models developed by practitioners in the school library field. These models outlined the steps undertaken by students engaged in information seeking projects and presented a plan or a cycle which collected the steps of a research project into groups or clusters of activities by which an information seeking project was successfully completed. A number of research models existed in the literature such as the one developed by Espeter & Gray, 1989, which divided the "Information
Cycle" into five steps: Pre-Research; Information Retrieval; Information Processing; Information Organizing and Creating; and Information Sharing. Similar models have been developed by Eisenberg & Berkowitz, 1990 and Stripling & Pitts, 1988.

The literature in this area has established the importance of teaching information seeking skills within the context of cooperatively planned curriculum based projects usually, but not always, within the school library resource centre.

STUDENT PERCEPTIONS AND BEHAVIOURS AND THE INFORMATION SEEKING PROCESS

Examination of the literature indicated that the perceptions of students about the process of seeking for information in a library setting had a profound effect on their behaviours during the process.

Some students had described their feelings toward an information search as consisting mostly of feelings of fear and confusion and of extreme trepidation at the beginning of a search. (Mellon, 1986) The fear and confusion were intensified because the students felt that there were great gaps in their knowledge of libraries and how they worked. It appeared also that the students had no concept of transferability and did not understand that information seeking skills learned in one library setting could be used in another.
These perceptions had influenced the behaviours of some students to such a degree that they were unable to approach an information search in any logical manner and led to the coining of the phrase "library anxiety" to describe the condition as a whole. (Collins, Mellon & Young, 1987; Mellon, 1986; Mellon, 1988; Mellon & Peagles, 1987.)

Students had different motives for seeking information. In some cases the information search arose from personal interest and a need to satisfy that interest and, at other times, the information search was assignment or course related. In either case, the information search was directed by these needs. (Stripling and Pitts, 1988.)

Psychological needs also influenced how a student approached an information search and had an influence on the sources a student used to satisfy the information need. Students who needed the approval of others tended to use family and friends as sources and students who needed intellectual stimulation used libraries and experts as sources in information seeking. (Dunn, 1986.)

Different levels of information needs and questions had been identified. Beginning with a "visceral need" unexpressed in words, the information seeker moved through stages until the "compromised need" stage was reached, where the information seeker was able to express the question which he/she expected that the library resources could answer. (Taylor, 1978.) Or, as the ASK theory postulated, the library user began with a need for information to resolve a problem and, after deciding that present knowledge was inadequate, interacted with an information system.
to obtain the needed information. (Belkin, Oddy & Brooks, 1982.) The theory of "personal constructs" (Kelly, 1963) proposed that our actions and feelings were directed by our ideas and thoughts. These three theories had been linked to information seeking in an effort to understand the perceptions and behaviours of student library users. (Kuhlthau, 1983)

Students' experiences with the information search process were documented and were found to follow a pattern. Confusion existed at the beginning of an information search and increasing uncertainty developed as the search continued. When the students were able to find a focus for their project, they had reached a significant stage in their search and from there on, developed a sense of direction which lasted until the information search was completed. Following this study, (Kuhlthau, 1983) a process model of the students' information search was developed. "The process approach offers a new paradigm for bibliographic instruction and library skills programs centering on users' experiences in the search process and their changing information problems." (Kuhlthau, 1988a, p.241.)

A longitudinal study of students with extensive library experience who were familiar with the original process model, a study of streamed high school students and a study which used academic, public and school library resource centre users all verified Kuhlthau's model of the information search process and showed a change in students' thoughts during the search process from general to more focussed. (Kuhlthau, 1988b; Kuhlthau, 1989; Kuhlthau, Turock, George & Belvin, 1990.)

Some younger students appeared to have difficulty with the
information seeking process because their knowledge of the Dewey Decimal system was not sufficient for the task of information retrieval and also because their perceptions of how books were shelved in the school library resource centre hindered their search for information. These difficulties indicated that "educators and librarians need to take account of students' perceptions of the task, the books, library system, and the information retrieval process." (Moore & St. George, 1991, p.168)

Again, students' facility in generating research questions, selecting search areas in a book and evaluating the information found for accuracy and suitability seemed to be age related. Similarly, the ability to use evaluative criteria with regard to information found during a search also seemed to vary with age and, in addition, younger students were less aware that information needed to complete the information search was missing. (Kobasigawa, 1983) Kobasigawa sums up his study in this way "...during the upper-level elementary school years, children become increasingly more skillful at such aspects of the retrieval process as generating and defining search areas and evaluating gathered information and its sources." (p. 270.)

Student behaviours indicated that most students have basic patterns of information use. The typical student used two or three different libraries, the principal ones being the school library resource centre, the public library and a home library. The use of the public library was limited by the availability of transportation. Most students used books more than they used other resources and resources other than
This examination of the literature concerning students' perceptions and behaviours during an information seeking project has shown that the students' perceptions of the process affected their behaviour. Related to this, students frequently had difficulties at the beginning of a search, before they had found a focus for their search. Other difficulties with the information seeking process appeared to be age related, with younger students having more problems than older ones.

CRITICAL THINKING AND PLANNING AND MONITORING STRATEGIES

Critical thinking skills are the skills used in the information search when analyzing, evaluating and assessing information found for authenticity and accuracy. Critical thinking is not a single mental operation, nor is it a process similar to problem solving. Rather, it is a series of discrete operations including: the determination of the reliability of a source and the factual accuracy of a statement; the separation of relevant from irrelevant information; the detection of bias; and the identification of ambiguous claims. (Beyer, 1985.)

Teaching students to think critically has been identified in the literature with the teacher librarian in a school, who has been encouraged to assume responsibility for incorporating critical thinking skills across the curriculum with the goal of making the students "information
literate". (Eisenberg & Spitzer, 1991; Hughes, 1986; Jay, 1986; Mancall, Aaron & Walker, 1986.)

An examination of the critical thinking of adolescents and their planning and monitoring strategies also involves a consideration of the developmental stages of adolescent thinking. Extensive research on the developmental stages in children's and adolescents' thinking has shown that young children do not think about the thought process and that schooling advanced their thought processes to a new, reflective level where they became aware of both the process and the product. By adolescence students were able to analyze their own thinking. (Bruner, 1966, 1973; Inhelder & Piaget, 1958; Lefebvre-Pinard & Pinard, 1985; Vygotsky, 1962.)

Four kinds of thinking during the progression from childhood to early adolescence were identified by Peel, whose research was based upon that of Inhelder & Piaget. Thematic thinking, exploratory thinking, productive thinking and coordinating and integrative thinking were the stages through which children advanced and "productive and integrative thinking begin to emerge in adolescence..." (Peel, 1960, p.36) These are the thinking strategies used to integrate thinking and form concepts. (Peel, 1960, 1971.)

Similarly, developmental thinking allowed students to adopt different mental positions as they matured. The first position was Dualism, where knowledge is quantitative and answers exist for every problem; the next position was Multiplicity, where diversity of opinion was legitimate when right answers were not yet known; this was followed by
the *Relativism* stage where knowledge was qualitative and depended on context; *Commitment* was the last step, where decisions were made in the awareness of relativism. Implicit in this model was a development from dependence on authority for knowledge to independent thinking. (Perry, 1970, 1981.) It has been stated that models such as Perry's also have contributions towards the development of students' critical thinking abilities. (Ford, 1984.)

Several models of "library learning" have been developed, one of which was designed specifically to assist in the development of levels of independent thinking in terms of library use, the theory being that as students mature in their thinking, they change in the ways they use the library. (Ford, 1979b.) "When students radically revise their notions of knowledge, would they not be likely to change their ways of going about it?" (Perry, 1981, p.102) The model (Ford, 1979b) links the library collection and how it is organized to facilitate access by different users engaged in resource based learning and information seeking which allow students more control over their own learning. The model also takes into account different learning styles and levels of development and, in addition, what students learn. (Ford, 1979a, 1979b)

In this model, (Ford, 1979b) the three levels of library learning are classified as dependent, independent and interdependent and all embrace common elements such as learning materials structured in different ways; self-assessment of information by students; and access to and a choice from a wide range of information. "All categories operate within the
context of three other categories: 1) the nature of the learner's mental activities; 2) individual differences on the part of the learners; and 3) learning outcomes." (Ford, 1979b, p.253-54) Ford also points out "that the distinctive contributions of libraries to learning is represented not by individual elements, but rather by complex combinations of them." (p.254.)

A related model proposed a scheme of library learning from the point of user behaviour which would "allow librarians to understand better what patrons feel, think and do when they use the library's resources and services." (Jakobovits and Nahl-Jakobovits, 1987, p.203.) User behaviour was classified into the cognitive, affective and the psychomotor domains developed by educational psychologists. Each domain was then divided into three levels: 1) Orientation, where the user had few cognitive resources, did not understand the library as a system, did not consult guides and generally felt frustrated; 2) At the Interaction level the user had a basic understanding of the library and also desired to improve his/her search tactics; 3) When the Internalization level had been reached the user had a "feeling of congruence with library values such as conservation, service and lifelong learning." (p. 206.) Using the three domains of user behaviour from educational psychology and the three levels of each domain as outlined above, a table of nine zones into which library users could be categorized was developed:
This scheme can be related to Ford's (1979b) model of library learning in that his three levels of library learning (dependence, independence and interdependence) fit the Jakobovits model's ascending three levels of the psychological domains: orientation; interaction; and internalization. This theoretical matrix could be used to plan bibliographic instruction, allowing librarians to develop appropriate objectives in the different domains at the different levels. (Jakobovits and Nahl-Jakobovits, 1987, 1990.)

Planning and evaluating strategies used by students must also be examined. These strategies involved in analyzing thinking are metacognitive in nature and, unlike cognitive processes which take place subconsciously, require conscious monitoring and control. (Bondy, 1984; Flavell, 1979.) Metacognitive strategies have been described as those strategies used to connect new information to present knowledge and to plan, monitor and evaluate thinking processes. (Blakey & Spence, 1990; Brown, Bransford, Ferrara, Campione, 1983.)

A link has also been made between the cognitive development levels of students and the presentation of effective library instruction programs.
"To be most effective, the design of information-skills instruction programs must consider the levels of cognitive development of the students for whom the instruction is intended. Increased emphasis should be paid to instructing students in the thinking skills that are necessary to plan and evaluate the information they retrieve." (Bertland, 1986, p.99.)

Further to this, schemata theory and metacognition with respect to designing instructional strategies for teaching reading have been linked and extended to the school library resource centre and the teaching of information seeking skills. (Kulleseid, 1986.) Schemata theory, originating in Gestalt psychology, is an analysis of the thought processes involved in incorporating new knowledge into the existing memory bank, a kind of a private view of reality. It is used in reading comprehension research to diagram and explain the mental processes that are involved in interaction with text. (Kulleseid, 1986.) Recent research in this area has shown that "The information-processing orientation of these models makes them readily adaptable to the information-skills learning models proposed and employed in many school library media programs." (p.44.)

A model of student learning involving "three main approaches to learning: deep, surface and achieving" was developed by Biggs, 1985. Subsequently, a comparison of Grade 8, Grade 10 and Grade 12 students in Singapore schools paired the dominant approach used by the students in learning different academic subjects with motive/strategy congruence in learning academic subjects. The three approaches and the associated
strategies used by students were isolated: a) A *Surface Approach* where learning was perceived as a means to an end and the linked strategy was to get the basic essentials; b) A *Deep Approach* in which motivation came from an interest in the subject matter. The linked strategy used by the students was to understand concepts and the relationship between them; c) The *Achieving Approach* was characterized by the motivation of achievement/competitiveness and time management was the strategy which allowed the students to cover the subject matter as efficiently as possible.

Younger students tended to favour either the Achieving Approach or the Surface Approach, either of which was accompanied by the surface motive of rote memorization to get the basics as quickly as possible. Older students favoured the Deep Approach and its linked strategy of understanding concepts and the relationships between them. (Chang, 1989; 1990.)

A related study investigated students' use of metacognitive strategies in solving mathematical problems. The findings indicated that very little difference existed in the frequency of use of metacognitive strategies by students from Grades 8, 10 or 12 but that as the grade levels progressed to the higher grades, a decline in the use of surface strategies and an increase in the use of deep strategies emerged. (Wong, 1989.)

In summation, the literature on student critical thinking pointed out the importance of extending students' ability to analyze and evaluate information by teaching critical thinking skills. Also, the literature on adolescent developmental states and metacognition pointed out that an
awareness of students' cognitive and developmental levels and also an awareness of the differing task approaches used by students would assist teacher librarians in the design of appropriate information seeking projects which took these factors into account.
Chapter 3:

METHODOLOGY

This study examined the perceptions of secondary school students about the information seeking process and their behaviours while engaged in information seeking. Within these areas the study addressed differences in student perceptions and behaviours by age group and by feeder school.

1. CONDUCT OF THE STUDY

The study was undertaken in North Central British Columbia, in a large school district comprised of 56 elementary schools and 11 secondary schools. The study was conducted in one Junior Secondary school situated in a semi-rural area.

Permission to conduct the study was received from the Superintendent of the school district through the Curriculum and Instruction Department Assessment Supervisor. Permission for the study was also obtained from the Ethical Review Committee of the University of British Columbia.

Criteria for the selection of the school and the classes which were to participate in the study were developed:

1. The study would be conducted in a secondary school with two Grade 8 and two Grade 10 Humanities classes ready to undertake an information seeking project.
2. The classes would be composed of students with a range of academic abilities.

3. The students had attended different elementary feeder schools.

Contact had been renewed during the school year of 1991-1992 with a Social Studies teacher in a Junior Secondary school involved in a Year 2000 Site Development Project during that school year, funded by the British Columbia Ministry of Education. Part of the Site Development Project was the integration of Social Studies and English in two Grade 9 classrooms, one of which was hers. The integrated classes had completed two fairly extensive information seeking projects which were termed successes by the teachers and the students in those classes.

It was decided not to continue the integration of Social Studies and English at the Grade 10 level for the school year of 1992-1993. Both teachers wished to have time to assess the past year's activities and plan for the future. Because of her positive experiences with the information seeking process, the teacher previously mentioned was extremely interested in this study and anxious to have her Grade 10 class participate.

The Assessment Supervisor in the Curriculum and Instruction Department was consulted about the choice of this school and permission was granted by the Principal to conduct the study in his school. Subsequently, three other classes in the school, two Grade 8 and a second Grade 10, were selected, based upon the fact that they were also Humanities classes and all were at a point in the curriculum where an
information seeking project would be an appropriate activity. The information seeking projects were cooperatively planned by the teacher librarian and the classroom teachers.

All of the classes were composed of students of varying academic abilities, enabling the investigator to work with a range of students and each class contained students from different feeder schools.

The study was conducted during May and June of 1993. Permission was received from the parents or guardians of the students in the four classes. The parents were assured that the anonymity of the students would be protected and the data destroyed upon completion of the study. From a possible 78, 53 letters of parental permission were received back by the researcher. This was a return rate of 65%. Of these 53 students, 24 were in Grade 8 and 29 were in Grade 10. The total number of females was 36 and of males, 17. The gender imbalance was created by the imbalance in the makeup of the classes, 52 females and 26 males, and it was maintained by an almost equal ratio in the return of the permission forms.

Of the 53 students in the study, 16 were from Feeder School 1, 20 from Feeder School 2, 6 from Feeder School 3, with 3 from Feeder School 4, 2 from Feeder School 5 and there was a single student from Feeder School 6. There were 5 students whose feeder school was not known. These were students who had moved to the area from another part of town or from another city, province or country.

The researcher met with each of the selected classes during a
regular class period and introduced and explained the research study. It was stressed to the students by the researcher and each classroom teacher that the purpose of the research study was not to examine their finished projects but to gather information about their perceptions as they carried out the information seeking process and completed their projects. It was also stressed that the information gathering project was a part of their regular curriculum work which would be graded by the teacher and that every student would complete the curriculum project whether or not he or she took part in the research study.

Students who had parental permission to participate in the study were given a blank journal in which to record their thoughts, feelings and activities as they engaged in the information seeking process. The students were asked to sign the cover of the journals to indicate that they were willing to participate in the study and also to identify the journals for return to the correct students. The journals were coded by each class for ease of return. After the journals had been collected for the final time, they were also coded by elementary feeder school.

The classes were observed during May and the early part of June as the students engaged in the information seeking process. The information seeking projects took place in the School Library Resource Centre and each class session was 65 minutes in length. The researcher made 16 visits to the school to observe the students for the duration of the information seeking process.

The journals were collected during each class session and returned
to the students at the beginning of the next session. In the intervening
time, detailed observation notes were compiled and the researcher
analyzed the journal entries, extracted data and placed it on cards in
categories developed from the students' responses. Each comment made
by a student was placed in the most appropriate category; as well,
comments which contained two or more different thoughts were divided
and the parts placed in the appropriate categories.

Validation of the categorization of the data was obtained in several
ways: the categories were subsequently clarified and verified by the
participating secondary teacher librarian and one of the participating
teachers; appropriate categorization was clarified through informal
interactions with participating students; and later observations also
verified the categories.

When the information seeking process was nearing its conclusion,
interviews were conducted with four or five randomly selected students
from each class, depending on the size of the class. The interviews were
held at the convenience of the students and when this was during class
time, it was with the permission of the teacher. The interviews were
recorded on cassette tape by a portable radio-cassette player. A total of 18
interviews were recorded and completely transcribed. Six of the interviews
were with males, and 12 with females, in keeping with the ratio of the
students participating in the study and they varied in length from 15 to 20
minutes.

During the interviews with the elementary school teacher librarians,
information was obtained about the type of School Library Resource Centre programme in place in their schools, principal occupations and recreational pursuits of the adults in the school community and the composition of the community and school population. Interviews were also held with the principal and the teacher librarian of the secondary school where the study took place and similar information was obtained.

2. LIMITATIONS OF THE STUDY

The study was conducted in one junior secondary school with students from four classes and cannot be generalized beyond that. The study may also be limited by the fact that the school in which the study was conducted is located in a semi-rural area. The gender imbalance may have also limited the study.

A further limitation may be that the students knew that the researcher was a teacher librarian from the senior secondary school which they would attend in the future and perhaps were more polite and circumspect in their journal writing and interviews because of this fact.

3. DATA COLLECTION

Data for the study were collected using the following methods:

a) Journal writing.
The students taking part in the study were asked to write journal entries describing their perceptions and search strategies during their research project.

This journal writing was facilitated by providing students with prompts typical of reflective journal writing and designed for this study. The decision was made to use prompts rather than free journal writing because many of the students were used to this style of journal writing. Prompts (Appendix A) such as the following were used:

- I like working in the library because...
- Today I did a lot of work on my project. I...
- The first thing I do when I start a new information seeking project is...
- After that I...

In their final journal entry, the students were encouraged to reflect on the information seeking process by prompts such as:

- When I think about looking for information in the School Library Resource Centre at first I feel...
- Some things I do well when looking for information are...
- Some things I'd like to improve about my information seeking are...

Prompts were provided by the researcher either by writing in the individual student journals or by interacting with the students during the information seeking process. The handling of the journals during the study has been previously described.
b) Observation.

Observation is a useful research tool when it is planned, focussed and recorded systematically. It allows the observer to collect at first-hand data that relates directly to a typical behavioural situation and to record this behaviour as it is happening. (Kidder, 1981; B.C. Primary Teachers' Association, 1992.)

The researcher selected the role of observer participant, thus creating a more natural environment where the observer could interact with the students during their information seeking.

Student behaviours appropriate to the information seeking process were looked for including: students planning information seeking strategies; students finding appropriate information; students appearing confident about using the School Library Resource Centre and students interacting with their classmates, their teacher or the teacher librarian.

The evidence that the students were engaged in appropriate behaviours during the information seeking process was found by focussing on some of the activities taking place: students who were developing a written plan for their information seeking; students who were taking notes from information sources; students who knew how to use the card catalogue and students who were familiar with the shelving arrangement in the library. Students' entry behaviour and their beginning search strategies were also observed. In addition, the observer looked for use of the CD ROM index and whether or not students interacted with the
teacher librarian, their teacher or their fellow students. The notes made were subsequently enlarged to more detailed observations.

c) **Informal interactions.**

The observer interacted with students at appropriate times during the information seeking process with the purposes of gathering additional data on their perceptions about seeking information in a School Library Resource Centre setting and of observing more closely what they were reading or writing.

Through these interactions it was ascertained whether or not the students felt they were successful at information seeking and whether or not they perceived information seeking as a useful process. The students also discussed their search strategies, where they had learned those strategies, how they kept track of their progress through an information seeking project and how they evaluated the information they located. Notes were made of these interactions as close in time to the actual conversation as possible.

d). **Interviews.**

Randomly selected students in the study were interviewed. The interview format used was a semi-structured one during which the interviewer was guided by a list of questions but the order of the questions was not fixed. This format allowed the interviewer to respond appropriately to answers and to react to new ideas. (Merriam, 1990.)
purpose of the interviews was to gather in-depth verbal data on the
students' perceptions about the information seeking process, their search
strategies and how they monitored their progress. Typical questions
included the following: What do you do first when you begin researching a
new topic? Is it helpful to talk to others about your topic? Do you ask for
help in locating materials? Do research assignments add to what you
learn in a course? Are you successful at finding information in the School
Library Resource Centre? (Appendix B) Questions were also asked about
library programmes they had experienced in their elementary school and in
the secondary school and the students provided information about their
note taking patterns. Theme development and growing interest in the
topic they were researching were discussed, as well as how the students
decided to stop looking for information. The interviews were recorded to
provide accuracy in data extraction and in any remarks quoted.

DATA ANALYSIS

The data gathered from the students' journal entries, the focussed
observation of the students as they engaged in an information seeking
project, the informal interactions and the recorded interviews with
students were subsequently analyzed by the researcher. The data were
first grouped by categories developed from the responses of the students.
Guidelines for grouping the categories took into account the frequency of
responses as well as unique thoughts and perceptions which revealed insights not previously considered. Verification of the categories has been previously discussed. The categories developed grouped together data under such broad headings as beginning the information search process, frustration, confidence, like working on School Library Resource Centre projects, do not like working on School Library Resource Centre projects, topic selection and stopping an information search.

Data were organized in three different ways: firstly, the data were coded by the elementary feeder school the students had attended and then organized by category under each feeder school; secondly, the data were organized by the same categories for each of the two grade levels and thirdly, the data were organized by the categories for each class.

Further examination of the data and the categories led to the grouping of the categories into five major perceptions about information seeking held by the students and into three areas which represented successive stages of the students' information seeking behaviour.

SUMMARY

Data gathered by means of student journal entries, interactions between the researcher and the students in the study, recorded interviews with randomly selected students and participant observation were placed in categories reflecting the students' responses. The categories were subsequently grouped into five perceptions the students held about
information seeking and three areas representing the three progressive stages of the students' information seeking behaviour.
The study examined perceptions of the information seeking process held by secondary school students. Behaviours were also examined as the students undertook and completed the information seeking process.

Participants in the study were students from two Grade Eight Humanities classes and two Grade Ten Humanities classes from the same Junior Secondary school.

The findings of the study rested principally in two areas:

1. The perceptions held by secondary school students regarding the information seeking process.
2. The information seeking behaviours of secondary school students during the information seeking process.

Within these two areas, the findings address any differences in perceptions either by the different age groups or by the students from the different feeder schools and inner behaviours such as use of strategies used by students to monitor and evaluate their progress through the information seeking process.

Five perceptions held by the students in the study about the information seeking process emerged from the students' responses. The perceptions are described in order of descending importance, beginning with the one most important to the students. The hierarchial order of the
perceptions was formulated by the investigator based on the frequency of journal entries and interview quotations concerning the perceptions. Observations were also made regarding the interest level of the students and their engagement with various aspects of the information seeking process.

Student behaviours during the information seeking process can best be described by grouping the behaviours into the three major successive stages of the information seeking process and describing at the same time the inner behaviours which take place during the different stages.

The information seeking process was investigated from the perspective of the students involved in the study and the perceptions developed arose directly from the students' responses. Therefore, the findings of the study are illustrated by quotations from the students. The students' words and journal entries have been coded to indicate whether they are journal entries, (j), whether they were spoken during an interview, (i), and whether they were uttered or written by a male or a female (M) or (F). The students' quotations have also been coded to indicate grade level (8 or 10). Phrases inserted by the investigator for clarification of the students' spoken and written words are enclosed in square brackets and observations made by the investigator are clearly indicated.
1. PERCEPTIONS ABOUT THE INFORMATION SEEKING PROCESS

a) The information seeking process provides for active involvement by the students in their own education.

This perception was held by between eighty-five and ninety percent of the students in this study. Different facets of this global perception were revealed by the students through their interviews and journal entries and were also observed throughout the information seeking process.

The students in the study recognized new information found during the information seeking process and realized that their knowledge base was extended through the exploration of their topics. "I didn't know anything about the country I'm doing. It's amazing what you find out." (F, i, 10). "When I first started this project I didn't know how to spell Louis Riel and I didn't know anything about him. I know now how interesting he was. I am reading a book called The Man Who Had to Hang but I didn't take any notes [today] because the book was so interesting." (M, j, 10)

The students in this study were able to internalize information as they linked it to the topic they were exploring. "I just found out that Hong Kong is going to be given back to China in 1997. I never knew any of that before! I thought it was a lot like China but I was reading through and like their vegetation is much different." (F, i, 10) Throughout the information seeking process, students were exposed to points of view which they had not previously considered and they learned to assimilate
these different points of view and used them to further their own thinking. "We did a thing about a united Canada a while ago and the more you read the more it [your mind] changes. You have different opinions." (M, i, 10)

Many students saw the information seeking process as an opportunity and a challenge to explore topics which were new or unfamiliar to them, thus allowing for the creation of fresh knowledge in the students' minds. "I try to pick something I don't know too much about but I'd like to learn about." (F, i, 8) "I chose my topic by picking an interesting person." (M, j, 8) One student, having stated that she did not like information seeking projects, was nevertheless interested in the new information. "I don't like looking for information. I only do it because I have to. [But] it's interesting to find out stuff that I don't know." (F, j, 10)

When the students were asked, more than seventy-five percent of them stated that they much preferred choosing their own topics for research projects, as opposed to having teacher assigned topics. It appeared that there were several reasons for this preference. Choosing a topic themselves indicated that they had some control over their learning. "[I'd rather] choose my own. Then you get to decide what you want to do. It's more interesting to yourself." (F, i, 10) Also, students found it easier to find a theme, or a focus, for their information seeking when they took ownership of the topic. "I would rather choose my own. I find it easier that way. I'll have an idea of what I want to do and I'll know where my information is." (F, i, 10) Those students who stated that they preferred teacher assigned topics gave essentially the same reason: "I want the
teacher to pick it for us because I can never think of anything. (F, i, 8) 

Sometimes it's hard to pick my own, so, [given] by the teacher, they're better. (M, i, 10)

It appeared that personally acquired information had more validity for the students than information read in their textbook. "Today I found a book to take notes from. Magellan is interesting. I can't believe what he went through." (M, j, 8) During the process of these student research projects, the students displayed a sense of pride in searching for information and took ownership of the information they found. "You get to work on your own and find your own information." (F, j, 10)

The students in this study saw the information seeking process as a separate entity, clearly differentiated in their minds from work in the regular classroom. It appeared that it was the active involvement in a project by which they contributed to their education that provided the difference for the students. "You get to research everything on the topic, not like out of the textbook where you just have to read it." (F, i, 10) Classroom work was perceived by the students as something done to them by someone else rather than something accomplished by them. "I enjoy research so much more than getting lectured." (M, j, 10) "This is better than having to work out of a textbook." (F, j, 8)

The factor which united all these facets of finding information through the information seeking process seemed to be the information itself. The students in this study were very interested in what they were finding out about their topic. Because of this factor, the information
seeking process was perceived by nearly all of the students as a worthwhile activity which assisted their learning and provided avenues to active involvement in their own education.

b) The information seeking process represents a positive experience when it takes place in the School Library Resource Centre.

The Library Resource Centre was different from the regular classrooms in this school and provided a different atmosphere and an attractive alternative workplace for the students. "You get more air from the windows open and the plants help." (M, j, 10) "I like working in the library because there is [sic.] lots of reference books and it is nice and quiet." (F, j, 8) These students perceived that the School Library Resource Centre provided them with more options than the classroom in that they were able to move around more freely and choose their own chair. "You can walk around and not just sitting [sic.] in one desk and you can talk." (M, j, 10) These seemingly simple things held great importance for the students in the study by contributing to the feeling that they were more in control of their learning in the library than in the classroom. The students perceived that they were directing the course of their education while they were engaged in the information seeking process. "I really like working in the library. I feel I learn more than in the classroom because I am able to find things out for myself and in my way." (F, j, 10)
This perception of directing their learning while working in the library extended to include the way in which the students interacted with the teacher librarian. She was viewed as the person who knew the library collection thoroughly and who helped the students locate the information they had chosen when they were unable to find it themselves. "If I really can't find something, I go and ask the librarian." (F, i, 8) The teacher librarian was also looked upon in a favourable way because she assisted the students in the direction of their information seeking. "Finding information in the library is very easy when the librarian knows what topic you will be researching ahead of time. The first few minutes where the librarian tells us where to find information is [sic.] very useful and helpful. I enjoy working in the library." (M, j, 10)

However positively the students in this study perceived the teacher librarian, it appeared that most asked for help reluctantly. "Yeah, [I'll ask for help] if I need to but I don't usually. I like to do as much by myself as I can." (M, i, 10) The students had a sense of pride at being able to find what they wanted by themselves and a feeling of accomplishment when they did locate the needed information. Some students hesitated to ask for help because they felt that they were bothering the teacher librarian. "I usually try to do it by myself without bothering many people. I can usually manage." (M, i, 10) Still other students expressed the fear that students who asked for help were thought to be inferior to other students. "Well, I don't ask for help very much. I feel like I'd be called an idiot or stupid or something." (F, j, 8) "I try not to because I sound like an idiot."
However, asking a friend or a fellow student was not a negative behaviour. "Yes, [I ask my friends]. It gives me a better understanding of what I should look for. Like, how to go about finding my information." (F, i, 10)

The students interacted freely and often with their teacher and the teacher librarian during the information seeking process when the adult initiated the interaction and offered help. When the teacher librarian or their teacher approached students to offer assistance, the students always reacted positively even though they had not requested help. This behaviour was observed throughout the course of the study.

c) The information seeking process requires student awareness of the importance of using self-discipline strategies.

The information seeking projects used in this study all had a time limit expressed in terms of a completion date when the final product of the information search was to be collected by the teacher or the teacher librarian. The students who were aware that self-discipline was needed during the process of information seeking frequently planned their information search as soon as this date was known. "Today I have started deciding what I should accomplish each day. It's a lot easier knowing that you will get something done then you know you will be finished on time and not late." (F, j, 8)
Clearly expressed teacher and teacher librarian expectations regarding the completed product were regarded by the students in the study as aids to self-discipline. Detailed instructions describing the components of the product also assisted students in practising self-discipline. "Today's was a cool experience. I feel it was a good way to start the project knowing what we were doing and what we have to do." (F, j, 8)

The students realized that consistent and continuing self-discipline while working on an information seeking project was difficult. They recognized that keeping themselves on task while working alone, with a partner or in a group was often a hard thing to do, particularly when the library was busy. "Today the library was too full and too noisy and too hard to research although I did find a few books on my topic." (F, j, 10) It appeared that when the School Library Resource Centre was fully occupied by students from several classes the students exhibited more off-task behaviours and the noise level rose. When there were some vacant chairs and tables in the room the students concentrated better on their work.

During the information seeking process, the teacher librarian and the classroom teacher continuously interacted with different students on a one-to-one basis. Thus, while the interaction ratio was higher when the teacher librarian and the teacher worked together, the students not involved in these interactions perceived that they did not receive the same level of supervision as is the practice in the classroom. These students were aware that they needed to practice self-discipline in order to accomplish their task. "I like working on a library project because it is a
change and fun, but you have less supervision and it's easier to fall behind." (F, j, 10) Students in the study who expressed negative feelings towards the information seeking process were nevertheless aware of the need for self-discipline. "Not really [do I like looking for information] but if I want to get a good mark, I guess I have to." (M, j, 10)

More than ninety percent of the students in the study displayed on-task behaviours. This was evident in the non-verbal behaviour of these students as they entered the School Library Resource Centre. During their stay they used the card catalogue and they directed themselves to the appropriate section of shelves in the School Library Resource Centre. The students read information sources, recorded notes and kept track of their information sources. They understood and used new technology such as the CD ROM index to locate journal articles and the modem to locate audio visual resources from the District Resource Centre. Interacting with the teacher librarian and their teacher, they also set up equipment and previewed audio visual resources for useability. All of these observed behaviours indicated that the students were using self-discipline strategies in accomplishing their task of information seeking.

d) The information seeking process uses the skills of locating and selecting resources, acquiring and analyzing information as well as recording and classifying this information

The students in this study perceived that certain skills were needed
for successful information seeking. Before appropriate information could be located the students recognized that the searcher must know exactly what information was being sought. "When you look for information you must know what you are looking for. When you narrow down the topic it will make the research easier." (M, j, 10) After the topic had been narrowed and the information seeking process was commencing, the students realized that an overview of the information available was useful. "The first thing I do is see how much information there is on the project." (M, i, 10)

About twenty percent of the students used the card catalogue to ascertain the information available on their topic. These students understood the manner in which subject headings were used in the card catalogue to locate headings which applied to their particular information search. In addition, they had mastered the skill of interpreting the information contained on the catalogue card and had comprehended the relationship between the numbers on the catalogue cards and the books on the library shelves. Students in the study who had not acquired these skills had difficulty using the card catalogue to assist in the information seeking process. "I didn't know what to do. Someone would say, go and look in the card catalogue, so I'd look and it would have all these numbers and I'd go - oh, this doesn't tell me anything." (F, i, 10) Students who understood the use of the card catalogue were aware that its use would lead them to discover the information available in the School Library Resource Centre. "I find my information best in the card catalogue
because it is all alphabetical, and easier to find [the books] with the numbers." (F, j, 10) A few of the students in the study had learned the skills necessary to use an automated catalogue properly and understood the difference between the card catalogue and the automated system in place in the Public Library. "Sometimes, going through it by hand you find things that you didn't expect to, that could help you. But on the computer, if you type a certain thing that's all you're going to get. It's good for looking up specific things. It's good [knowing how to do it] the two different ways." (F, i, 8)

The students recognized that knowing how to use indexes was also a skill necessary during the information seeking process. Many instances of students perusing indexes in books and encyclopedias and numerous interactions between students and either their teacher or the teacher librarian during which the use of an index was being explained for the benefit of the student were observed.

For the past three years, the School Library Resource Centre has possessed a CD ROM index to journal articles, heavily used by students who have acquired this information seeking skill. "For current events, I use the TOM [the CD ROM index]. (F, i, 8) "I would like to look on the TOM but there is always someone on it." (F, j, 8) Students who were not familiar with this electronic index perceived this skill as one lacking from their repertoire of information seeking skills. "I would like to improve on the TOM because I don't know how to run that very well." (F, j, 10) "I would like to improve on looking for [information] in places like
magazines. Most of my information comes from books." (M, j, 10)

Microfiche copies of heavily used journals have been purchased to assist the students with information seeking, requiring an additional skill. "Today I worked on the TOM and the microfiche." (M, j, 8)

Students perceived that the ability to take concise and understandable notes from information sources was an important skill and a major component of a successful information search. "I'm terrible at the notes. Sometimes I can't read my own writing, I go so fast." (F, i, 10) The students in the study mentioned note taking in many interviews and journal entries either as a skill they felt they had mastered or as an aspect of information seeking that should be improved upon and frequent instances of recording of notes by students from the resources they had located and selected were observed. "I always do such a good job with my notes. My notes take the longest, for sure." (M, i, 10) "[I'd like to] take better notes. I don't take notes very well. A lot of times they're too long and I don't know how to shorten them so I shorten them too much and then I don't understand what I wrote down." (F, i, 8)

The generation of the final product of an information search was dependent upon what product had been decided upon by the class, the teacher and the teacher librarian. These students were all expected to generate a written report which involved organizing the information located throughout the information seeking process in some logical manner. The students in the study made use of organization methods which they had learned and which had proven successful for them. "I
organize by what's most important and then go for that. I take all the notes and then reorganize them and rewrite them so that they're in different sections. It's easier that way." (F, i, 10) "When I first begin I usually make out questions so I know what I'm trying to find so I can answer my questions. Then I look for books that will answer my questions. I basically answer my questions first and then if I find more information than my questions I'll change my topic a bit." (F, i, 10) Some of the students used the technique of organizing their information by major topic and subtopic. "I usually go and get a few books and then see what there is to say about it [the topic]. I write a subtopic on the side and take a bunch of notes and then write another subtopic and take some more notes." (M, i, 10)

Many of the students were confident and organized throughout the entire information seeking process. It was apparent that these students attributed their facility with the information seeking process to the fact that they had been taught how to look for information in elementary school and had been provided with frequent opportunities to practise the skills in both elementary and secondary school. "Most of us know where to look because we have been taught where to look for our information when we were seven and onwards. In Grade Two, Grade Three and so on ... lots of practice. (F, j, 10) "Last year [Grade 9] we found that research and like that was pretty easy. How it [the skills] always worked and we always worked together." (M, i, 10) "We did a lot in the library usually." (F, i, 8)
In addition to using these skills to carry out successful projects involving the information seeking process, students in the study saw the skills used in the information seeking process as skills that would assist them in achieving career goals. "It [library projects] interests me a lot. My career goal is to become a journalist, so these skills are required." (F, j, 10)

e) The information seeking process evokes varying degrees of student frustration.

The students in the study perceived that different levels of frustration may be encountered throughout the information seeking process. This frustration might sometimes be linked to a certain aspect of information seeking or to a particular stage in the information seeking process and even, in some cases, to the entire process. About five percent of the students perceived the information seeking process as a difficult task to complete and this view evoked frustration. "Working in the library on research is something I find difficult. Looking for information is something I always seem to do wrong." (F, j, 10) "I have a real problem with research assignments. I don't know. It's something that I ... just like ... I'll look and then I get frustrated if I can't find anything and I usually tend to give up." (F, i, 10) General unease and frustration was sometimes expressed by the use of the word 'boring'. "Library research can be very
boring." (M, j, 10) "It [research] isn't hard, just boring." (M, j, 8)

The commencement of the information seeking process was frustrating for some of the students. Usually their difficulty at the beginning was attributed to the fact that they were not organized. "Next day it will be easier when I'm organized." (F, j, 8) Some students were more precise about their problem. "I think when I get a base of my project it will go much faster." (F, j, 8) Although more than seventy-five percent of the students had stated that they would rather choose their own topic, many appeared to experience frustration when permitted to do either this or to choose a topic from a list generated by their teacher. "I can't make up my mind. I want to do something that's going to be really good and fun to do but I don't want it to sound dumb, you know." (F, i, 10)

Some of the students were frustrated by the amount of time given to complete the information seeking process. "I would like to have more time in the library." (F, j, 8) Sometimes students felt such frustration with the time given that it impeded their progress. "I have not got anything done because I have not got enough time." (F, j, 8) A different sort of time pressure was created if components were added to an assignment after it had been presented to the students and they had assumed that it was complete and had planned their time. "There's too much work. I am given more work today. A lot more work and I have to do other subjects for homework. Not enough hours in the day to do all this." (M, j, 10)

Incomplete and insufficient instructions about the information seeking project were also a source of frustration to the students. "I think

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there should have been a little more about what we were supposed to do. I know now, but that's not the way it should have been done." (M, j, 10)

Even students who had acquired the skill of using the card catalogue were frustrated by it at times. "Sometimes it [the card catalogue] doesn't have any information. They have books on it [the topic] but it's not in there. You sometimes have to look under author, but if you don't know [the author's name], then you can't." (F, i, 10)

A number of the students in the study experienced varying levels of frustration at different times throughout the information seeking process, frequently at the commencement of the process. When the students had located some information and had begun to work, the frustration level was observed to drop. However, a few students appeared to experience some frustration throughout the information seeking process and approximately eight percent of the students exhibited off-task behaviours, which might have indicated frustration.

2. STUDENT BEHAVIOURS DURING THE INFORMATION SEEKING PROCESS

Analysis of the data gathered on student behaviours throughout the information seeking process allowed the grouping of this data into three areas. These three broad areas represent the students' progression through the information seeking process.
a) Students commenced the information seeking process and clarified research strategies.

All of the information seeking projects observed began with an introduction for the students by the teacher or the teacher librarian during which appropriate resources for the project were described.

No more than six or seven students from each class began the information seeking process by going to the card catalogue to look for their topic. Other students began by proceeding directly to the appropriate section of shelves and looking for books and the CD ROM index was busy at the beginning of each project. Some students from every class went first to the reference shelves where the encyclopedias are kept and a few of the students adopted a more passive approach by remaining in the seats they had chosen until they were offered material by the teacher librarian or by beginning to read from their texts.

In one case the teacher librarian had previously selected material pertaining to the topic from the shelves and had arranged it on a bookshelf at the side of the library. In this instance close to one hundred percent of the students used those selected resources and did not explore either the card catalogue or the shelves, but did make use of the CD ROM to access journal articles. A few students from every class observed began their information seeking process by using the CD ROM although its use was only appropriate for the two information seeking projects which dealt with current events.
Many of the students who had started with the card catalogue next went to the library shelves to locate the resources they had found by using the card catalogue. Although not mentioned in any of their journals or interviews, a few students were observed experiencing frustration in locating the particular book they were looking for. This frustration appeared to be related to their inability to understand the Dewey Decimal system.

Several of the students who had gone directly to the shelves proceeded to the card catalogue while others located the encyclopedias in the reference section. However, when asked what they did first when they began a new information seeking project in the School Library Resource Centre, more than seventy-five percent of the students replied that they used the card catalogue or the CD ROM first. "I look in the card catalogue for information and if I can't find any books then I look in the encyclopedias and then, if I still can't find any, I look in the TOM." (F, i, 10) "I usually go and look it up in the card catalogue." (F, i, 8) "Depends on whether it's recent or old. If it's recent, I go to the TOM. If it's older, you go into the card catalogue." (M, i, 10) One student in the study began his information seeking process in a slightly different manner. "I check the encyclopedias usually and then I'll go to the card catalogue." (M, i, 10)

As the students in the study acquired material they returned to their previously selected seats and began looking through the resources, making use of their assignment sheets for direction. Some students had gathered three or four pieces of material while others returned to their seats as
soon as they had located the first resource. The teacher librarian and the teacher circulated among the students, interacting with individual students and offering assistance in using the resources or in finding additional material. Many of the students had already begun to read and record notes while some were observed writing out a plan for their project.

Students who planned at this stage or even earlier in the information seeking process were asked about their planning strategies. "I usually think about what I'll do before [I start] and what I'm going to be looking for and stuff like that," (M, i, 10) "I taught myself to be a careful planner and be organized because if I don't I don't get finished on time and I lose things. I learned that a few years ago when I was doing a project and nothing was going right." (F, j, 8) "When I first begin I usually make out questions so I know what I'm trying to find so I can answer my questions." (F, i, 10)

At the end of this first session in the information seeking process, many students signed out books pertaining to their topics. It appeared that this first session was used by the students in the study to ascertain what material was available in the School Library Resource Centre and then to begin the clarification of their research strategies.

b) Students recorded, analyzed and classified information from resources previously located and selected.

As students entered this stage of the information seeking process
their behaviours shifted from those used to locate and select resources to those behaviours which revealed that the students in the study were now principally engaged in recording, analyzing and classifying information from the resources they had previously selected. The students exhibited various information recording, analyzing and classifying behaviours. "I usually check a whole bunch of sources and find one that has the most information and copy those notes down and then I'll check the other ones [sources] to see if I missed anything." (M, i, 10) "Sometimes I take notes as I go along if I find it really interesting and I know I'm going to be able to use them, but otherwise I'll just take them after I've read and choose from what I've read." (F, i, 8) The recording of information was sometimes begun by using the text as a reference source. "The books I'm using [now] are my school texts. After I'm done with them I will find more books." (F, j, 10)

Students were asked to describe inner behaviours which could not be observed. A number of students in the study described this phase of the information seeking process as the period during which they developed a theme for their information seeking project and decided on their approach to the topic. "I usually take notes and it falls into place." (M, i, 10) "It depends on how much I know to begin with, I guess. Usually it develops as you're researching." (M, i, 10)

Many students reported that they often changed their minds about a topic as they learned about it. "A lot of times my opinion changes while I'm doing an essay." (F, i, 10) "Usually I have an idea of what I want to
say but a lot of times it changes according to the information I get." (F, i, 8) It was also during this information recording and classifying process that the students developed a growing interest in their topics as they read and learned more. "Right now I'm doing Saskatchewan and I keep getting more and more interested because my Dad comes from there and I keep getting more interested and into it." (F, i, 10) This growing interest in their topic was strengthened when the students found that there was a connection between what they already know and what they were finding. "I find it very interesting to look up different countries and find things that are different about them compared to Canada." (F, j, 10)

This recording, analyzing and classifying of information occupied the greater portion of the time that the students in the study spent on the information seeking process. As students perused resources and gathered information they were approaching the third part of an information seeking project.

c) Students applied organizational skills to conclude the information seeking process and to prepare for the production of the final product.

As the completion date for the information seeking project approached, the students in the study were observed to cease analyzing, recording and classifying information and to begin to apply the organization skills they needed to produce their final product. Many
students used their assignment to verify their information seeking. "I make sure that I've answered the questions where and why." (F, i, 10) "I go back over it and find if I've missed anything." (F, i, 10) "I ask my teacher to look at it and that's my rough draft and then I'll go do my final draft." (M, i, 10) "I make a checklist and check off everything when I've done it." (F, i, 8)

Students were asked to describe how they decided to stop information seeking. Several of the students used as their guide the amount of information they had been able to locate. "That's a hard question. As soon as I've gone through all the books I can find, I suppose." (M, i, 10) Others stopped when they ceased finding new information. "I usually look up information until it starts to repeat itself, until I start to find things that are the same as what I've already read." (F, i, 10) "Either when I can't find any more information or when I have enough." (M, i, 8) Some of the students used a mental assessment of their information seeking process. "[I stop] when I feel satisfied." (F, i, 8) "I guess you just kind of know." (F, j, 10)

A number of the students in the study were guided by the form of the final product. "I usually decide by how much I've got. If I have enough to do the paragraph or whatever. If the teacher wants a long report you have to look at everything but if it's just a short paragraph, you don't have to go through everything. You can stop when you've got what you need." (F, i, 8) "That's a hard question. When I have enough to write an essay. When an essay is full, got a lot of content." (F, i, 10)
The amount of information acquired indicated to some of the students that they could stop seeking for information. "Probably when I have five or six pages of notes on each book." (M, i, 10) "When I stop looking for information is when I have more than enough and then I know I'm on the safe side." (F, j, 10) "When you have enough information to complete a well-informed paper." (F, j, 10) For certain of the students in the study, interest was the deciding factor. "That's a hard one. Sometimes if it's a topic I'm not very interested in I'll just get what I need and then stop, but if it's something I'm really interested in or if I find something really interesting I'll just keep on." (F, i, 10) Time dictated to others when they stopped this phase of the information seeking process. "Usually when the teachers tell us we don't get any more research time." (F, i, 8)

The computer laboratory in this school was visible in its entirety from the School Library Resource Centre as it was located in a classroom adjacent to the School Library Resource Centre and separated by a wall which was glass from ceiling to waist level, while a door provided easy access. During the final stages of the information gathering project many of the students were observed taking their organized notes to a computer to compose their final product. Several students were engaged in producing a handwritten draft before proceeding to a computer. As the students worked on the computers, a number were observed interacting with their teacher or the teacher librarian and discussing an information point or a grammatical construction in the final draft.

A few of the students had decided to present the results of their
information seeking in the form of a poster with accompanying written details and remained in the School Library Resource Centre to prepare their posters. It was apparent that more than ninety percent of the students were satisfied that the information seeking process had enabled them to be successful with their School Library Resource Centre research project.

3. DIFFERENCES IN PERCEPTIONS AND BEHAVIOURS DURING THE INFORMATION SEEKING PROCESS OF GRADE 8 AND GRADE 10 STUDENTS.

There were several differences which became evident during the examination of the data concerning the perceptions and behaviours of the students.

Firstly, when the data was grouped by feeder school and examined, an important difference was seen. It appeared that students from Feeder School 1 and Feeder School 2 in general had fewer problems with the information seeking process and suffered fewer frustrations throughout the information seeking process than did some of the students from the other feeder schools. Both of these feeder schools have had cooperative program planning strategies in place for a number of years. These were the students in the study who exhibited confidence throughout the information seeking process, and saw themselves as successful at finding information for a project. "Usually successful." (M, i, 10) "Usually I'm
pretty good at finding it [information]." (F, i, 10) At times, these students had some problems finding information, but they still saw themselves as successful with the process and not frustrated by it. It was apparent that the practice that these students had with the information seeking process enabled them to undertake it with fewer problems. "Yeah. The more [projects] you do, the better you get." (F, i, 8) The students have also had practice at information seeking at the secondary level and this was reflected by the confident behaviours displayed by several students from the other feeder schools. "No, not usually. The odd time [I have problems] but, no." (F, i, 10)

Secondly, grouping the data by age groups indicated that the five perceptions found during the study were held by a majority of the students in the study. The differences uncovered resided in the depth of the perceptions held by the students. It appeared that the Grade 10 students had internalized the perceptions found, had accepted them as a part of their belief system and consequently were more articulate in explaining them. The younger students held the perceptions but it seemed that they were less able to explain them. "I like working in the library." (M, j, 8) with no accompanying reason, appeared in a number of the journals written by the Grade 8 students.

It also seemed that the information seeking process was recognized by the Grade 10 students for its intrinsic value. For the Grade 8 students, the particular topic they were dealing with had more value than the information seeking process. "It depends on the topic." (F, j, 8)
The data revealed that the younger students viewed the information seeking process as a series of small concrete steps, separated one from another and not necessarily arranged in any logical manner. "I did my title page." (F, j, 8) "Today I drew a map." (M, j, 8) "I looked in the card catalogue." (F, j, 8) The older students viewed the process, wrote and spoke about it globally. "My research is going well." (F, j, 10) "I like looking for information. I am interested in finding information on my country." (M, j, 10) It appeared that the older students carried out their information seeking in a more disciplined and logical manner. These students carried out planning activities more often and referred more often to their assignments for guidance in their information seeking process. "My teacher gives us a sheet of what she wants and I usually refer to that lots." (M, i, 10)

It appeared that the students perceived the information they were finding in different ways. The Grade 10 students had a stronger intrinsic interest in gaining knowledge and in the knowledge gained than did many of the Grade 8 students. The Grade 10 students were also more consistent in practising self-discipline and exhibited fewer off-task behaviours than the Grade 8 students.

In summary, differences in student perceptions of the information seeking process centered around the greater opportunities some of the students had received to practise information seeking and the greater depth of the perceptions and global view of the information seeking process held by the Grade 10 students. The older students saw the value of
the information seeking process as an entity and had a more intrinsic interest in the knowledge gained through the information seeking process than did the younger students. The information seeking process was a more disciplined process for the more mature students, both in its execution and in their behaviour.

DISCUSSION

The findings of this study demonstrated that adolescents in one secondary school perceived the information seeking process in a positive light because they saw it as a process which allowed them to be active participants in their own learning and, by implication, enhanced and individualized their education. In the past, theorists and practitioners in education have expressed concern and pressed for change in school systems which did not address individual needs. (Dewey, 1933; Eisner, 1971; Fullan, 1982; Goodlad, 1984.) The practice of paying attention to the needs of the individual learner has grown in recent years and the official documents which define practices and guidelines in many provinces advocate an individual approach. (Alberta, Ministry of Education, 1985; British Columbia Ministry of Education, 1990a, 1990b, 1992; Ontario, Ministry of Education, 1982; Saskatchewan, 1986.)

This study also showed that students recognized the value of the information seeking process as a process as it is the key which teaches the students how to find the information they want and opens the door to
lifelong learning. Students who wish to attend university were already aware of this and perceived the information seeking process as necessary to their educational goals.

Society is becoming less economically dependent upon primary industries and more dependent upon the creation and consumption of information as a source of employment. Learning the skills associated with the information seeking process is therefore perceived by a few students as useful vocational education.

The students approached the information seeking process in different ways. Their strategies for completing the task can be directly linked to the research on metacognition and metalearning by people such as Biggs, 1985; Chang, 1989, 1990; and Wong, 1989. These researchers discovered that secondary school students used different approaches when they undertook a problem solving assignment. What these researchers named a "Deep Approach" was characterized by an intrinsic interest in learning; the "Surface Approach" was used by students who just wanted to get the task finished and the "Achieving Approach" was based on task completion for competition and high marks. Each of the approaches was accompanied by a matching strategy used to complete the task. Their findings indicated that, although different approaches were used by the same students at different times, in general, students in the higher grades tended to use the "Deep Approach" more than students in the lower grades of secondary school, who favoured either of the other approaches. It appears that this study supports this theory.

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The consistent practice of self-discipline displayed by the older students can be in part attributed to developmental changes in adolescents and also in part to the "Deep Approach" to the information seeking process adopted by more of these students. Their intrinsic interest in the subject matter and the knowledge they were acquiring promoted self-discipline practices.

Certain of the students, particularly the older students, displayed uses of strategies to plan and monitor their search for information. The use of these strategies was not consistent, they were not used by all of the older students and by only a few of the younger students. This pattern was consistent with the extensive research on child and adolescent developmental stages carried out by Bruner, 1966, 1973; Inhelder & Piaget, 1958; Peel, 1960, 1971; and Vygotsky, 1962.

The perception of the students that the information seeking process involved various degrees of frustration is worth noting. Other studies have shown that the anxiety level of students was intense and that the majority of students underwent anxiety during the information seeking process. (Collins, Mellon & Young, 1987; Mellon, 1986; Mellon, 1988; Mellon and Pagles, 1987.) The findings of this study, albeit with its small sample, indicate that practice in the information seeking process has a great deal to do with reducing student frustration with the process.

The two larger feeder schools which sent students to the secondary school where the study was conducted, had teacher librarians who practised cooperative program planning with the teachers in their schools.
It is important to note that the students from these schools had previously received curriculum based instruction in the information seeking process during their years in elementary school and these students comprised the bulk of the sample for this study. In addition, classroom teachers and the teacher librarian at the secondary school where the study was conducted have developed and used curricular projects which involved information seeking in the School Library Resource Centre. The low frustration levels experienced by the students in this study can be linked to the students' familiarity with the information seeking process and the amount of practice they have had with it. Studies have shown that School Library Resource Centres with teacher librarians who use cooperative program planning do make a difference in the students' facility with information seeking skills. (Didier, 1984, 1985; Goodin, 1988; Hodges, Gray & Reeves, 1985; McConnaha, 1972; Mancall, 1986.)

It is also worth noting that the few students who did experience somewhat higher levels of frustration had attended elementary schools in which the library programme consisted principally of 'library lessons' which were presented at set times and were unrelated to the regular classroom work or elementary schools in which there was no library programme.

There is a distinct difference between what the students in the study did when they began a new information seeking project in the School Library Resource Centre and what they said they did. More than seventy-five percent of the students said they used the card catalogue first when
they began a new information seeking project. However, observation revealed that only a few of the students actually did this.

What the students in the study thought they did and what they did can be attributed to several different reasons. In the situation where the teacher librarian had previously selected resources and the students used these almost exclusively, the positive perception of the helpfulness of the teacher librarian was verified. This behaviour might also indicate that it is easier to let someone else do the work. The students who went directly to the appropriate section of the shelves indicated that they were familiar with the School Library Resource Centre. This behaviour might also have indicated that they have previously experienced frustration using the card catalogue and have learned to avoid this frustration. Another possible reason for the difference in what they said they did and what they actually did might be that the students had been taught to go to the card catalogue first, but that some of them had found that this was not always the best place to begin an information search. An observation might also be made that the students said they went to the card catalogue first because perhaps that was what they thought the researcher wanted to hear.

More than three-quarters of the students stated that they preferred to choose their own topic for an information seeking project. However, it appeared that some students experienced doubt and frustration when permitted to do this. Perhaps one solution to reduce this frustration for the students would be to do what several students suggested. "I like it when she has some [topics] you can do but you can also choose your own."
So that if you get stuck and can't think of anything you can always have some ideas, but if you have one you'd really like to do you can do that one." (F, i, 8)

A number of the students said they asked for assistance with their project only when they "got stuck" by which they meant they had used all the information seeking strategies they knew and had not found what they needed. This possibly indicated a frustration not expressed by the students in so many words and might also have supported the theory that our culture encourages a tradition of "rugged, do-it-yourself individualism [and] asking for help can be for some tantamount to admitting failure." (Keefer, 1993 p.337.)

A number of the students went to the adjacent computer facility as soon as they had enough notes or rough copy, to begin assembling the final draft of their written assignment. It appeared that the location of the computers provided direct support for the School Library Resource Centre and for students engaged in the information seeking process. It also allowed the students to interact with their teacher and the teacher librarian while they were preparing their final draft and seemed to give them more confidence in the composition of their final draft.

Placing the computer facility next to the School Library Resource Centre, separated only it by a glass wall with easy access provided by a door, makes this facility almost an extension of the School Library Resource Centre. This placement did inevitably add to the duties of the teacher librarian but it seemed that this was more than balanced by the
It appears that this limited and preliminary study has shown that a positive perception on the information seeking process is almost universally held by secondary school students. This should encourage teacher librarians in their efforts to plan curricular based information seeking projects with classroom teachers.

Teacher librarians have infrequent opportunities to observe students engaged in an information search, yet assisting students with that process is a major component of the role of a teacher librarian. This study has allowed a practising teacher librarian time to step back from active participation in information searches, to observe what the students do and to converse with them about their perceptions of the process. It has proven to be a valuable learning experience.

SUMMARY

The secondary school students in Grade 8 and Grade 10 who participated in this study held five major perceptions about the information seeking process. Firstly, nearly all of the students perceived the information seeking process as providing for their active involvement in their own education. This perception reflected the students' feelings that the information seeking process allowed them to have some control over their own learning.

Secondly, the information seeking process represented a positive
experience for the students when it took place in the School Library Resource Centre. The students perceived that the School Library Resource Centre was an attractive alternative working space for them where they had access to the resources they needed for information seeking and where they received support from their interactions with their teacher and the teacher librarian.

Thirdly, the students perceived that successful information seeking required the application of self-discipline strategies. The students were aware that practising consistent self-discipline was difficult and were also aware of the skills needed to carry out self-discipline. This was particularly true of the Grade 10 students.

Fourthly, the students perceived that the information seeking process used the skills of locating and selecting resources, acquiring and analyzing information as well as recording and classifying this information. These skills were seen as necessary skills which will also assist the students with their future education and employment.

Lastly, the students perceived that the information seeking process involved varying degrees of frustration. This frustration was more evident at the beginning of the information search and seemed to lessen as appropriate resources were found.

The findings of this study also indicated that student behaviours during the information seeking process fell into these three areas: the students commenced the information seeking process and clarified research strategies; the students recorded, analyzed and classified
information from previously located resources; the students applied organizational skills to conclude the information seeking process and prepared for the production of their final product. Within these three areas there were individual variations in behaviours but nearly all of the students followed a similar behaviour pattern.

Differences found in the study between the perceptions of the Grade 10 and Grade 8 students resided chiefly in the greater depth of the perceptions held by the older students.

The study supports other studies which have shown that students who have attended elementary and secondary schools where the teacher librarian and the classroom teachers practise cooperative program planning have more facility with the information seeking process and also experience fewer frustrations with the process than those students who have not had this same experience.
Chapter 5:
SUMMARY, CONCLUSIONS AND IMPLICATIONS

SUMMARY

This study has dealt with the perceptions and behaviours of secondary school students during the information seeking process. The study was conducted with students from four classes in one junior secondary school in a large school district in North Central British Columbia. Data was collected by means of student journal writings, recorded interviews with randomly selected students and by participant observation.

CONCLUSIONS

The findings of the study give insight into the manner in which secondary school students perceive the information seeking process and into the behaviours they use to search for information. From this insight, the following conclusions and implications about secondary school students and the information seeking process can be stated.

1. Firstly, the information seeking process empowers the students to be active participants in setting directions for their own learning. In addition, it is regarded as a positive experience by which the
students learn skills they will need in their future information searches.

Implication: Teacher librarians should place greater emphasis on their role as teachers, thus facilitating active participation by the students and the classroom teachers in the information seeking process and ensuring that students learn the skills needed to locate, synthesize and evaluate information.

2. Secondly, the frustrations experienced by students during the information seeking process appear to be fewer for those who have had practice with curriculum based, cooperatively planned projects. In addition, students who have had opportunities to practise information seeking skills have more confidence in their ability to search for information and to find it successfully.

Implication: Teacher librarians must be persistent in their efforts to use cooperative program planning with classroom teachers in preparing relevant information seeking projects for their classes to demonstrate to the students that successful information seeking is enhanced by practice and will result in greater confidence.
3. Thirdly, students who are aware of the importance of self-discipline are more consistent in practising these behaviours during the process of information seeking.

Implication: Teacher librarians need to be aware that, while the older students tended to view the information seeking process globally, the younger students saw information seeking as a series of small, concrete steps, each step requiring some action on their part. Information seeking projects should be designed to provide more structure for inexperienced students at this developmental stage and greater emphasis should be placed on integrating the steps in the process.

4. Fourthly, secondary school students appear to ask either the teacher librarian or their teacher for assistance with an information seeking project only when they have exhausted their own information seeking competencies or when these competencies are lacking.

Implication: Teacher librarians must realize that requests for assistance are likely to be accompanied by feelings of frustration. Strategies must be initiated to increase interactions with students and to offer assistance before it is requested.
5. Fifthly, students, fascinated by technology, will use electronic references such as a CD ROM index, even when this use is inappropriate.

Implication: Teacher librarians should make every effort to provide electronic access to references in the School Library Resource Centre, as well as access to databases located elsewhere. Students need frequent opportunities, as a part of on-going assignments, to use this equipment and to determine its appropriateness to a particular information seeking project.

6. Finally, the location of a computer facility visibly adjacent to and easily accessible from the School Library Resource Centre appears to encourage the students to make use of available technology to complete their information seeking projects and, at the same time, allows for increased interaction with the teacher librarian and their teacher.

Implication: Teacher librarians must make every effort to provide easy, open access to a computer facility in elementary and secondary schools. A greater integration of the school
curriculum is likely when the computer facility is adjacent to, or a part of, the School Library Resource Centre. Administrators need to be aware of the need for increased staffing to cope with the increased work load associated with the management of such a facility.

Research and this current study indicate that teacher librarians who plan cooperatively with the classroom teachers in the school and who integrate information seeking skills with curriculum based student projects do make a difference in improving the students' facility with the information seeking process.

Teacher librarians should be encouraged to step out of their daily role and observe the realities of students engaged in the information seeking process. This study has allowed a practising teacher librarian time to observe the behaviours of secondary school students working in a school library resource centre and to talk to them about their perceptions of information seeking. The result has been an increased understanding of the successes and frustrations experienced by the students during information seeking and a sharpened sense of the importance of the teaching role of the teacher librarian.

The information seeking process is seen by students as a positive experience which invites them to be participants and partners in their own education; teacher librarians and teachers need to use the information seeking process as the ideal strategy in the implementation of the Year 2000 philosophy throughout the educational system in British Columbia.
REFERENCE LIST


Saskatchewan Association of Educational Media Specialists. (1986). The fourth r: Resource based learning in the school curriculum. Saskatoon, SA: Author


The following sample prompts have been designed for this study to assist reflective journal writing:

I am interested in my topic because...
I like working in the library because...
I like looking for information for a project because...
I found out that...
When my class comes to the library tomorrow I will...
Today I felt frustrated because...
My next task is to...
Today I did a lot of work on my topic. I...
I asked the librarian or my teacher for help with...
What I notice about looking for information in a library...

In a final journal entry, students were asked to reflect on the information seeking process by prompts such as:

When I think about looking for information in a library at first I feel...
Later I feel...
When I look for information in a library I used to...
Now I...
Some things I do well when looking for information...
Some things I'd like to improve are...
APPENDIX B  SAMPLE INTERVIEW QUESTIONS

1. What do you do first when you begin researching a new information seeking topic?

2. Do you ask someone for help before you begin looking for information on your topic?

3. Is it helpful for you to talk to others about your topic?

4. Do you prefer a research topic assigned by your teacher?

5. Do you prefer to choose your own research topic?

6. Do you have difficulty selecting a research topic?

7. Do you ask for help in locating materials?

8. Do you look for materials other than books?

9. Does the card catalogue list all the sources of information you need?

10. Do you take notes from each source of information as you read each one?

11. Do you like to find everything first and then take notes?

12. Do you become more interested in your topic as you gather information?

13. Do you have a central theme for your topic before you begin looking for information?

14. Does a central theme emerge as you gather information about your topic?

15. Do you have difficulty finding information on a topic?

16. Do you find as much information on your topic as you can before you stop looking for information?

17. Do you ask for help after you have begun looking for information on your topic?

18. Do your thoughts on your topic change as you gather information?
19. Do you have difficulty finding information in a library?

20. Do you find one or two sources of information on your topic and then stop looking for more information?

21. When is your information search complete?

22. Does researching a topic take less time than you thought?

23. Do research assignments add to what you learn in a course?

24. Does the library have all the information you need?

25. Does researching a topic take more time than you thought?

26. Are you successful in finding information in the School Library Resource Centre?

27. How do you evaluate your progress through the information seeking process?

28. Do you stop and think about what you have done and what you still have to do?

29. What are some of the things you do well when you look for information?

30. Are there any information seeking skills you would like to improve?
The School Community

The first feeder school is located at the eastern edge of the expanded city limits, about 15 km. from the centre of Prince George. The school community is classed as semi-rural with many homes clustered along the two main highways which roughly define the boundaries of the school's population.

The area, one of the first to grow outside the city limits, is a fairly stable economically lower middle class one with most children coming from two-parent families where the main wage earner is the father and a high percentage of mothers manage the home life. The education level of the parents is varied, ranging from non-completion of high school to a scattering of university educated professionals. The blue collar workers are mainly associated with the logging and trucking industries and some are self-employed as truckers and small logging contractors. Some professional people live in the area because it offers a semblance of country living while being reasonably close to the amenities offered by the city. This segment of the population is increasing and the school is consequently one of the faster growing ones in the district. The ethnic and recent immigrant population is almost non-existent. The parents are generally very supportive of the school and keenly interested in its activities. There is no lack of parental supervision and assistance with school events.
The community interests are dominated by sports and other outdoor activities such as fishing and snowmobiling. There is a separate, heavily used community centre and ball diamond next to the school grounds. Most families have reliable car access to the city and a number of children are taken to the pool or the arena for swimming and skating or hockey lessons.

The School

The school presently has a population of 396 students ranging from Primary 1 (Kindergarten) to Intermediate 1 (Grade 7). More than half the students are bus students. The curriculum is standard but the classroom presentation ranges from traditional to a multi-aged integrated curriculum. Some teachers are using many Year 2000 teaching strategies while others are moving more slowly in this direction. Generally, the school has a whole language/library focus.

The philosophy of the school is child centered with the responsibility for education shared by the school and the home. The child is expected to be an active participant in his/her own education.

The Students

The 396 students have a wide range of abilities and learning styles. Many students are fairly mature and take on helping duties at school. They are accustomed to daily chores at home and are responsible for getting themselves and their siblings on the school bus twice a day. Their aspirations reflect their parents' occupations and lifestyles.
The Library

The school library is located in the centre of the school and is large enough to accommodate two classes at the same time, although it is more comfortable with one class and a small group. The teacher librarian has a .8 FTE contract and a part-time clerical is assigned to the library. The library is accessible to teachers and students during school hours.

At the beginning of the school year orientation visits to the school library are held for every class. There are no formal 'library lessons' and the teacher librarian follows a reasonably aggressive policy of promoting cooperatively planned library projects, using the district developed Scope and Sequence of Library Skills as a guide to ensure that students are taught an appropriate range of information seeking skills. When Enrichment time is assigned to the school it is usually spent on projects in the library. The Administration is very supportive of this approach. The collection consists of approximately 7200 titles,* mainly print, and there is a teachers' professional collection. The library circulation system is fully automated. The district has no formal interlibrary loan system but an informal one exists among teacher librarians.

*Note: The District Resource Centre has a large audio-visual collection which is accessible to all the teachers in the district on a very fair and equitable booking schedule. District long range plans include the automation of all the school libraries but cut-backs in funding have so far limited the fully automated libraries to one elementary and one secondary.
The School Community

Located on the main north-south highway, the second feeder school is just outside the south eastern edge of the city limits about 20 km. from the city centre. Unlike the stable, long established school community of the previous feeder school, this community is not a unified one. Its main components are a large Canadian Croatian population, a core of long time residents, a number of younger families and a segment of economically disadvantaged, principally single parent families. In addition, there are a number of well established hobby farms primarily owned and run by university educated professionals and their families who have chosen to work in the city and live in a rural setting. Many of the non-professionals own small businesses, are self-employed at some occupation associated with logging or work at one of the pulp mills. This is an economically and socially mixed community, ranging from low to upper middle class. Most of the parents view education as critical to their children's futures and are very supportive of the school and its activities while some view education and school attendance as unimportant.

Many families take advantage of the cultural and recreational offerings in the city. Music, dance and hockey are probably the main town interests while softball, horseback riding and 4 H activities are important community pursuits.
The School

Presently the school population is 225 and the grade levels are Primary 1 - Intermediate 1 (K - 7). The majority of the students are bus students. The school population has declined in recent years as families have grown up and the area population has stabilized. Teachers have made efforts to bring in new teaching styles. There is a trend away from structured classrooms and a swing toward cooperative teaching strategies in order to cope more effectively with the range of learning styles present in every classroom. Every effort is made to meet the individual needs of the students. The staff is very collegial with many choosing to remain at the school year after year.

The Students

The 225 students have a wide range of abilities and learning styles. There are few ethnic students other than the Canadian Croatian population which provides a few ESL students each year. The maturity level of the students varies, but many have grown up in a very protective home environment where their horizons are limited to caring for their horses and their 4-H projects. Others, from single parent families, have had to accept responsibility for younger siblings while the parent works away from home.

The Library

The library is located at the centre of the school and has a seating capacity of about 35. The collection consists of 7000 mainly print items and includes a small Professional collection for teachers. The teacher
The librarian is .8 FTE and has some clerical time assigned to the library. The library is fully accessible to teachers and students.

Orientation sessions are held for every class in September. With only one exception, the teacher librarian plans cooperatively with all the teachers on staff. Most library projects involve group work which incorporates curriculum with information seeking skills. Occasionally, whole class lessons to teach new information skills or to reinforce skills as necessary are given prior to practising the skills in a library project. When Enrichment time is available to the school it is usually spent on extended library projects. The teacher librarian has been at the school for some time and feels very comfortable with the administrative support received from various principals.
PROFILE: FEEDER SCHOOL 3

The School Community

The third feeder school is located outside the city limits and about 25 km. south east of the city centre. It is surrounded by family run farms, large houses located on acreage and hobby farms owned by professionals such as medical practitioners and teachers who wish to live in a thoroughly rural setting.

The area which contains the school's population is very pretty, with its large open fields, dirt roads, trees and quiet rural atmosphere. Many of the people here farm to raise their own food, support their livestock and earn a small second income. In these cases, the partner earns the main income by working in the city, frequently in a service industry, or, in the case of the male partner, at a variety of blue collar jobs. Foster children are placed in homes in this area and contribute slightly to family income. The background of the population is mainly white Anglo-Saxon with a very few recent immigrants and the economic status is middle to low income. Families are very supportive of the school and are frequent volunteers at school events and field trips. The community is a country one with the tradition of sharing and helping. There is a large volunteer fire department, the members of which contribute in many ways to community life. There is an active 4 H club. Most of the families see that their children have access to the city recreational facilities, but a small percentage of the school population has never visited the city.
The School

The school has 140 students. This number has been reached by a slow decrease in the population over the past few years. The teaching strategies employed by the teachers are moving strongly toward Year 2000, and the focus of the school is changing slowly but steadily from traditional single grade classrooms to multi-grade integrated classrooms with the philosophical emphasis on the child as an active partner in his/her education along with the teacher and the parents.

The Students

The 140 students display the usual wide range of abilities and learning styles. The four ESL students in the school this year are more than there has ever been at one time. Generally the students are mature and responsible. They are expected to do farm chores, look after their 4 H animals and help look after younger siblings at home. Many students help in various ways in the school.

The Library

The library was created out of two full classrooms and is a large pleasant room with a collection of about 5000 print items. There is a large professional collection which the teacher librarian says has to be severely weeded. The library is located in the south west corner of the school away from the office area and near the primary classrooms. The teacher librarian is assigned to the library .5 FTE. There is no designated clerical time but the office secretary does the library clerical work. The library is open during school hours and the teacher librarian is available more than
the .5 FTE would indicate as she also provides preparation time for the regular classroom teachers.

It is the practice in this school to offer library orientation sessions to every class at the beginning of the school year and to teach 'library lessons' on such topics as note taking, outlining, use of the card catalogue and the Dewey decimal system throughout the year. Not all classes are covered every year if the teacher and the teacher librarian do not feel that a class needs a particular lesson. The teacher librarian also works with groups of students on projects which are usually planned by the teacher. Sometimes the teacher librarian assists in the planning. As Year 2000 teaching strategies are adopted, the use of the library is increasing. The teacher librarian feels that the Administration supports her management of the library.
The School Community

The fourth small feeder school is located some 50 km. north east of Prince George. The community originally grew up around a prosperous saw mill which then closed about 15 years ago. The houses which belonged to the saw mill were auctioned off and many of them were moved. In effect, the community was closed down but many people chose to stay and the school was kept open. The main occupations in the community now are farming and independent logging. Many people work outside the community. The population is a mixture of those who are long time older residents and those who follow one of several alternative life styles. The people who live in this community are those who wish to live in a relatively isolated place and do all their business 50 km. away. Since the village is located on the west bank of the Fraser River it is fairly regularly cut off in the spring when the river floods from the spring runoff or in the winter from ice jams. Community interests centre around outdoor activities and the school.

The School

The school population presently stands at 50. It is funded by the district on the same basis as larger schools but because the population is small it is not a school rich in material resources. Teachers must be flexible as their assignments always include multi-grade classes. Year 2000 teaching strategies are suited to these kinds of classes and have been
adopted by the teachers.

The Students

The 50 students have a real sense of ownership of their school and they perform many helping and sharing tasks in the school and in their classrooms. Discipline problems are uncommon in schools like this one.

The Library

The school has a library with a small collection. Limited funding means that the library allocation is minimal. The collection is not up-to-date and looks worn and shabby. The teacher librarian is assigned to the library on a .1 FTE contract, which amounts to one afternoon a week. This time is spent on clerical tasks, trying to keep some order on the shelves and in the circulation. There is no time for a library programme and consequently the students know little about using library resources. The library is supported by the Administration of the school to the extent that it has not been closed.
PROFILE: SECONDARY SCHOOL

The School Community

The school is located in the same area as Feeder 1 and draws its population mainly from the first three of the four previously described feeder schools. There are two more small feeder schools, each located in a discrete community, one 30 km. to the south of the city and the other 60 km. south. The principal occupations in these two communities are centered around logging and trucking and the economic status of both could be described as low to middle. Profiles have not been developed for these two feeder schools because the sample of students in the classes in the study from these feeders in the study was too small.

The parents of the students are primarily blue collar workers, some self-employed in businesses associated with logging and trucking. A minority is university educated professionals who live on hobby farms and a few are farmers. There are relatively few single parent families and about sixty percent of the mothers do not work out of the house. If they do, they are usually either teachers or are employed in a service industry. The ethnic background is Anglo-Saxon and with the exception of the Croatian community the immigrant population is very small.

Secondary schools traditionally do not receive as much direct parental support as elementary schools and this one is not an exception. Some parents are active volunteers at school events. Most of the parents do think that education in the basics is important and this is reflected in
their children's attitudes toward school and their courses.

Outdoor sports and activities are important in this community. Many people own snowmobiles and ATVs. Horseback riding is the principal leisure-time activity for a number of students and a substantial number of students are active in 4 H clubs. Many parents make sure that their children continue to have access to the recreational and cultural possibilities in Prince George.

The School

The school has 320 students who are in Intermediate 2-4 (Grades 8 - 10). The school has been involved in a year 2000 Site Development project and last year had a class of Intermediate 3 (Grade 9) which integrated English and Social Studies and did some project work with an Intermediate 1 class (Grade 7) from the elementary school. The students called their class the Year 2000 one and many students chose to stay with the same teacher this year, although English and Social Studies are not integrated in Intermediate 4 (Grade 10). Other than this Site Development Project and team teaching by Intermediate 2 (Grade 8) teachers, the curriculum is delivered in a traditional manner. Teachers have always made an effort to accommodate individual needs both in their classrooms and through learning assistance. The ability range of the students is very wide and their learning styles are varied. As in the feeder schools, there are never more than a few ESL students. The school philosophy commits the school to provide each student with the opportunity to develop to his/her fullest potential culturally, socially, academically and physically.
and to provide the best possible environment to achieve this.

The Students

The students from Feeder School 1 see themselves as a distinct group, different from the rest of the students in the school. Because their elementary school is across the road, they have a proprietary feeling about their secondary school and they also see their area as being the most settled and stable of all the feeder areas. As only about half of this group travels by school bus, they are the ones who have more time to help at various tasks around the school.

The aspirations of the students reflect those of their parents. Most want to go on to the senior grades; some want just to get a job so they can buy a truck; some want to go to college or a trade school after they finish high school; a few want to go to university and have expressed interest in the new University of Northern British Columbia in Prince George, realizing that this offers an opportunity that was not available a few years ago. The aspirations of a number of the girls include getting married and having children.

The Library

The library has recently been expanded into what was the corridor and is a much more attractive, less crowded room with sufficient seating spaces for two classes. It is located on the second floor of the two story wing, on the east side of the school. The Shops, the Home Economics rooms, the Computer Laboratory and the Science Laboratories are also located in this wing. The regular classrooms are in another wing quite far
from the library. The collection has just been thoroughly weeded and has about 5000 mainly print items. There is a CD ROM magazine index which receives heavy use and a modem which students and teachers use to access the audio-visual collection at the District Resource Centre. The various departments in the school have their own small professional collections and there is a modest one in the library.

The teacher librarian holds orientation sessions in the fall for students new to the school and other classes as necessary. She worked extensively with the Year 2000 class on library projects and has continued to build on that base and to plan cooperatively with other teachers as well. The principal is supportive of libraries and librarians. He feels that the teacher librarian has made it easy and pleasant for teachers to make library research a necessary part of their curriculum.
Consent Letter, parents of students in participating classes:

My name is Anne Rowe. I am a teacher librarian at Prince George Secondary School. I would like to ask your permission to allow your child to take part in a small research project which I am conducting as a part of the requirements for a Master of Arts Degree in School Librarianship at the University of British Columbia. The title of my project is Exploring the Interaction of Secondary School Students and Information Seeking.

The purpose of the research is to gather information about the thoughts and feelings of secondary students as they engage in a library project which involves information seeking. In addition, information about strategies the students use to monitor their progress during the information seeking process will be gathered.

Your child will engage in a typical library research project which will be part of the regular curriculum. The students will be asked to keep a journal recording their thoughts and feelings about looking for information in the library for the project. I will observe the students as they complete their library project and will have informal conversations with them. Some students will be asked to take part in semi-structured interviews about the search process. The interviews will be recorded. The time needed for the interviews (about 30 minutes) will be the only extra time required. Interviews will be arranged at the students' convenience.

Complete anonymity will be maintained by no use of student, teacher or school names. After the data analysis has been completed the data will be destroyed.

Please complete the attached form and have your child return it to me at the next class. Thank you for your cooperation. If you have any questions about the project please contact me at 562-6441(PGSS) during school hours. My Faculty Advisor is Dr. R. Jobe, Faculty of Language Education, U.B.C., telephone 1-(604)-822-5233.

Yours truly,
To: Anne M. Rowe, Teacher Librarian, Prince George Secondary,
C/O Blackburn Junior Secondary School

I request that my child participate in the research study as described on the foregoing page. I understand that complete anonymity will be maintained and that the data will be destroyed upon completion of the project. I understand that my child has the right to withdraw from the research study component of the information seeking project and that such withdrawal will not jeopardize his/her academic standing. I also understand that students who do not participate in the research study component of the information seeking project will complete the information seeking project as a part of the regular curriculum in this course.

There are two pages to this consent form. As well as indicating your willingness for your son/daughter to participate in this project, your signature also acknowledges that you have read both pages.

I consent to have my child participate in this study.

Signed ____________________________

I do not consent to have my child participate in this study.

Signed ____________________________
My name is Anne Rowe. I am a teacher librarian at Prince George Secondary School. I am conducting a small research project as a part of the requirements for a Master of Arts Degree in School Librarianship at the University of British Columbia. The title of my project is Exploring the Interaction of Secondary School Students and Information Seeking.

The purpose of the research is to gather information about the thoughts and feelings of secondary students as they engage in a library project which involves information seeking. In addition, information about strategies the students use to monitor their progress during the information seeking process will be gathered.

Students will engage in a typical library research project which will be part of the regular curriculum. The students will be asked to keep a journal recording their thoughts and feelings about looking for information in the library for the project. I will observe the students as they complete their library project and will have informal conversations with them. Some students will be asked to take part in semi-structured interviews about the search process. The interviews will be recorded. The time needed for the interviews (about 30 minutes) will be the only extra time required. Interviews will be arranged at the students' convenience.

Complete anonymity will be maintained by no use of student, teacher or school names. After the data analysis has been completed the data will be destroyed.

The University of British Columbia and School District 57 require that written consent be obtained from those participating in any research project. Please indicate your willingness to participate in this project by signing the attached form and returning it to me.

Thank you for your cooperation. If you have any questions about the project please contact me at 562-6441 (PGSS) during school hours. My Faculty advisor is Dr. R. Jobe, Department of Language Education, U.B.C., telephone 1-(604)-822-5233.

Yours truly,
To: Anne M. Rowe, Teacher Librarian, Prince George Secondary,

I am willing to participate in the research study as described on the foregoing page. I understand that complete anonymity will be maintained and that the data will be destroyed upon completion of the project. I understand that a student has the right to withdraw from the research study component of the information seeking project and that such withdrawal will not jeopardize his/her academic standing. I also understand that students who do not participate in the research study component of the information seeking project will complete the information seeking project as a part of the regular curriculum in this course.

I am willing to be interviewed as a part of this project.

There are two pages to this consent form. As well as indicating your willingness to participate in this project, your signature also acknowledges that you have read both pages.

I consent to participate in this study.

Signed ___________________________

I do not consent to participate in this study.

Signed ___________________________