INFORMATION SEEKING BEHAVIORS AND ATTITUDE TO INFORMATION AMONG EDUCATIONAL PRACTITIONERS

by

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SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF EDUCATION

in

THE FACULTY OF GRADUATE STUDIES
(Department of Education,
Department of Reading)

We accept this dissertation as conforming

to the required standard

Thesis Supervisor

UNIVERSITY OF BRITISH COLUMBIA

February, 1979.

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Date April 20, 1979

ABSTRACT

This study investigates the personal, professional and psychological characteristics of the users of information; their purposes for seeking information, the sources they use, the characteristics of sources that are important to them, and the problems they encounter in seeking or using educational information. In addition, an attitude to information scale, developed to measure users' affective response to information, was analyzed to determine the extent to which it reflected a 'hierarchy' of growth and development.

A questionnaire was designed, pilot tested, revised and mailed to a random sample of teachers, administrators and support personnel in the schools and district offices of education in the province of British Columbia. Responses from 1,037 educators were analyzed.

Position and attitude both had strong correlations with experience, education, and information dissemination. Sense of isolation was not significantly related to position or attitude, but did differ from region to region, although not on a simple geographic distance factor.

The fifteen-item scale designed to measure attitude to information was analyzed to determine whether a 'hierarchy' of development and growth of attitude could be confirmed. Although a five-level taxonomy was not confirmed, a less concise, three-level hierarchy was confirmed.

Fifteen possible purposes for seeking information were rated as to their importance to respondents. These ratings were used as a basis for grouping the nine position categories into four classes. In addition they were analyzed to identify the effects of Position on Purposes. A significant and complex relationship was revealed by this analysis.

Thirteen sources of educational information were rated on frequency of use. The results of analyses indicate that different position groups do use different sources when they seek information. It also showed that while the use of nearly all sources increases with post-graduate university study, there is little or no difference between those who have no university degree and those who have no more than a bachelor's degree. For only one source, "educational journals", did frequency of use change with increased years of experience; but the rate of dissemination reported and the total score on the attitude to information scale were both directly and significantly related to frequency of use of sources.

Multiple regression analyses of sources extended and illuminated these bivariate relationships. Attitude, dissemination and position (measured using three planned contrasts) were significant in explaining the variance of nearly all sources. Experience, education and isolation were each significant for relatively fewer sources, and at a lower level of significance.

Eleven characteristics of information sources were rated by respondents according to importance. All characteristics were considered important by all groups (all means >2.5, the midpoint of the scale). Least important were "is free or inexpensive" and "provides access without involving others"; most important were "is authoritative, accurate, reliable and objective" and "is likely to have the information I need". Attitude to information was highly related to importance of characteristics.

Ten problems were rated as to the difficulty they cause. Only one, "finding time to look for or read information" had a mean greater than 2.5, the midpoint on the scale. This suggests that respondents did not see most of the problems as barriers to getting information. Position was not a major factor in explaining the variance of problems, indicating that problems are idiosyncratic, related to the level of use of sources or to personal style of users, but not to position category.

The final item on the questionnaire was an open-ended question asking for a personal statement of an "ideal" information system. The 673 responses were tabulated and reported as frequencies, and 27 categories were developed. The most commonly cited characteristics of an "ideal" information systems were 1) computer retrieval and/or ERIC, 2) improved district libraries, 3) improved school libraries, 4) time to seek and use information, 5) courses and workshops, and 6) information personnel in the district.

Table Of Contents

List Of Tables

Figure

ACKNOWLEDGEMENT

There are many who were essential to the completion of this task. My thanks go:

To my parents who supplied the genes and the example that made it a posibility;

To Dr. E. G. Summers who introduced me to big, little and information science and who guided much of the venture;

To my dissertation committee for their interest and support, and a special thanks to Dr. R. Conry who taught me how to measure and who carefully oversaw the design and the final stages of the study;

To all the faculty and graduate students who shared and cared;

And, most of all, to my husband Don, and our six children, who not only thought that I could, but believed that I should.

CHAPTER I

INTRODUCTION OF THE PROBLEM AND RELATED RESEARCH

Introduction

The exponential growth of scientific literature has been well documented (Cuadra, 1966; Borko, 1967; Weisman, 1972; Kochen, 1969). In 1963 Price wrote, "It is reasonable to suppose that the volume of scientific literature published during the next decade will roughly equal that having been produced from the beginning of science to its present time" (p.37). It was estimated that during every sixty seconds of the twenty-four hour day, more than two thousand pages of text were published throughout the world (Shera, 1966). In 1969 the Science Council of Canada reported:

> Since the 17th century, there has been an annual growth in scientific literature of 7 percent-- a growth factor of 10 for each half century. This year, 3,000,000 articles in some 35,000 journals are being published in more than 60 languages (Special Study No.8, p.3).

This tremendous growth in published materials was often referred to as an "information explosion". However, Licklider (1966) suggested that "what is happening in scientific and technical communication is more closely analagous to a flood than an explosion" (p.1044). Whatever it was named, the effects of the increase in print information were not all positive. While the growth reflected a strong and active scientific community conducting research and reporting its findings, it

also posed the problem of assimilation for those in the field. Licklider (1966) said, "It is our unique experience to live and work through the period in which individual mastery of a field turns from possible to impossible"(p.1045). Almost ten years later, Licklider's prediction was confirmed by Borko and Bernier (1975): "The literature has now expanded to such an extent that every person is experiencing difficulty in keeping up with his own field of interest"(p.4).

When "every person" is having trouble keeping current with his own scientific field, then the methods of information production, management, and dissemination must be examined, evaluated and improved.

Information Management

In response to this exponential growth of reported scientific findings, a new science was developed, the science of information, or as it became known, Information Science. Information Science was defined by Borko (1968) as

> An interdisciplinary science that investigates the properties and behaviors of information, the forces that govern the flow and use of information, and the techniques, both manual and mechanical, of processing information for optimal storage, retrieval, and dissemination (p.5).

In 1966 the first Annual Review of Information Science and Technology (ARIST) was published. At that time the field of information science was still undefined. Views of the new science included an elaboration of traditional library practice, machine manipulation of linguistic or numeric data, processing

or analyzing scientific documents, and a means of interpersonal communication. The annual review was designed to encourage intercommunication between the various factions and to accelerate fusion of the parts into a unified field of scientific enquiry (Cuadra, 1966).

As information scientists became more proficient at collecting and processing the vast quantities of information being produced (Bourne, 1962; Lipetz, 1966; Murdock & Liston, 1967; Science Council of Canada, Report #6, 1969; Saracevic, 1971; Weinberg, 1971), they became aware that merely categorizing material and making it available did not solve the information problems of the scientists, technicians or practitioners in the various fields of natural or social sciences. In spite of their efforts, there was still a gap between information production and information use.

One example of this phenomenon was the conceptualization and development of the Educational Resources Information Center (ERIC) for the field of education. Relevant documents were located, labelled by descriptors, abstracted and entered into a computer system. The designers of ERIC, recognizing the need for synthesis, collections of related documents, annotated bibliographies, and indexes, directed the clearinghouse personnel to produce new documents that would bring together the information on specific topics.

Paisley (1971) commended the ERIC system for its efforts, but noted that "even knowledge of ERIC's existence declines

abruptly as we move from 'cosmopolite' researchers and professors to 'localite' administrators and teachers"(p.403).

In the natural sciences concern for the user, the individual who needs the information for his work, was expressed in the number of studies that were concerned with user characteristics and behavior (Herner, 1954; Menzel,1960). In the first volume of ARIST, Menzel (1966) said,

> The way in which scientists and engineers make use of the information services at their disposal, the demands they put to them, the satisfaction achieved by their efforts, and the resultant impact on their further work are among the items of knowledge which are necessary for the wise planning of information systems and policy (p.41).

He noted that "user studies" were just beginning to emerge as valuable sources of facts about user activities.

Two years later, Paisley (1968) could report "a significant literature" of information needs and uses (p.1). He recognized evidence of "mutual education and accommodation" between information science and behavioral science in developing this literature.

Martyn (1974) provided a history of the development of user studies. He noted three new trends in the purposes of user studies: (1) to design or re-tailor information systems, (2) to investigate information flow in areas other than science and technology and (3) to discover the role of information at different stages of research activities.

As interest in users grew, articles and books reviewed past studies and discussed new and better methods of investigating information users and their needs (Herner, 1954; Bernal, 1960; Borko, 1962; Rees, 1963; Parker & Paisley, 1966; Wood, 1969, 1970; Bernier, 1971; Kugel,1974).

The importance of connecting the person who needed information to the sources where it could be found was recognized in the social science field of education.

Information Users in Education

The disseminators and users of educational information, their characteristics and habits, have been investigated by several researchers (Chorness, Rittenhouse & Heald, 1968, 1969; Rittenhouse, 1970; Summers, 1972, 1974). Havelock (1967, 1969) identified eight separate classes of "linkers", individuals who naturally tend to find information and link it to the people who need it. When these linkers act individually without support or formalized position, their effectiveness is restricted. Havelock suggested that there should be a recognized role within an established organization so that a systematized link could be developed.

In the United Kingdom in 1967, an Investigation into Information Requirements of Social Scientists (INFROSS) was undertaken (Line, 1969, 1971; Brittain, 1970). One section of this investigation was concerned with researchers and practitioners in education. The teachers shared with other social science practitioners shortage of time and lack of

awareness of information tools. In contrast to practitioners in other fields, however, the researchers found that teachers,

> where they were not plain apathetic showed some suspicion, even hostility, towards educational research; they saw the need to keep up with the subjects they taught, not with educational theory, research and practice. Education was to them something one did, not something one found out about (Line, 1971, p.429).

Line reported that, from the responses,

> the greatest difficulty concerns research information. It is of little use to convey 'raw' research to the practitioners in the form of journal articles and research papers; what they need is carefully prepared and temptingly presented packages, summarizing and evaluating research findings that are sufficiently established for their practical implications to be clear.... Since practitioners have an even stronger preference for informal communication than researchers...thought should also be given to developing channels of informal communication, whether these be contacts with local institutions of higher education, or access to a central or regional information centre (p.429).

Line strongly recommended the use of personal intermediaries, noting that previous attempts to simplify information tools to make them usable had lessened their effectiveness, while attempts to educate practitioners to use existing systems had not been very successful (p.430).

Paisley (1972) reported on "Developing a Sensing Network for Information Needs in Education". This study tested five separate methods of information needs assessment: (1) a thirteen state survey of information needs; (2) a follow-up of educators who had requested information from an ERIC clearinghouse or

local information center; (3) an "information specialists" study in which expert personnel attempted to project the information needs of their clients; (4) a toll-free "hotline" study in which educators were invited to phone for needed information; and (5) an educational serials study in which the topics coming in to the Current Index to Journals in Education (CIJE) were tabulated across four time periods. This study focussed on the content which users demanded and on the methods of delivery they preferred, but did not investigate user behavior in seeking information. As a result of the study, Paisley endorsed the survey as the single best method of identifying user needs. To investigate the method of delivery of information, five choices were presented. "Practical, how-to guidance" was most popular over all groups, with "Summaries of research" the preferred method among administrators and supervisors. All groups showed moderate interest in "News and professional current awareness" and "Case studies, descriptions of practice", but very little interest in "Original research papers" (Paisley, 1972).

Paisley points out that information needs data do not immediately result in policy changes. He compared information needs data to business indicators, as prerequisite to policy change, but not automatically resulting in change. He continued: "As measurement of information needs becomes more specific new delivery systems will be required to match need specificity with response specificity" (1972,p. 108).

Four years later, Hood and Blackwell (1976), at the Far

West Laboratory for Educational Research and Development, published their "Educational Information Market Study". This market analysis of educational information service needs was conceived as "an antecedent to determining the specifications for developing an information system more responsive to the needs of education users" (Vol I, p. II-1). The research team hoped to discover homogeneous sub-groups of educational information users. "If significant, meaningful patterns can be established there would be at least a beginning basis for designing or redesigning information products and services in terms of needs of different classes of users" (Vol I, p. I-3).

An Education Information Use Model was developed which posited the relationships between seven variables: context (location, organization), position (type, work activities), person (age, sex), information resources (perception of isolation), sociometric information exchange (give to, come to), purposes (type, task), and sources used and/or preferred. The results of the study indicated that there are many significant differences among educational sub-audiences, and that the patterns of information use have multiple determinants.

Hood and Blackwell concluded that "the educational information market is quite easily segmented by work roles" (Vol II, p. I-19), and that "this information can be used to improve existing information systems and to design new products and services targeted to the needs and preferences of various sub-audiences " (Vol II, p. I-19).

Investigating the demographics and the professional environment of users can give some insight into which of these factors, singly or in combination, influence the information sources used by educational practitioners.

There is another facet of the user that might also influence the sources used. King and Palmour (1974) suggest that the "psychological make-up, such as personality characteristics, attitudes, ability to learn and change" might be an informative way to classify users. Martyn (1974) suggested that new studies "...should add to our knowledge or our understanding of user attitudes and behavior" (p. 5).

Hood and Blackwell (1976), in their summary of results of the Educational Information Market Study, said:

> There are distinct patterns of information use that characterize people, and ... people who tend to use similar patterns are only sometimes in the same types of jobs or positions. Thus, patterns of purposes and sources may be as much personal styles as they are requirements or consequences of particular jobs or positions....Although these findings of distinct patterns of information use that are only partially related to job type are extremely speculative at this point, they are interesting enough to warrant further investigation (Vol I, p. I-5).

It was to investigate further this area of "personal styles" that the Attitude to Information scale was developed for this study. It is hypothesized that attitude to information will have a significant effect on the choice of sources used.

Attitude to Information

The measurement of attitudes in any field is a subtle and complex task. Social psychologists have been studying attitudes for many years. Triandis (1971) synthesized the wide range of definitions and directions and offered a classification of attitude which included three components: cognitive, affective and behavioral. The cognitive component is made up of the ideas built into the attitude through a person's own perception of the world; the affective component is the emotional component, how a person "feels" about an issue; and the behavioral component is a measure of the overt actions and habits of the individual. All of these components must be included if attitude is to be measured completely.

Krathwohl (1964) and his associates looked at the acquisition of an attitude as a slow, subtle process quite different from the process of acquiring a concept. After a long and careful examination of "interests, attitudes, appreciations, values and emotional sets or biases", they produced A Taxonomy of Educational Objectives: the Affective Domain. This taxonomy offers a classification of the stages of attitude development based on a thorough study of the relevant literature and research:

1.0 Receiving (attending)
    1.1 Awareness
    1.2 Willingness to receive
    1.3 Controlled or selected attention
2.0 Responding
    2.1 Acquiescence in responding
    2.2 Willingness to respond
    2.3 Satisfaction in responding

3.0 Valuing
    3.1 Acceptance of a value
    3.2 Preference for a value
    3.3 Commitment (conviction)
4.0 Organization
    4.1 Conceptualization of an idea
    4.2 Organization of a value system
5.0 Characterization by a value
    5.1 Generalized set
    5.2 Characterization.

There have been some attempts to operationalize and use the affective taxonomy in education. A recent study (Mikulecky, 1976) provides a useful model. The Multi-Stage Behavioral Reading Attitude Measure (MBRAM) developed for the study was designed to take into account both Triandis' three components of attitude and Krathwohl's developmental process of acquiring an attitude. Items of the measure described specific behavioral situations which reflected the five stages of Krathwohl's taxonomy. Included within the items were references to ideas, feelings and values. Respondents reacted to these realistic situations, along a five point scale, as being "very like me" or "very unlike me". The use of Krathwohl's taxonomy as a framework for developing attitude items seemed appropriate for designing an attitude to information measure for this study.

Summary

The recent growth in published literature led to the development of a new science, Information Science, to investigate and manage the flow and use of information. As the control of information sources became more sophisticated, concern grew for the problem of linking information to the ultimate user.

The information user in the natural and social sciences was studied to identify his needs and habits. In the field of education, Havelock (1967) examined the natural linkers and advocated an organizational role for them. The INFROSS study revealed practitioner attitudes to information. In response to those negative reactions, Line (1971) recommeded new ways of packaging research results and new methods of communication, especially the use of a human intermediary.

The Educational Information Market Study (Hood & Blackwell, 1976) investigated a number of personal and professional factors and related them to the sources used/preferred by educators at the school, district and state levels.

Other researchers discussing user studies suggested investigation into the attitudes and personal styles of the users of information (King & Palmour, 1974; Martyn, 1974). Mikulecky (1976) provided a model of attitude scale development that can be useful in producing a measure of attitude to information.

If "information is the essential ingredient in decision-making" (Kochen, 1974), then information must be made available to the decision-makers in education. How to do this effectively and efficiently is a major problem in education today.

CHAPTER II

STATEMENT OF THE PROBLEM

The problem addressed by this study is that of improving linkages between information contained in the literature of education and those educators in the field who need it for decision-making.

The literature review has indicated that knowledge about the user, his information needs, his present information-seeking behaviours (and the factors which influence them), and his attitudes is essential for the design or reorganization of information dissemination systems.

The specific purposes of this study are:

1. To develop a questionnaire to measure:

(a) The professional and personal factors of position, years of experience, sense of isolation, level of education, and information dissemination;

(b) The psychological factor of attitude to information; and

(c) The purposes for seeking information, the sources used, the characteristics of sources that influence their use, and the problems encountered in seeking and using information sources.

2. To investigate the extent to which professional, personal and psychological factors relate to each other and influence the choice of sources used.

3. To determine the extent to which the attitude-to-information scale reflects a 'hierarchy' of attitude development and growth.

Significance of the Study

The questionnaire employed in this study will provide a knowledge base for the development or improvement of connections between information and educators. Used in conjunction with a content needs survey, it can identify specific content required by the educators being surveyed and the methods of dissemination they prefer. Giving the user the information that he wants, in the form he wants it, would increase the probability of transferring information from the literature to the decision-maker.

Analysis of the attitude to information section will illuminate the present attitudes of the respondents and will provide data on the validity of Krathwohl's taxonomy as a conceptual framework for designing scales to measure attitude.

Definition of Terms

The following terms are used throughout this study:

1. Information. Facts, data or statements of thought that can be communicated or used.

2. Knowledge. Information that has been processed by the user.

3. User. A person who acquires information in order to use it in decision-making.

4. Attitude to Information. Measurement of an individual's affective response to educational information along a scale that goes from mere awareness through responding, valuing and ultimately to a strongly positive attitude to the concept.

5. Sense of Isolation. The feeling of being isolated from the educational information sources the respondent would like to use.

6. Sources of Information. Places, people or materials to which respondents go to get the information they need.

Overview

The background of the problem, the related research literature, a statement of the problem and its significance, and definitions of key terms have been given in the the first two chapters.

Chapter III will introduce the procedures of the study. It will describe the development of the questionnaire, including the pilot study and its influence on the questionnaire, the sampling, the final questionnaire and the statistical methodology that will be used.

Chapter IV gives the analyses and results of the administration of the questionnaire. Chapter V will discuss the conclusions drawn from the study, the limitations, recommendations for further research and a final summary of the study.

CHAPTER III

PROCEDURES

To investigate the factors--professional, personal and psychological--that influence educators' choices of information sources used, a questionnaire was developed and administered to a sample of educators across the province of British Columbia. This chapter describes the development of the questionnaire, the sampling procedures and the data analyses used in the study.

Development of the Questionnaire

This section describes the development of the questionnaire including the pilot study and its influence. A later section describes the revised questionnaire with specific reference to each of the eleven sections. A copy of the pilot questionnaire is included as Appendix A; the final questionnaire appears in Appendix B.

The Pilot Study.

In June, 1977, an initial form of the questionnaire was distributed in a pilot study to three elementary schools and two junior high schools in Burnaby, British Columbia. Eighty-three questionnaires were returned from a possible 138 teachers and administrators, a response rate of 60.1%. Analyses of those results indicated where changes should be made to improve the questionnaire. The Market Study by Hood and Blackwell (1976) served as a partial model for design and content of the questionnaire. However, many deletions, changes and additions were introduced so that the questionnaire was more suitable for

the total population size, the Canadian location, the size of study planned and the difference in emphasis between the two studies.

As a result of the analyses of the pilot study data, several changes were made in the questionnaire. The section on work activities, which asked the respondent to indicate the percentage of work time spent at each of 14 work activities, was deleted from the study. Responses to this item in the pilot study were erratic (several reported three or more activities, each of which used more than 60% of their time), and the results obtained did not reveal new or useful information. For these reasons this item does not appear in the final questionnaire.

Sense of isolation was investigated with a section requesting respondents' self-reports of their feelings of isolation from the information sources they would like to use. Responses to this item in the pilot study showed little variance, since all the subjects were located in a single urban district adjacent to the city of Vancouver. This section was retained because the province-wide distribution should result in greater variance and give a clearer indication of whether sense of isolation is related to geographic distance.

The attitude-to-information section was designed to measure respondents' attitudes to the concept of educational information, and to determine whether a hierarchy of attitude development did exist, as suggested by Krathwohl (1964) and Mikulecky (1976). The existence of that hierarchy was partly confirmed in the pilot study, but several items did not seem to

reflect the stages of the taxonomy they were designed to measure. These items were rewritten to represent the appropriate stages more precisely. At the same time, the total score on the attitude scale proved to be a significant correlate of the reported use of eleven of the fourteen sources, in a multiple regression analysis.

The section concerned with purposes for seeking information was included as an open-ended question in the pilot study questionnaire. From the responses to that question, a list of fifteen purposes, structured by classifying the responses from the pilot study, was developed.

In the pilot study, fourteen sources were be classified by respondents according to frequency of use. The analysis indicated that "abstracts, reviews" and "bibliographies and booklists" had very similar responses, and that "dissertations or theses" and "unpublished research reports" were almost identical. Each of these pairs was merged into a single item. In comparing the responses of the pilot study to those of the Market Study, (Hood and Blackwell,1976) it became evident that an item reflecting "personal library" and "notes and files in my own office" should be added.

Characteristics of sources was expanded from the eight items in the pilot study to eleven, so as to include three additional items that were important in the Hood and Blackwell study. These three items were "Is responsive to my particular problem", "Keeps me aware of new developments", and "Is likely to have the information I want".

In the section about problems in finding and using information, four of the items in the pilot study included the word "understandable". The use of the word seemed to inhibit respondents from admitting that any of these was a problem, so two of these items were rewritten, and one, "finding understandable information", was replaced by "finding qualified personnel to help locate information". The latter item was added because response to the open-ended "ideal" system question had revealed a need for help from a person in seeking information.

The pilot study results proved valuable in redesigning the questionnaire for the final study.

Sampling

The sampling plan for this study was to identify a random sample of teachers, administrators and support personnel at the school and district level. The British Columbia Ministry of Education collects information on employment, grades and subjects taught, teaching experience, salary, class size, teacher training and certification, and level of education (a copy of this document, 'Form J', is in Appendix I). After these data are processed, a Form J teacher information file classifies

teachers and administrators according to eighteen positions, nine for each of the elementary and secondary levels. The positions of 'relieving teachers' at both levels and 'department heads' at the elementary level were omitted from the present study. The first step in sampling was to define the categories of professional level (hereafter called 'position'). Principals and vice-principals were assigned to the same category--'principal'--at each level. Within each district, superintendents and assistant superintendents were merged into one group, and all support personnel were merged into another. This resulted in nine categories of position: 1. elementary school teachers, 2. junior and secondary secondary school teachers, 3. secondary department heads, 4. elementary principals and vice-principals, 5. secondary principals and vice-principals, 6. support personnel in elementary schools, 7. support personnel in secondary schools, 8. district administrators and 9. district support personnel.

The second step was to enumerate the sub-populations in each of these nine categories. To do this, descriptions of the previous year's populations were obtained from the 1976 file of teacher information, constructed from the Form J data. Using those figures, sampling proportions were derived so that eventual samples would be of sufficient size. These sampling proportions were applied to district personnel lists to produce the final sample. Because the district-level supervisory categories were ambiguous--it was not initially clear whether they should be regarded as 'administrative' or 'support' personnel-- a question was added to determine how 'district'

personnel spend the largest amount of their time. Two answers to this question--'assisting teachers' and 'curriculum planning and coordinating'--indicated support services, while the other two--'supervising/assessing teachers' and 'administrative duties'--indicated administrative functions. As the district position responses were coded, the items checked were used to verify the placement of each respondent. It was obvious in coding the responses that nearly all district personnel labelled, and viewed, themselves more as support personnel than as supervisors and evaluators.

The final sample was identified by sorting the September 30, 1977 Form J teacher information file according to district code, to ensure a representative geographic distribution of teachers in the sample. Subjects from each position category were selected using the corresponding sampling proportion p(i) for category i. This was done by first choosing, at random, a number between 1 and 1/p(i), and starting with that person in the category list. Thereafter, every 1/p(i)th person on the list was chosen. The sampling proportions were chosen so that approximately the target sample size would result. That is:

$$p(i) = \frac{\text{population of teachers in category i}}{\text{Target sample size for category i}}$$

All the school districts in the province were contacted with a request for permission to distribute the survey (the letter requesting permission is in Appendix E). Only two districts (Campbell River and Richmond) refused to permit the survey. The schools in Burnaby that had been used in the pilot study were deleted from the list, and the teachers from those schools were not sent questionnaires. As a result of these procedures, 1,640 questionnaires were distributed to school district offices, and forwarded from there to respondents.

Five weeks after the original mailing, reminder postcards were mailed directly to all non-respondents in the sample (a copy of the post card is in Appendix F). Table 1 gives the target sample, number of questionnaires mailed and the number and percentage of useable returns.

Table 1

Sampling Frame and Returns

Position	Target Sample	Mailed	Returns Usable	%age
Elementary Teachers	400	394	236	59.9
Secondary Teachers	300	292	186	63.7
Secondary D. Heads	150	147	106	72.1
Principals (Elem.)	130	121	97	80.2
Principals (Sec.)	65	62	46	74.2
Support (Elem.)	100	97	69	71.1
Support (Sec.)	125	118	66	55.9
Administrator (Dist.)	190	195	31	15.9*
Support (District)	190	214	200	93.5*
Totals	1650	1640	1037	63.23

*the ambiguity of these roles seems evident here. If these two categories are combined, then the response rate for both categories is 231/409 =56.48%

In total, 1,078 (65.7%) of the questionnaires were returned, or their non-returns were explained by respondents. Twenty-six of the returns were blank; half of them with no reason for the lack of response. Reasons that were given included: lack of time (5), preferred not to answer (3), hopeless to try to change things (1) and resigned from teaching (4). In the weeks following the mailing of the reminder, fifteen subjects wrote to explain their non-response. Six had received the reminder card, but not the original questionnaire; five admitted having lost or misplaced the questionnaire and four claimed to have mailed their responses, but they had not been received.

Description of the Final Questionnaire

The final questionnaire was divided into these three major sections and their appropriate sub-sections:

Description of the User
- Position
- Years of Experience
- Sense of Isolation
- Level of Education
- Information Dissemination
- Attitude to Information

Information Seeking Behavior
- Purposes for Seeking Information
- Sources
- Characteristics of Sources
- Problems in Finding and Using Information

Your "ideal" System.

In the covering letter, each respondent was offered a summary of results if he gave his name and address on the last page of the questionnaire. One hundred and twenty-three requested the summary. A brief report has been designed for distribution to each of these individuals.

Description of the User

The following section will discuss each of the eleven sections in the questionnaire. A description of the questions and the reasons for including each of them will be presented.

Position. Nine alternatives were included:

Elementary school teacher
Junior or secondary high school teacher
Secondary department head
Principal or vice-principal (elementary)
Principal or vice-principal (secondary)
Support person in an elementary school
Support person in a secondary school
District administrator (superintendent or assistant)
District support person (consultant, supervisor, researcher, etc.).

Each respondent was requested to check the appropriate combination of alternatives if in his work he was assigned to more than one position. Very few respondents checked more than one, and the subsequent questions, asking which grades were taught and how time was spent, were used to assign each of these respondents to a single position. Just one position category, then, was coded for each respondent.

Years of Experience (Experience). Respondents were asked to indicate the number of years of professional experience they had. This item was used in lieu of one asking for age, such as was used by Hood & Blackwell (1976). It was felt that years of experience would be related to information-seeking habits more than would years in age, and that the corresponding question would be less likely to be omitted.

Sense of Isolation (Isolation). Each respondent was asked to report the degree to which he felt isolated from the information sources he would like to use. Four choices were presented; not isolated, somewhat isolated, considerably isolated and seriously isolated. Because the questionnaires were distributed province-wide, it would be possible to determine whether 'sense of isolation' is related to actual geographic distance from a large urban centre, or whether it is due to other factors.

Level of Education (Education). Respondents were asked to check their highest earned degree from this list: high school, bachelors, masters or doctorate. The relationship between level of education and sources used may reflect the influence of higher education on the awareness and use of information sources.

Information Dissemination (Dissemination). This item asked for the respondent's perception of himself as one who disseminates information through person-to-person channels. Each respondent was to identify how often others came to him for information or how often he gave information to his colleagues. The time intervals presented were: less than once a month, once a month, once a week, once a day, more than once a day. Responses to this item might identify individuals who are natural 'linkers' in a school or distict, or they may indicate which positions are most active, or perceive themselves to be most active, in disseminating information. In July, 1977, Hood emphasized the importance of locating these natural disseminators:

> The ultimate user may be a poor target. We may have to go upstream and identify the intermediary, the person who tends to disseminate information, and design our information services to suit his needs.... We need to focus on the linkers, the educational middlemen, the gatekeepers. We need to locate them and study their present disposition and their needs so that we can find new ways to serve them (Note 1).

Attitude to Information (Attitude). Fifteen items were written to reflect the five stages of Krathwohl's Taxonomy (1964). Each item described a behavior, and respondents were required to circle a number, from one to four, to indicate whether the behavior was "very unlike me" or "very like me". The even number of responses was used so that a midpoint would not be available; neutral response was thus not permitted by the scale. High scores on this scale indicate a positive (favorable) attitude to information.

Information Seeking Behavior

Purposes. A list of fifteen possible purposes for seeking information was presented. For each item, the respondent was asked to check the frequency for which he sought information for that purpose. The three choices were: seldom or never, sometimes, or frequently. This item is of value as an index of educators' purposes in seeking information. It can also be used to reduce the number of position categories for some analyses (see Data Analyses).

Sources. Thirteen sources were listed, including places (libraries, etc.), persons (colleagues, experts), or materials (books, computers, journals). Both formal (print) and informal sources were included. Respondents were asked to indicate their frequency of use for each source, choosing from never, rarely, sometimes, and frequently.

The judged frequency of use of sources is the dependent variable for many of the analyses in this study. While it is important to identify the comparative frequency of use of these sources, it is also important to identify which factors of position, attitude, experience, education or information dissemination influence that use. It would also be of value to identify the characteristics of sources that make them popular and to identify the problems perceived by educators in using them.

Characteristics of Sources. (Characteristics). Eleven characteristics of sources were presented and each respondent

was asked to indicate how important each was to him. Levels of importance were: of no importance, of little importance, quite important and very important. Knowledge of which characteristics are important can help those trying to transfer information in choosing which methods to use. At the same time, understanding which characteristics are not important may prove of equal value.

Problems in Finding and Using Information. (Problems). This section presented ten problems that users might encounter, and asked repondents to indicate the extent to which each is a genuine difficulty. Four levels of response were listed: no problem, very little problem, considerable difficulty, and extreme difficulty. Understanding of the problems identified by information seekers may have implications for ways to simplify existing systems.

Item 3, "getting information quickly enough" was included to measure the importance of fast turn-around in securing information. The Market Study questionnaire (Hood & Blackwell, 1976) had included a separate question about the amount of time users could "usually allow to elapse after realizing the need for information". The response to this item in their study indicated that:

> about 30 percent of these users needed information within one day....nearly the same proportion (29%) can wait two or three days; another fourth (24%) can wait about a week....The relatively short response times suggest that mail exchange would be tolerable for only a small proportion of the users.... This suggests that most information sources must be local or accessible through tele-communication channels (p. IV-29).

In the present study, special attention is paid to this item, to determine whether this insistence on fast response is replicated.

Your "ideal" System.

This question was included to give respondents a chance to express their own ideas about what methods would be most useful.

The final questionnaire consisted of these eleven sections. They are investigated singly and in various combinations to discover the present personal characteristics, attitudes and information-seeking behaviors of a sample of educators in British Columbia.

Statistical Methodology

Data Processing

As each questionnaire was received, it was given an identification number. The district code, taken from the return address label, was entered into a computer file with the data taken from the responses to all sections except "your 'ideal' system". That section was hand tabulated according to an empirically derived list. Responses to the attitude to information items were item analyzed, then the total score for the fifteen items was transferred to the master data file. Missing responses to items in the attitude scale were coded as 2.5 (the midpoint of the scale) so the total scores would not be badly misrepresentative. (There were 62 missing scores, or 0.4% of the total responses).

Data Analyses

Methods of data analysis in this study include: simple tabulations of distibutions, rank ordering by means, cluster analysis, analysis of variance with Scheffe multiple comparisons, univariate and bivariate frequency tables, item analysis, factor analysis and multiple regression analysis. (Note 2. The computer programs mentioned in text are specifically referenced in the Notes which precede the Bibliography).

UBC:TRP (Triangular Regression Package; Le & Tenisci, 1977) was used to produce the mean for each Position on each of the fifteen purposes for seeking information. This array of means (9x15) was used as input data for hierarchical grouping analysis by the UBC:C-GROUP program (Patterson & Whitaker, 1977). This procedure defined each of nine positions as a 'group', then reduced the number of groups by one in each of a series of steps so as to minimize the estimate of variation in profiles of purpose within the groups. All nine categories of position were used for the univariate and bivariate tables that included Position. The four position groups developed in the cluster analysis provided more nearly equal cell sizes for the analyses of variance and the multiple regression analysis.

UBC:MVTAB (Multivatiate Contingency Tabulations; Bjerring, 1974) generated univariate and bivariate data on the positional and personal factors, including attitude to information. Standard item analysis was done, using the program LERTAP (Nelson, 1974) on the items of the attitude scale. This produced

correlation matrices for sub-tests (stages). Total scores developed by this analysis were used as raw data for analysis of responses, using SPSS:GUTTMAN (Nie, 1975), to discover whether the hierarchical nature of the taxonomy had been confirmed. Rank ordering by means was used to report results on school regions according to the sense of isolation of their educators, and of purposes, sources, characteristics of sources and problems.

Univariate one-way analyses of variance were done, using the program SSPS:ONEWAY (Nie, 1975) employing (1) Purposes as the dependent variables and Position and Attitude as the independent variables, (2) Sources as dependent variables and each of the professional and personal factors as independent variables, and (3) Characteristics of sources as the dependent variables and Position and Attitude as the independent variables. Scheffe's multiple comparisons were computed for each analysis which yielded a significant F-ratio.

Sources were analyzed by multiple regression using BMD:02R (Brown, 1977) six personal and professional factors as predictor variables. Factor analysis was performed using SPSS:FACTOR (Nie, 1975) to identify orthogonal factors of sources.

CHAPTER IV

RESULTS

Data analyses in this study were designed to provide descriptions of the information sources used, and analyses of the extent to which Position, Experience, Education, Isolation, Dissemination, and Attitude influence the choice of sources used. Other analyses examined respondents' purposes for seeking information, the characteristics of sources that are important to them, and the problems encountered when they seek information. Relationships between these factors and selected personal factors were also calculated.

Other analyses were designed to examine the Attitude to information scale. The scale was analyzed to determine whether the postulated hierarchical nature of the taxonomy could be confirmed.

Results of the study are presented here in three sections: 1. Description of the Information User, 2. Information Seeking Behavior, and 3. Ideal Systems of information transfer suggested by users.

Description of the User

Six questionnaire items-- Position, Experience, Isolation, Education, Dissemination, and Attitude--describe the respondents.

Position

Respondents chose from nine position categories. Table 2 gives the distribution and percentages of those responses.

Table 2

Distribution of Respondents over Professional Positions

Position	Frequency	Percentage
1. Elementary Teacher (K-7)	236	22.8
2. Secondary Teacher (8-12)	186	11.9
3. Secondary Dept. Heads	106	10.2
4. Elementary Administrators	97	9.3
5. Secondary Administrators	46	4.4
6. Support (Elementary)	69	6.6
7. Support (Secondary)	66	6.4
8. Disrict Administrators	31	3.0
9. District Support Personnel	200	19.3
Total	1037	100.0

The nine categories of position provided in the questionnaire include most of the positions held by teachers, administrators and support personnel in the province. The nine categories are used in all the univariate and bivariate tabulations. These nine categories range in size from 31 to 236. In order to do analyses of variance, it was desirable to have fewer groups with more nearly equal cell sizes. To combine some of these nine categories into fewer groups, means were computed for each of the nine positions on each of the 15 purposes for seeking information. These 135 means were used as input to a stepwise cluster (grouping) analysis. This analysis merges groups one at a time, and reports the 'error' for each merging. The optimum number of groups is indicated when a sharp

rise in error value occurs. In this case, as reported in Table 3, the optimum number of groups might have been five (error=9.02), but at that step the smallest group, district administrators, had not been joined to any other group. The next step merged district administrators with elementary and secondary administrators and resulted in four groups of similar size.

Table 3

Results of Cluster Analysis of Positions

Number of Groups	Positions Joined*	Error	Cum. Error
8	2 & 3	3.148	3.148
7	1 & 6	3.585	6.732
6	4 & 5	6.899	13.631
5	7 & 9	9.028	22.669
4	8 &4&5	14.265	36.924

* group numbers are identified in Table 2.

When this analysis is used, the four resulting Position clusters and their frequencies are:

1. Elementary Teachers & Elementary Support Personnel 304
2. Secondary Teachers & Secondary Department Heads 292
3. Secondary Support Personnel & District Support personnel 265
4. Elementary & Secondary & District Administrators 173.

As a check on the effectiveness and usefulness of this grouping, a oneway analysis of variance was performed using Position cluster as the independent variable, attitude to information as the dependent measure and the individual respondent as the unit of observation. Results of this analysis are summarized in Table 4.

Table 4

Summary of Analysis of Variance:
Attitude as a Function of Position Cluster

Source	df	Sum of Squares	Mean Square	F
Between clusters	3	6,561.97	2,187.3	55.262*
Among Individuals within clusters	1032	40,768.11	39.6	
Total	1035	47,330.08		

* $p < .0001$

These results indicate that the four position clusters suggested by the grouping procedure differ significantly from each other in attitude, and that the clustering procedure based on purposes for seeking information is valid for differentiating groups of positions which are characterized by different attitudes to information. The nature and extent of these differences are discussed in Chapter V.

Experience

Table 5 indicates years of experience as related to position held. Experience was reported as exact number of years and coded as two-digit numbers. Scores were grouped into ten-year intervals for analysis.

Table 5 indicates that 77.3% of all respondents have less than 20 years of professional experience.

Table 5

Cross-tabulation of Experience and Position: Frequencies and Percentages

Position	Range of Years of Experience				Frequency per Category	Percent of Total N
	<10	10-19	20-29	30-39		
El. Teachers	59.3	30.5	8.4	1.7	236	22.8
Sec. Teachers	55.9	27.4	13.4	3.4	186	17.9
Sec. D. Heads	37.7	38.7	17.9	5.7	106	10.2
El. Principal	26.8	39.2	33.0	1.0	97	9.3
Sec. Princip.	23.9	47.8	23.9	4.3	46	4.4
El. Support	49.3	31.9	11.6	7.2	69	6.7
Sec. Support	51.5	27.3	13.6	7.6	66	6.4
Dis. Admin.	3.2	32.3	51.6	12.9	31	3.1
Dis. Support	40.0	29.0	25.0	6.0	200	19.3
% of Totals	45.3	32.0	18.3	4.3		100.0
Frequencies	470	332	190	45	1037	

The obtained result is statistically significant (Chi-square=38.03, $p<.01$). It is noteworthy that more than 55% of elementary and secondary teachers have less than 10 years of experience, and that fewer than 2% of elementary teachers have more than 30 years of experience. Almost 50% of the members of the three support groups have less than 10 years experience, while 60% of district administrators have more than 20 years experience.

Isolation

Table 6 presents the cross-tabulation of responses to the question "How isolated do you feel from sources you would like to use?" and position. It was hypothesized that position would have no relationship to sense of isolation.

Table 6

Cross-tabulation of Isolation and Position: Frequencies and Percentages

Position	Range of Sense of Isolation				Frequency per Category	Percent of Total N
	Serio	Consid	Somew	Not		
El.Teacher	5.3	15.4	49.3	30.0	227	22.4
Sec.Teacher	5.0	21.1	50.0	23.9	180	17.8
Sec.D.Head	7.7	10.6	51.9	29.8	104	17.8
El.Principal	4.3	14.0	49.5	32.3	93	9.0
Sec.Principal		17.4	52.2	30.4	46	4.5
El.Support	7.3	10.1	58.0	24.6	69	6.8
Sec.Support	6.1	20.0	43.1	30.8	65	6.4
Dis.Admini.	3.2	9.7	51.6	35.5	31	3.1
Dis.Support	7.1	17.2	48.0	27.8	198	19.6
% of totals	5.6	16.0	49.9	28.0		100.0
Frequencies	57	162	505	289	1013	

As expected, the results of the chi-square test were not significant (p=.78). The categories offered in response to this item were 'seriously', 'considerably', 'somewhat', or 'not' isolated. In the pilot study, which was administered in one large urban district, 13.2% of the respondents felt considerably or seriously isolated from the information sources they would like to use. In these results only 21.52% felt considerably or seriously isolated, even though this questionnaire was distributed province-wide.

To further investigate this sense of isolation, responses to the question were cross-tabulated with the geographic area in which the respondent worked. The province of British Columbia has 75 school districts organized into 12 regions. These twelve regions were used as areas for the analysis. Table 7 gives the order of the districts by decreasing means on the sense of isolation question. Higher scores in this table indicate less sense of isolation.

Table 7

Sense of Isolation for Each of Twelve Education Regions

Rank	Region	n	Mean Sense of Isolation
1	6. Greater Vancouver	352	3.12
2	11. Vancouver Island South	141	3.04
3	12. Vancouver Island North	47	2.98
4	5. Fraser Valley	97	2.94
5	3. Okanagan	100	2.93
6	4. Mainline Cariboo	77	2.91
7	9. Northern Interior	67	2.84
8	10. Peace River	36	2.77
9	2. West Kootenay	32	2.56
10	1. East Kootenay	33	2.45
11	8. North Coast	30	2.33
12	7. South Coast	22	2.32

Table 8 presents the results of analysis of variance using sense of Isolation as the dependent variable and Region as the independent variable.

Table 8

Summary of Analysis of Variance:
Sense of Isolation as a Function of Region

Source	df	Sum of Squares	Mean Square	F
Between regions	11	46.5061	4.2278	5.125 **
Among individuals within regions	1022	843.1177	0.8250	
Total	1033	889.6238		

**p<.001

On page 41, a map of British Columbia indicates the boundaries of the regions and the numbers assigned to them. (Two blacked-out areas show Campbell River and Richmond districts, the two districts that did not permit the survey).

Examination of the map and the rank order of regions reveals that geographic distance is not the only factor which influences the sense of isolation. The South Coast, Region 7, contains the respondents who feel most isolated, yet this district is geographically adjacent to Vancouver. The East and West Kootenays each contained respondents who felt quite isolated, although geographically those two regions are not as far from centres of population as are the two northern regions of Peace River and Northern Interior. To determine why some of these far northern regions do not report a correspondingly high sense of isolation would require further study.

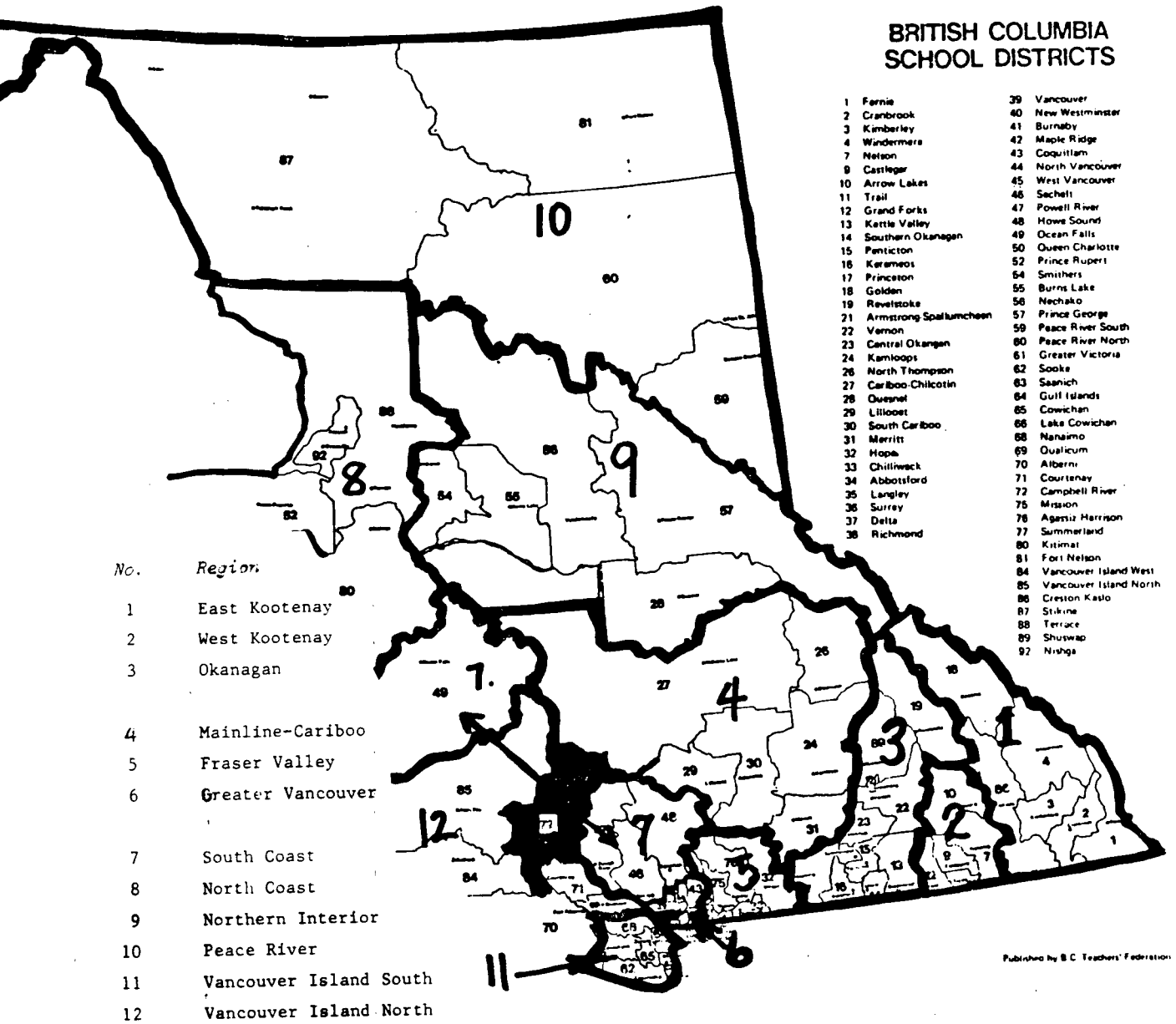

Figure 1

British Columbia School Districts by Regions

Education

Table 9 reports the level of education of personnel in each of the nine position categories.

Table 9

Cross-tabulation of Education and Position: Frequencies and Percentages

Position	Range of Level of Education				Frequency per Category	Percent of Total N
	Highsc	Bach	Masters	Doct		
El. Teacher	29.8	66.2	3.5	.4	228	22.4
Sec. Teacher	4.9	79.7	14.8	.5	182	17.9
Sec. D. Head	2.9	68.9	27.2	1.0	103	10.1
Elem. Princ.	2.1	69.1	26.6	2.1	94	9.2
Sec. Princ.		34.8	63.0	2.2	46	4.5
Elem. Support	22.4	61.2	16.4		67	6.7
Sec. Support	3.0	66.7	30.3		66	6.6
Dist. Admin.		12.9	77.4	9.7	31	3.1
Dist. Support	7.0	45.0	46.5	1.5	200	19.7
% of Total	11.1	61.6	26.1	1.2		100.0
Frequencies	113	627	265	12	1017	

Statistical analysis of this table is inappropriate because 11% of the cells are empty, although some interesting facts do emerge. Across the sample, 29.8% of elementary teachers and 22.4% of elementary support personnel have no university degree. In the province of British Columbia it is still possible to get a teaching certificate without completing a bachelor's degree. A large number of the teachers in this category may have been in the profession for many years, and obtained their teaching certificates while teacher training programs were still in the normal school. Also included in this category are many specialists who have specific job qualifications which do not include a university degree.

Dissemination

Table 10 reports responses of practitioners to the question "How often do your colleagues come to you for educational information or do you give such information to them?"

Table 10

Cross-tabulation of Dissemination and Position: Frequencies and Percentages

Position	Frequency of Dissemination					Frequency per Category	Percent of Total	N
	<1/mon	1/mon	1/week	1/day	>1/day			
El.Teacher	15.2	23.1	38.7	18.7	4.3	230	22.5	
Sec.Teacher	16.8	22.7	36.8	22.2	1.6	185	18.1	
Sec.D.Head	6.6	17.9	42.4	26.4	6.6	106	10.3	
El.Princip.	1.1	7.4	30.9	42.6	18.1	94	9.2	
Sec.Princip.	2.2	13.0	15.2	47.8	21.7	46	4.5	
El.Support	4.4	13.2	36.8	29.4	16.2	68	6.6	
Sec.Support	4.7	7.8	40.6	26.6	20.3	64	6.3	
Dis.Admin.		3.2	6.5	35.5	54.8	31	3.0	
Dis.Support	3.0	4.5	20.5	30.5	41.5	200	19.5	
% of Total	8.5	14.8	32.4	27.6	16.7		100.0	
Frequencies	87	151	332	283	171	1024		

The relationship between Position and Information Dissemination proved to be statistically significant (Pearson's Chi-square=297.57, $p<.0001$). According to this self-report of respondents, district administrators are the most active information disseminating position group, with 90.7% asked for or giving information once a day or more. The next three most active (once a day or more) disseminating groups are district support personnel (72.0%), secondary principals (69.6%), and elementary principals (60.6%).

This item was included in an attempt to identify natural information linkers. It would have been helpful to have some way to confirm these self-reports, perhaps in the form of "When you need educational information, what person do you go to see?" The relatively infrequent dissemination reported by some of the elementary and secondary support personnel is of some concern.

Attitude

Attitude scale as a hierarchy. One purpose for developing the attitude scale was to further the investigation of the hierarchy posited by Krathwohl et al's (1964) affective taxonomy. Fifteen items were designed, with three items for each of the five major levels of the taxonomy. Explanations of the levels and the items designed to reflect them are in Appendix C.

Each of these sets of three items was treated as a sub-test of the whole scale. The total scores for each level were computed per individual and used as raw data in the scaling analyses. The series of analyses is designed to discover whether a hierarchy exists, and if it does, the number of levels it includes.

A 'pass-fail' cutting point was set at nine for each level. This decision was based on the underlying design of the attitude scale. On the four point scale, points 1 and 2 reflected negative levels of response, while points 3 and 4 indicated moderate or strong positive responses. A minimum total score of 9 at a level would characterize an individual who scored at least 3 on all the items, but not one with two 2's and a 4. This cut-off point resulted in a reasonable range of marginal

frequencies when the attitude scores were analyzed using SPSS:GUTTMAN.

The steps of the analyses and the resulting coefficients of reproducibilities (Rep.= 1-proportion of error) are given in Table 11. At step one, all five levels were forced to enter according to their placement in the taxonomy, with the most difficult level, level 5, first. A Rep = .869 was achieved in this analysis. When the same five levels were permitted to enter freely, levels 3 and 4 reversed their order and the Rep=.893. Since levels 3 and 4 were not functioning hierachically as intended, they were combined for the next analysis. Using four levels, 5, 4&3, 2, and 1, Rep=.934. If these four levels were permitted to enter freely, then levels 1 and 2 reversed orders. A final analysis was performed on a three-level scale with levels 5, 4&3, and 1&2. In this analysis, Rep =.957. In analysis of cumulative (Guttman) scales, a Rep =.90 or higher is a primary and necessary condition for scalability. There are certain auxiliary criteria that can be used as checks to ensure that the value of Rep is not spuriously high (Torgerson, 1962). These criteria include: a sufficient number of items, a reasonable range of marginal frequencies, a random pattern of errors, individual item reproducibilities of .85 or more, and item categories which contain more non-error than error. Each of these criteria was met in the three-level analysis.

This series of analyses, while it did not confirm a five-level heirarchy as hypothesized in Krathwohl's taxonomy, did confirm the existence of a heirarchy of three levels of attitude development.

Table 11

Results of Guttman Analyses of Attitude Items

Step	# of levels	Definition of Levels	Rep.
1	5	5,4,3,2,1	.869
2	4	5,4&3,2,1	.934
3	3	5,4&3,2&1	.957

Relationships between Attitude and descriptive items. The total score achieved on the fifteen-item attitude scale was cross-tabulated with each of the other items used to describe respondents: Position, Experience, Isolation, Education, and Dissemination. Bivariate analyses were conducted in each case.

Total score on the attitude scale ranged between 23 and 60. The eight scores below 30 were added to the 163 scores between 30 and 39, and the four scores of 60 were merged with the 371 between 50 and 59. This resulted in three intervals of attitude scale: <40 (171), 40-49 (491), and >50 (375). These groups were used in all the bivariate analyses and ANOVA's with attitude as the independent variable.

a) Attitude and Position. As indicated in Table 12, district administrators have the most positive attitude to information with 80.7% scoring above 50, and the rest scoring in

the middle range. District support personnel are the next most positive group with 65.5% in the top category and only 4.5% scoring less than 40.

Table 12

Cross-tabulation of Position and Attitude: Frequencies and Percentages

Position	Attitude Score Range <30	40-49	50-60	Frequency per Category	Percent of Total N
El. Teachers	29.7	50.4	19.9	236	22.8
Sec. Teachers	26.9	52.7	20.4	186	17.9
Sec. D. Heads	14.1	55.7	30.2	106	10.2
El. Principal	12.4	49.5	38.1	97	9.3
Sec. Princip.	8.7	54.4	37.0	46	4.4
El. Support	10.1	59.4	30.4	69	6.7
Sec. Support	6.1	53.0	40.9	66	6.4
Dist. Admin.		19.4	80.7	31	3.0
Dist. Support	4.5	30.0	65.5	200	19.3
% of Total	16.5	47.3	36.2		100.0
Frequencies	171	491	375	1037	

Elementary and secondary teachers reveal a less positive attitude to information: 29.7% of elementary teachers and 26.9% of secondary teachers scored below 40 on the attitude scale. Approximately 20% of each teacher category scored more than 50 on the scale. In all school-based categories, about half the respondents scored at the middle level, but the principals at both elementary and secondary and the secondary support personnel had more than one third of their number who scored more than 50. The Chi-Square for the relationship between Attitude and Position was 130.61 ($p<.001$).

b) Attitude and Experience. Years of experience was grouped using the first digit of the actual number of years of

Experience. This resulted in four categories: <10 years, 10-19 years, 20-29 years, and >30 years. The actual range of these years were 1 to 38. The bivariate analysis of these two factors produced a Goodman and Kruskal's Gamma =.201 ($p<.001$).

Table 13

Cross-tabulation of Experience and Attitude: Frequencies and Percentages

Years of Experience	Attitude Score Range <30	40-49	50-60	Frequency per Category	Percent of Total N
<10	20.2	51.1	28.7	470	45.3
10-19	12.3	47.3	40.4	332	32.0
20-29	15.3	40.0	44.7	190	18.3
30+	13.3	40.0	46.7	45	4.4
% of Total	16.5	47.3	36.2		100.0
Frequencies	171	491	375	1037	

Table 13 indicates a strong move to a more positive attitude to information from that of respondents who have less than 10 years of experience to those who have 10-19 years. Those who remain in the profession for more than 30 years have a slightly more positive attitude to information than any other group.

c) Attitude and Isolation. Results given in Table 14 indicate that there was no statistically significant relationship between Attitude and Isolation.

Table 14

Cross-tabulation of Isolation and Attitude: Frequencies and Percentages

Sense of Isolation	Attitude score Range <30	40-49	50-60	Frequency per Category	Percent of Total N
Not isolated	19.3	47.4	33.3	57	5.6
Somewhat	15.4	55.6	29.0	162	16.0
Considerably	17.4	45.7	36.8	505	49.9
Seriously	14.2	46.0	39.8	289	28.5
% of Total	16.3	47.5	36.2		100.0
Frequencies	165	481	367	1013	

d) Attitude and Education. The relationship between these two factors was expected to be strong. Gamma =.399 was significant ($p<.001$). Table 15 indicates that attitude-to-information increases directly with increasing level of education: 75.0% of those with a doctorate and 55.4% of those with a masters degree scored in the very positive category of attitude, while only 23.9% of those without a degree felt a strong positive attitude.

Table 15

Cross-tabulation of Education and Attitude: Frequencies and Percentages

Level of Education	Attitude Score Range <30	40-49	50-60	Frequency per Category	Percent of Total N
High School	22.1	54.0	23.9	113	11.1
Bachelors	19.6	50.6	29.8	627	61.4
Masters	6.3	38.3	55.4	269	26.3
Doctorate	8.3	16.7	75.0	12	1.2
% of Total	16.3	47.3	36.4		100.0
Frequencies	166	483	372	1021	

e) Attitude and Dissemination. The relationship between attitude and frequency of asking for or giving out information was quite strong (Gamma=.482, $p<.001$). Table 16 indicates that of those who ask for or give out information more than once a day, 67.8% have a very strong positive attitude towards information, while of those who seek or provide information less than once a month, 43.7% scored in the lowest category of attitude to information.

Table 16

Cross-tabulation of Dissemination and Attitude: Frequencies and Percentages

Frequency of Dissemination	Attitude Score Range <30	40-49	50-60	Frequency per Category	Percent of Total
Less than 1/mon	43.7	47.1	9.2	87	8.5
1/mon	25.8	53.6	20.5	151	14.8
1/week	16.9	55.1	28.0	332	32.4
1/day	8.5	48.1	43.5	283	27.6
More than 1/day	5.3	26.9	67.8	171	16.7
% of Total	16.2	47.5	36.2		100.0
Frequencies	166	487	371	1024	

Information Seeking Behavior

Purposes

Rank Order of Purposes. The questionnaire listed fifteen purposes for seeking information and asked respondents to indicate how often (1=seldom or never, 2=sometimes, 3=frequently) they sought information for each purpose.

The items in this section were developed from responses to an open-ended question in the pilot study. Table 17 indicates the means and rank order of purposes in the final study.

Table 17

Purposes: Means and Rank Order

Rank	Purpose	Mean
1	Finding New Materials	2.51
2	Developing New Materials	2.31
3	Professional Development	2.25
4	Students with Problems	2.21
5	Curriculum Development	2.18
6	Awareness of Trends	2.13
7	Evaluation	2.08
8	Finding New Sources, Experts	2.06
9	Facts for Classroom Use	2.06
10	Teaching Techniques	2.05
11	Motivation	2.01
12	Decision Making	1.93
13	Public Reaction	1.86
14	Classroom Management	1.77
15	Writing Reports, Articles	1.55

This rank ordering of purposes may be of value to those in charge of designing in-service programs for an educational community. It would be sensible to administer this question to a particular population before designing programs.

Position Effects on Purposes. In the pilot study the fifteen purposes were analyzed with position as the independent variable. For only one purpose, "finding new materials", was there a significant ($p<.05$) relationship with Position. A similar analysis was performed on the data in the final study.

In contrast to the pilot study results, Position was significant ($p<.001$) for all purposes. Table 18 gives the statistically significant F-ratios when analysis of variance is performed. Scheffe's pair-wise comparisons reveal the significant differences between position means.

Table 18

Effect of Position on Purposes: Means, Significant F-ratios and Significant Differences between Means

Purposes	F**	Position Means*** 1	2	3	4	Sig.Comp.*
1. Teaching techniques	11.0	2.13	1.86	2.16	2.07	(2-4,1,3)
2. Finding new materials	9.9	2.53	2.54	2.60	2.28	(4-1,2,3)
3. Facts for classroom	12.0	2.11	2.26	1.87	1.95	(3-1,2) (4-2)
4. Awareness of trends	17.1	1.99	1.99	2.36	2.24	(1,2-3,4)
5. Motivation	5.9	2.10	1.86	2.07	2.03	(2-3,1)
6. Curriculum development	5.1	2.08	2.15	2.24	2.33	(1-4)
7. Developing new materials	4.8	2.32	2.39	2.35	2.14	(4-3,2)
8. Evaluation	19.8	2.01	1.89	2.17	2.40	(2-3,4) (1,3-4)
9. Finding new sources	16.5	1.93	2.10	2.29	1.89	(4,1-2,3) (2-3)
10. Professional development	18.6	2.18	2.09	2.51	2.24	(2,1,4-3)
11. Decision making	13.8	1.87	1.76	2.05	2.15	(2,1-3,4)
12. Classroom management	9.5	1.87	1.59	1.74	1.91	(2-1,4)
13. Writing reports	12.7	1.43	1.44	1.68	1.74	(1,2-3,4)
14. Students with problem	11.9	2.36	2.00	2.24	2.27	(2-3,4,1)
15. Public reaction	29.5	1.71	1.67	2.00	2.22	(2,1-3,4) (3-4)

*Within each set of parentheses, each position number on the left side of the dash is significantly different from each position on the right side of the dash. All significant ($p<.05$) pair-wise comparisons are reported. All comparisons are ordered from lower means to higher means.
**F-ratios reported are all significant, $p<001$.
*** Positions are 1. Elementary teachers and support personnel, 2. Secondary teachers and department heads, 3. Elementary and secondary principals and district administrators, and 4. District and secondary support personnel.

This table indicates the complexity of the relationship between the four position categories and the purposes for

seeking information. Nearly every purpose reveals a unique ordering of means and pattern of significant comparisons.

Sources

Rank Order of Sources. Respondents were asked to indicate their frequency of use (1=never, 2=rarely, 3=sometimes, 4=frequently) of thirteen possible sources of educational information.

Table 19

Sources: Means and Rank Orders

Source	Mean	Rank Orders in two studies Hood (of 18)	Final (of 13)
1. Workshops, courses seminars	2.65	13	6
2. Conversations with colleagues	3.50	1	1
3. Notes, files, books in my office	3.32	6+2*	2
4. Abstracts and bibliographies	2.23	18	10
5. School or district libraries	2.69	10	5
6. Educational journals	2.64	5	7
7. Experts from outside	2.30	8	9
8. Books or textbooks	3.21	14	3
9. Conventions or meetings	2.45	12	8
10. Public or university libraries	2.00	17	11
11. Computer or retrieval systems	1.30	**	13
12. Research reports dissertations	1.80	**	12
13. Curriculum materials	2.79	15	4

**item was not included in the study
*two items were merged for final study

Table 19 records the mean for each item in the present study and the rank order of these items in both the Hood and Blackwell (1976) Market Study and this study.

Effects of Position on Sources. Analysis of variance of each source was performed using Position as the independent variable. For each of the eleven sources in which the F value was statistically significant ($p<.05$), the Scheffe method of multiple comparisons was applied to identify where significant differences occurred.

Table 20 gives the means for each of the four position groups, the F-ratio and the significant contrasts on each source.

For four of these sources, teachers (elementary and secondary) are very different from the administrative and support personnel groups. In each of these cases--journals, conventions, computer retrieval and research reports--teachers make significantly less use of the source. In eight of the thirteen sources, secondary teachers and department heads are the least frequent users. Only for "books and textbooks" are secondary teachers the most frequent users of a source.

Table 20

Effects of Position on Sources:
Means, F-ratios and Means Comparisions

Sources	Positions*** 1	2	3	4	F	Comparisons
1.Workshops, courses	2.63	2.46	2.75	2.69	8.40**	(2-1,4,3)
2.Conversations with colleag	3.50	3.35	3.50	3.47	2.64**	
3.Books,files in my office	3.18	3.29	3.34	3.18		
4.Abstracts and bibliography	1.99	2.09	2.32	2.15	6.13**	(1,2-3)
5.School,dist. libraries	3.02	2.53	2.55	2.41	23.89**	(4,2,3-1)
6.Educational journals	2.47	2.40	2.92	2.74	23.12**	(2,1-4,3)
7.Experts outside	2.15	2.06	2.53	2.36	17.91**	(2-4,3) (1-3)
8.Textbooks, books	3.23	3.40	3.08	2.91	14.78**	(4-1,2) (3-2)
9.Conventions, meetings	2.31	2.26	2.63	2.56	15.69**	(2,1-4,3)
10.Public or Univ.library	2.00	1.90	2.02	1.99		
11.Computer retrieval	1.13	1.21	1.45	1.39	15.73**	(1,2-4,3)
12.Research, theses	1.62	1.60	2.03	1.94	21.87**	(2,1-4,3)
13.Curriculum materials	3.01	2.58	2.64	2.87	17.21**	(2,3-4,1)

*** Positions are 1. Elementary teachers and support personnel, 2. Secondary teachers and department heads, 3. School and district administrators 4. District and secondary support personnel.
** $p<.001$

Administrators (elementary, secondary and district) are the most frequent users of ten of the thirteen sources.

Effects of Isolation on Sources. For only four sources was Isolation a significant ($p<.05$) factor. When Scheffe's comparison tests were applied, only three sources had significant comparisons between means. In each case the significant contrast was between those who felt "considerably" isolated and those who did not feel isolated at all. The mean scores indicated that in each case those who felt "extremely" isolated reported more frequent use of sources than did those who felt "considerably" isolated.

Effects of Education on Sources. When analysis of variance was performed on sources with Education as the independent variable, eight of the F-ratios were significant ($p<.05$). Education was originally divided into four groups according to the highest earned degree. Only 12 respondents had a doctorate, so this category was combined with the masters category. Group 1 includes all those with no university degree, group 2 includes those with a bachelor's degree, and group 3 is the post-graduate degree group. The first four sources--workshops and seminars, conversations with colleagues, notes and files in my office and abstracts and bibliographies-- and source 8-- books and texts-- all had F-ratios of less than 2.0 and probabilities greater than $p=.05$. Table 21 reports the eight sources with significant F-ratios and the significant pair-wise comparisons revealed when Scheffe's test was applied.

Table 21

Effects of Education on Sources:
Significant F-ratios and Mean Comparisons

Source	Education*** 1	2	3	F	Sig. Comparisons
5. School or district libraries	2.93	2.71	2.44	13.75**	(3-2,1)
6. Educational journals	2.57	2.51	2.89	20.24**	(2,1-3)
7. Experts outside	2.19	2.20	2.41	6.21*	
9. Conventions meetings	2.27	2.39	2.55	6.57*	(1,2-3)
10. University or publ.libs.	1.84	1.93	2.11	5.65*	(1,2-3)
11. Computer retrieval	1.12	1.21	1.49	25.75**	(1,2-3)
12. Research or theses	1.64	1.68	2.03	21.47**	(1,2-3)
13. Curriculum materials	3.00	2.78	2.64	7.55**	(3,2-1)

*** Education levels are 1.No degree, 2.Bachelor's degree, and 3. Masters' degree or doctorate.
** p<.001
* p<.05

The post-graduate group, those with master's degrees or doctorates, are significantly different from the other two groups in six sources, and for five of those six, they are the most frequent users of the sources. Curriculum materials and school or district libraries are used least by this group.

Effects of Experience on Sources. Experience had very little power in explaining variance in Sources. The F-ratios for three sources were significant ($p<.05$), but for two of these no significant pairwise comparisons were found when Scheffe's test was applied. The significant pairwise comparison was for the use of educational journals, and the significant contrast was between those with less than 10 years experience and both groups with more than 20 years of experience. This indicates that educators learn about journals and increase their use of them as a function of increasing professional experience.

Effects of Dissemination on Sources. Analysis of variance was performed on the 13 sources using Dissemination as the independent variable. For ten of the sources, Dissemination was significant ($p<.05$). The Scheffe test was applied to all sources with significant F-ratios.

Table 22 gives the means of each source for the five levels of Dissemination, the F-ratios, and the significant pair-wise comparisons.

In all the significant comparisons, group means increase from those who disseminate information least to those who disseminate it most.

Table 22

Effects of Dissemination on Sources:
Means, F-scores and Significant Comparisons

Source	Dissemination Frequency*** 1	2	3	4	5	F	Sig.Comps.
1.Workshops, seminars	2.51	2.63	2.59	2.61	2.78	2.99*	
2.Conversations with colleagues	3.00	3.31	3.47	3.57	3.60	14.02**	(1-2345)
3.Notes,files in my office	3.14	3.21	3.29	3.23	3.37		(2-45)
4.Abstracts, bibliographies	1.80	2.03	2.15	2.17	2.34	5.68**	(1-345)
5.District,school libraries	2.45	2.68	2.70	2.70	2.64		(2-5)
6.Educational journals	2.09	2.46	2.54	2.71	3.02	22.62**	(1-234-5)
7.Experts outside	2.05	2.09	2.14	2.40	2.53	11.04**	(123-45)
8.Textbooks or books	3.10	3.25	3.28	3.09	3.14	2.75*	
9.Conventions or meetings	2.21	2.31	2.36	2.45	2.70	8.88**	(1234-5)
10.University,pub. libraries	1.69	1.97	2.01	2.02	2.01	2.82*	
11.Computer retrieval	1.06	1.19	1.21	1.36	1.47	9.76**	(123-5)
12.Research and theses	1.38	1.70	1.67	1.84	2.15	19.01**	(1-23-5)
13.Curriculum materials	2.69	2.78	2.77	2.78	2.78		(1-4)

*** Dissemination groups are: 1. Less than once a month, 2. Once a month, 3. Once a week, 4. Once a day, and 5. More than once a day.
** $p<.001$
* $p<.05$

Effects of Attitude on Sources. The results of analysis of variance with Sources as the dependent variable and Attitude as the independent variable were significant ($p<.05$) for ten of the thirteen sources. Table 23 reports these results.

Table 23

Effects of Attitude on Sources:
Means, F-ratios and Significant Comparisons

Sources	Attitude Intervals***			F	Sig.Comps.
	3	4	5		
1.Workshops and seminars	2.46	2.56	2.78	16.36**	(3,4-5)
2.Conversations with colleagues	3.24	3.45	3.55	10.63**	(3-4,5)
3.Notes, files in my office	3.05	3.24	3.36	7.59**	(3-5)
4.Abstracts and bibliographies	1.85	2.02	2.41	30.15**	(3,4-5)
5.District or school libraries	2.62	2.65	2.69		
6.Educational journals	2.02	2.51	3.02	105.51**	(3-4-5)
7.Experts outside	1.85	2.15	2.58	58.19**	(3-4-5)
8.Textbooks or books	3.15	3.16	3.23		
9.Conventions or meetings	2.22	2.36	2.59	16.47**	(3,4-5)
10.University or public libraries	1.69	1.95	2.14	16.91**	(3-4-5)
11.Computer retrieval	1.11	1.22	1.43	19.05**	(3,4-5)
12.Research or theses	1.35	1.69	2.07	59.90**	(3-4-5)
13.Curriculum materials	2.70	2.74	2.84		

***Attitude intervals are 3.scores between 15 and 39, 4.scores between 40 and 49, and 5.scores between 50 and 60.
** $p<.001$

Multiple Regression of Sources. Stepwise regression analyses were performed to investigate how much each of the personal characteristics contributed to the variance of frequency of use of the thirteen sources of information.

The personal characteristics of respondents that were used as independent variables were forced to enter in the following order: 1. Experience, 2. Education, 3. Position, 4. Isolation/Dissemination, 5. Attitude.

Table 24 indicates the significance levels of increase in R^2 for each of the thirteen sources. F-ratios for the increase in R^2 for each of the variables were calculated using an error term derived from the full-rank model. Tables of the correlations of sources and characteristics of respondents are provided in Appendix G.

Although Experience was the first factor in each of the multiple regressions, it explained significant amounts of the variance in only five of the thirteen sources (3 at $p<.01$, 2 at $p<.05$). For eight sources the frequency of use does not change across years of experience. The three sources for which experience does explain a highly significant part of the variance are the use of school or district libraries, educational journals, and research reports and dissertations.

Education was a significant predictor for eight of the thirteen sources ($p<.01$). For school and district libraries and for curriculum materials, those with the least educational training make the most use of the sources, for the six other sources frequency of use increases as level of education increases.

Experience and Education are both related to Position. They were forced to enter before Position so that any variance

accounted for by Position would not include the variance shared by the previously entered factors. Because Position is a categorical factor, orthogonal coding was used to provide three contrasts: C1 is the contrast between (a) elementary teachers (including elementary support personnel) and secondary teachers (including department heads) and (b) district and school administrators combined with district and secondary support personnel; C2 contrasts (a) elementary teachers and (b) secondary teachers; and C3 contrasts (a) district and school administrators and (b) district and secondary support personnel. All three contrasts were entered at the same priority level so that the most significant contrast would enter first in the analysis.

Although Experience and Education had already accounted for some of the variance, Position was still a significant predictor ($p<.01$) for eleven of the thirteen sources; C1 was significant for nine of those, C2 for six, and C3 for three.

Dissemination and Isolation were entered at the next level. Dissemination, even though it entered after three other factors, still accounted for a significant amount of the variance for eleven sources. In each case those who asked for or gave educational information are the most frequent users of sources of information. Isolation was significant for only three sources, and only one of these was at $p<.01$.

Table 24

Multiple Regression Summary Table of Significance
Thirteen Sources by Six Personal Factors.

Source of Variance	Sources of Information 1 Wrksh.	2 Cnver.	3 Office	4 Abstr.	5 S.Lib.	6 Ed.Jr.	7 Expert	8 Texts	9 Cnven.	10 P.Lib.	11 Cmptr.	12 Resrch	13 Curr.
Experience			.05		.01	.01			.05			.01	
Education					.01	.01	.01		.01	.01	.01	.01	.01
Position	.01	.01		.01	.01	.01	.01	.01	.01		.01	.01	.01
Con.1	.01			.01	.01	.01	.01	.01	.01		.01	.01	
Con.2	.05	.01			.01	.05		.05		.05			.01
Con.3				.05		.01							.01
Dissemination	.01	.01	.05	.01	.01	.01	.01		.01	.01	.01	.01	
Isolation					.05	.01					.05		
Attitude	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
Cum. R^2	.065	.066	.035	.006	.102	.250	.150	.060	.071	.055	.082	.160	.070

The last factor to be entered was Attitude. From previous analyses it was known that Attitude was related to all other personal characteristics except Isolation. By holding Attitude until all other factors had entered the equation, the specific amount of variance accounted for by Attitude would not include that shared with other factors. In spite of this, Attitude was a significant predictor ($p<.01$) for all sources. In the earlier analyses the continuous scores on the attitude test had been categorized into three levels. In the regression analysis the individual scores were used.

The attitude to information scale is a significant predictor of frequency of use of sources, and the construct that it measures is separate and different from all the other personal characteristics.

It is of interest to note which sources are most 'extensively' explained by these analyses. The frequency of use of source 6, 'educational journals', is significantly related to the personal factor at each level of the analysis. At the other extreme, the use of 'files and notes in my own office' is related significantly only to experience and dissemination ($p<.05$) and attitude ($p<.01$).

Factor Analysis of Sources. The thirteen sources were intercorrelated and factor analyzed using a principal factor solution with iterations, an eigenvalue=1.0 criterion for factor extraction, and varimax rotation. Three factors were extracted, and they account for 48.9% of the covariances among the thirteen sources. Table 25 gives the rotated factor loadings.

Table 25

Rotated Factor Loadings* of Sources

Source	Factors I	II	III
1. Workshops, courses seminars	03	08	67
2. Conversations with colleagues	39	05	26
3. Notes,files,books in my office	54	10	03
4. Abstracts,indexes, booklists	40	45	-03
5. School or district libraries	54	17	-09
6. Educational journals	23	42	24
7. Experts outside district	07	34	38
8. Textbooks or books	60	06	-01
9. Conventions or meetings	02	17	69
10. University or public libraries	25	45	07
11. Computer retrieval	01	61	09
12. Research reports or dissertations	10	70	20
13. Curriculum materials	40	11	18
Explained variance	25.4%	13.4%	10.1%

* Decimals omitted.

Factor I. Close at hand, traditional sources. This factor is identified with the following items (factor loadings in parentheses): 8. Books and textbooks (.60); 3. Notes, files, books in my office (.54); 5. School and district libraries (.54); 13. Curriculum materials (.40); 2. Conversations with colleagues (.39); Abstracts, indexes, booklists and bibliographies (.40). These are traditional, school-based sources.

Factor II. Formal print sources, less accessible. This factor had two very strong items: 12. Research reports and dissertations (.70); and 11. Computer or retrieval systems (.61), and four moderate ones: 10. Public or university libraries (.45); 4. Abstracts, indexes, book lists and bibliographies (.45); 6. Educational journals (.34); 7. Experts outside my school or district (.34). This factor includes less accessible print sources.

Factor III. Organized interpersonal. This factor reflects the traditional in-service sources of information: 9. Conventions or meetings (.69); 1. Workshops, courses or seminars (.67); and 7. Experts outside my school or district (.38).

Eight of the eleven sources loaded strongly (>.50) on one factor and very low (<.20) or negatively on the other two. Five sources loaded moderately on two factors, and one, educational journals, loaded moderately on all three.

Characteristics of Sources

Rank Order of Characteristics. After respondents had identified the sources they used, they were asked to consider the characteristics of sources and the importance of those characteristics in choosing sources to use. Eleven characteristics were listed and they were rated as being 1=of no importance, 2=of little importance, 3= quite important, and 4= very important. Table 26 gives the characteristics, their means and their rank order in both the Hood and Blackwell (1976) study and the final study.

Table 26

Characteristics: Means and Rank Orders

Characteristics	Mean	Rank Order Hood (of 14)	Final (of 11)
3. Authoritative, accurate, and objective	3.58	9+15*	1
11. Is likely to have information I need	3.58	1	2
7. Responsive to my problem	3.49	3	3
1. Is near at hand and usually available	3.46	2	4
10. Is complete, and comprehensive	3.44	7+13*	5
8. Keeps me aware of new developments	3.34	6	6
2. Is easy to use	3.22	4	7
4. Variety of viewpoints, or discussion	3.13	8+11*	8
6. Leads to other sources	2.86	10	9
5. Access without involving others	2.56	**	10
9. Is free or inexpensive	2.50	14	11

* two items is Hood study combined to one.
** item not in the study.

The mean levels of responses indicated that all characteristics are important to information seekers. Only three of the characteristics had means less than 3, and none was below 2.5, the neutral point on the scale. The ranking of "free or inexpensive" as the least important characteristic may indicate a willingness to pay for information services. The fact that "provides access without involving others" rated second lowest seems to indicate that a human interceder, a "linker", is not seen as a problem by most information seekers.

Effects of Position on Characteristics. Position was significant ($p<.001$) for two characteristics: "keeps me aware of new developments" and "is free or inexpensive". Awareness was least important for elementary teachers and elementary support personnel, and most important for district administrators; low cost was least important to school and district administrators, and more important for elementary and secondary teachers. For five other characteristics the F-ratios were significant ($p<.05$), but for two of these no significant pair-wise comparisons were found when Scheffe's test was applied. In two of the three other cases, "is near at hand and usually available" and "is easy to use", were most important to elementary teachers and support personnel and least important to school and district administrators while for "is authoritative, accurate, reliable and objective" the positions were reversed.

Effects of Attitude on Characteristics. Attitude was significantly ($p<.001$) related to eight of the eleven characteristics. Table 27 gives the means by the three attitude groups, the significant F-scores and the significant ($p<.05$) contrasts between means as identified by Scheffe's test.

Table 27

Effects of Attitude on Characteristics:
Means, F-ratios and Significant Comparisons

Characteristics	Attitude Intervals* 3	4	5	F	Sig.Comps.
1. Near at hand, available	3.46	3.49	3.42		
2. Easy to use	3.26	3.26	3.16		
3. Authoritative, reliable, objective	3.41	3.53	3.73	12.31**	(3,4-5)
4. Variety of viewpoints or discussion	2.87	3.07	3.33	19.22**	(3-4-5)
5. Access without involving others	2.60	2.55	2.56		
6. Leads to other sources	2.60	2.82	3.05	17.29**	(3-4-5)
7. Responsive to my problem	3.33	3.45	3.61	9.62**	(3,4-5)
8. Awareness of new developments	3.01	3.27	3.61	48.73**	(3-4-5)
9. Is free or inexpensive	2.67	2.59	2.29	12.60**	(5-4,3)
10. Complete, up-to-date, comprehensive	3.23	3.41	3.58	12.15**	(3-4-5)
11. Is likely to have information I need	3.45	3.54	3.68	7.15**	(3,4-5)

* Attitude intervals are 3. Scores from 15 to 39, 4. Scores from 40 to 49, and 5. Scores from 50 to 60.
** $p<.01$

In all but one of the cases with significant contrasts, those whose attitude to information score was less than 40 rated the characteristics as least important. The exception was "free or inexpensive", where the order was reversed. In all cases with significant contrasts, the group scoring 50 or more on the attitude scale was significantly different from both other groups in their assessment of the importance of characteristics of sources.

Problems

Rank Order of Problems. This section analyzes the problems

faced by educators in seeking and using educational information. Only "finding time to look for information" seemed to present a real problem, as it was the only item with a mean higher than 2.5, the neutral point on the scale. "Getting information quickly enough" had the second highest mean, which suggests that there is some concern for speed of retrieval when information is sought. Table 28 gives the problems, the means in this study and the rank order of the means.

Table 28

Problems: Means and Rank Order

Rank	Problems	Means
1	Finding time to look for or read information	2.94
2	Getting information quickly enough	2.43
3	Getting up-to-date material	2.35
4	Understanding research reports and statistics	2.16
5	Locating suitable sources	2.16
6	Financial costs	2.16
7	Lack of qualified help to locate information	2.05
8	Making information understood by others	1.99
9	Resolving differences between reports	1.99
10	Knowing how to use indexes, ERIC	1.72

Effects of Position on Problems. Only two of the comparisons were significant ($p<.05$) when Position and Problems were compared. For both, "making information understandable to others" and "resolving differences between reports", secondary teachers and department heads reported the least difficulty and secondary and district support personnel reported a

significantly higher level of difficulty. Since the secondary teacher group is the one that uses most sources least, and since the secondary and district support personnel are the ones who try to provide the educational information the teachers do not locate for themselves, these results were not surprising.

Effects of Attitude on Problems. Attitude proved to be a slightly better predictor of problem importance with half the items having significant F-ratios($p<.05$). When Scheffe's test was applied to these comparisons, for only three problems--"locating suitable sources", "knowing how to use indexes, ERIC, etc.", and "understanding research reports or statistical analyses"--did those with a total attitude score >50 have significantly lower means (indicating less difficulty) than those who scored below 40 on the attitude scale.

Your "ideal" System.

An open-ended question was posed on the last page of the questionnaire which asked for a personal statement of an "ideal" information system. To encourage bold thinking, the question was qualified with the phrase : "assuming unrestricted financing and technical know-how". Though some individuals felt that these assumptions were unrealistic (one replied, "I don't believe in the tooth fairy!"), 673 respondents, more than half, did reply to the question.

This item was included so that respondents could mention the services and sources that they perceive as valuable, especially any items that had not been included in the rest of the questionnaire. Responses from the first two hundred returned

questionnaires were listed and an empirically-derived set of categories was developed. All responses were then tabulated using the categories developed and adding new ones when required. Twenty-seven categories were used, including "satisfied" for those who stated that they were satisfied with the information system as it existed now in their areas. The list and the number of respondents whose "ideal" system included each category are given in Table 29.

Table 29

Responses to Your "ideal" System

Rank	Category	# of responses
1	Computer retrieval and/or ERIC	204
2	Improved district libraries	136
3	Improved school libraries	115
4	Time to seek and use information	108
5	Courses, workshops	90
6	Information personnel in district	79
7	Consultants (experts)	65
8	Telephone access to information	57
9	TV or video tapes	57
10	Information personnel in school	52
11	University involvement	45
12	Conferences or meetings	30
13	Collections of materials	29
14	Personal information seeker	26
15	Better access to photocopiers	24
16	Provincial clearinghouse	24
17	Indexes of materials available	24
18	Access to more magazines and journals	22
19	Money for travel, books	20
20	Visits to other teachers	18
21	Provincial coordination of service	15
22	List of experts	11
23	Evaluation of materials	7
24	Professional Association involvement	7
25	Condensed research reports	6
26	Improved textbooks	1
	Satisfied with things as they are	17

As the totals indicate, many of the respondents wanted improvement of already existing libraries (251 out of 673). More than 30% referred to "computers", "ERIC", or "automated retrieval systems" in their responses. There seemed to be an awareness of the new technologies and a desire to make use of them.

The list of categories with the corresponding frequencies fails to reflect the concern expressed by many of the respondents. More than 100 wrote full pages, not just of suggestions, but also of their concern for such issues as the incompetence of district personnel, the apathy of teachers and the lack of understanding of administrators. Librarians complained of teacher skepticism, cynicism and reluctance to provide input regarding new materials or services; industrial arts and music teachers revealed a profound sense of isolation from others doing the same kind of work. Many of the responses indicated a real desire for more information and a real sense of frustration in getting it.

Summary

The results of this study have been organized and discussed under three major headings: (1) description of the user, (2) information seeking behavior, and (3) your "ideal" system.

A questionnaire was distributed to a random sample of 1,640 teachers, administrators and support personnel at the school and district level in British Columbia. A usable return of 1,037 was achieved.

Under the heading 'description of the user', six personal or professional factors were investigated: position, experience, isolation, education, dissemination and attitude. These factors were examined singly and in various combinations. Significant relationships were found between position and experience, position and education, and position and dissemination. The attitude to information scale was analyzed and a three-level hierarchy was confirmed. Attitude was also analyzed with relation to the five other personal factors. Highly significant ($p<.001$) relationships were found between attitude and position, attitude and experience, attitude and education, and attitude and dissemination.

There were four major headings under the general topic information seeking behavior: purposes, sources, characteristics of sources, and problems in locating and using information. Means and rank order of each item in this section were calculated and reported.

Analysis of variance was performed on purposes using position as the independent variable, and for each significant ($p<.05$) F-ratio, Scheffe's test was applied. Sources were analyzed in the same way, using each of the personal factors as the independent variable. For position and sources there were ten of the thirteen sources with significant differences, for isolation only three, for education seven, for experience one, for dissemination seven, and for attitude ten.

Characteristics of sources and problems were both analyzed with position and attitude as separate independent variables. The significant F-ratios were further examined by using Scheffe's test to locate significant differences between means. There were five significant differences between means when characteristics and position were analyzed, and seven when characteristics and attitude were compared. For problems, only two significant contrasts were found when position was the independent variable; when attitude was the independent variable, five of the ten sources had significant contrasts.

Responses to the open-ended question about your "ideal" information system were tabulated and reported as frequencies.

CHAPTER V

SUMMARY, LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate the personal, professional and psychological characteristics of the users of information; their purposes for seeking information, the sources they use, the characteristics of sources that are important to them, and the problems they encounter in seeking or using educational information. In addition, an attitude to information scale, developed to measure users' affective response to information, was developed and analyzed to determine the extent to which it reflected a 'hierarchy' of growth and development.

A questionnaire was designed, pilot tested, revised and mailed to a random sample of teachers, administrators and support personnel in the schools and district offices of education in the province of British Columbia. Responses from 1,037 educators were analyzed.

Position and attitude both had strong correlations with experience, education, and information dissemination. Sense of isolation was not significantly related to position or attitude, but did differ from region to region, although not on a simple geographic distance factor.

The fifteen-item scale designed to measure attitude to information was analyzed to determine whether a 'hierarchy' of

development and growth of attitude could be confirmed. Although a five-level taxonomy was not confirmed, a less concise, three-level hierarchy was confirmed.

Fifteen possible purposes for seeking information were rated as to their importance to respondents. These ratings were used as a basis for grouping the nine position categories into four classes. In addition they were analyzed to identify the effects of Position on Purposes. A significant and complex relationship was revealed by this analysis.

Thirteen sources of educational information were rated on frequency of use. The results of analyses indicate that different position groups do use different sources when they seek information. It also showed that while the use of nearly all sources increases with post-graduate university study, there is little or no difference between those who have no university degree and those who have no more than a bachelor's degree. For only one source, "educational journals", did frequency of use change with increased years of experience; but the rate of dissemination reported and the total score on the attitude to information scale were both directly and significantly related to frequency of use of sources.

Multiple regression analyses of sources extended and illuminated these bivariate relationships. Attitude, dissemination and position (measured using three planned contrasts) were significant in explaining the variance of nearly all sources. Experience, education and isolation were each significant for relatively fewer sources, and at a lower level

of significance.

Three factors of sources, identified by factor analysis, were: 1) easily accessed, traditional print sources, 2) formal, less accessible sources, and 3) organized interpersonal sources, traditional to inservice programs.

Eleven characteristics of information sources were rated by respondents according to importance. All characteristics were considered important by all groups (all means >2.5, the midpoint of the scale). Least important were "is free or inexpensive" and "provides access without involving others"; most important were "is authoritative, accurate, reliable and objective" and "is likely to have the information I need". Attitude to information was highly related to importance of characteristics.

Ten problems were rated as to the difficulty they cause. Only one, "finding time to look for or read information" had a mean greater than 2.5, the midpoint on the scale. This suggests that respondents did not see most of the problems as barriers to getting information. Position was not a major factor in explaining the variance of problems, indicating that problems are idiosyncratic, related to the level of use of sources or to personal style of users, but not to position category.

The final item on the questionnaire was an open-ended question asking for a personal statement of an "ideal" information system. The 673 responses were tabulated and reported as frequencies, and 27 categories were developed. The most commonly cited characteristics of an "ideal" information

systems were 1) computer retrieval and/or ERIC, 2) improved district libraries, 3) improved school libraries, 4) time to seek and use information, 5) courses and workshops, and 6) information personnel in the district.

Limitations

Because all the groups were randomly sampled, the results of the questionnaire are generalizable to the populations they represent, the teachers, administrators and support personnel at the school and district level in the province of British Columbia. The overall usable response rate of 63% means that the findings may be biased; if this is so, respondents probably reflect the portion of each group that is most likely to use educational information. Hence the results of this study may be biased toward a favorable prospect of information use. However, relative preferences and comparisons between groups should still be substantially useful.

The sample size, 1,037, is so large that some relatively small F-ratios and their corresponding proportions of 'explained' variance are significant, often at $p<.001$ levels. However, even with a smaller sample size, most of those would still be significant at a $p<.05$ level or better.

Another limitation, common to all questionnaire studies, is the question of the validity of self-report. Since no other observations or measurements were used in the study, the only data available is that provided by each person in response to the questionnaire. This limitation may be of special concern in

the reporting of frequency of dissemination of information and the rating of problems in seeking or using information.

When the attitude-to-information scale was analyzed using a cumulative (Guttman) scale analysis, three levels were confirmed. The inability to confirm all five levels of the taxonomy (Krathwohl, 1964) may relate more to inappropriate design of some of the items than to a flaw in the original theoretical hierarchy. Further validation of the attitude scale, and testing of its hierarchical nature, is desirable.

Conclusions

This section will deal with the conclusions drawn from the results of the study, with particular reference to the purposes of the study as set out in Chapter II.

Description of the User

The first problem posed in the study was to measure the professional and personal factors of position, years of experience, sense of isolation, level of education, and information dissemination, and to study some of their interrelationships.

Position. Position was the variable on which the sampling frame was based. The nine categories included teachers, department heads, administrators and support personnel from elementary and secondary schools and from district offices. Using 'profiles' of purposes for seeking information, these nine groups were empirically collapsed into four position categories: 1) elementary teachers and elementary support personnel, 2)

secondary teachers and secondary department heads, 3) elementary, secondary and district administrators, and 4) secondary and district support personnel.

Experience. When the nine positions were cross-tabulated with years of experience, it was found that more than half the teachers and support personnel in both the elementary and secondary schools had less than ten years of professional experience. At the other extreme, more than half the district administrators have more than twenty years of experience.

Isolation. The measure of sense of isolation revealed that very few of the respondents felt seriously isolated. When the responses were correlated with the twelve school regions, it was obvious that actual geographic distance from a large metropolitan area was not the only factor affecting the sense of isolation of respondents. Accessibility to teacher centres, educational libraries, or extensive in-service programs may give teachers a feeling that they are not isolated from educational information sources.

Education. The level of education was highly related to position. Between 20-30% of elementary teachers and support personnel have no university degree, while more than 60% of secondary principals and district administrators have at least two degrees.

Dissemination. The self-report of information dissemination was highly correlated with position. District administrators viewed themselves as being asked for or giving information more than once each day. More than three-quarters of teachers, in contrast, report that they are asked for or give information once a week or less.

An individual's educational position is partly a result of his years of experience and his level of education. His information disseminating practices may be both a cause and a result of the position he holds. Some jobs require more response to questions or the giving of information, but at the same time a person's disseminating habits may influence whether or not he is offered that kind of position.

Attitude. The psychological factor of attitude to information was measured on a fifteen item scale which was structured to represent the five levels of Krathwohl's taxonomy. Total score on this test was correlated with the five professional and personal factors. As regards position, the two district categories, administrative and support, indicated a much more positive attitude to information than all the other groups. The two teaching groups had a large percentage (27-30%) who had average scores less than 30 on the scale.

Years of experience and attitude related directly to each other. As years of experience increase, the percentage of respondents with strongly positive attitudes to information also increases.

Sense of isolation and attitude were not significantly related.

The relationship between education and attitude was strong and positive. The percentage of those with one or two degrees who scored above fifty on the attitude scale was more than double the percentage of those without a degree who scored that high.

The same direct relationship was found between dissemination and attitude. Of those who say they disseminate information more than once a day, two thirds scored fifty or more on the attitude scale. Of those who disseminated information less than once a month, over two fifths scored less than thirty on the scale.

The attitude to information scale seems to be measuring an individual's interest in and respect for ideas about his subject area and/or the educational tasks his job involves. A high score on the scale reflects the kind of person who remains in the profession for a long period of time, who acquires post-graduate degrees, and who is promoted within the profession.

Information Seeking Behavior

Other sections of the questionnaire were designed to measure purposes for seeking information, frequency of use of information sources, characteristics of sources that influence their use, and problems encountered in seeking and using educational information.

Purposes. When the effect of position on purposes was assessed, a very complex relationship was revealed between the four position groups and the fifteen purposes for seeking information. Each purpose had an idiosyncratic ordering of the position groups and/or a different set of significant comparisons when Scheffe's test was applied. The information revealed in this analysis would be valuable for those who are planning in-service programs for one or more of the position groups.

Sources. An examination of the frequency of use of sources indicated that the four major position groups differed distictly in their preferences for information sources. Although there were a few sources that showed similar patterns of use by the different groups, the relationship here too was quite complex. The preferences of each group should be of utility to those concerned with effective delivery of information to educators in different job categories. Secondary teachers, for example, rated workshops, courses and seminars lower than any other group, while administrators reported frequent use of that particular source. When administrators plan in-service programs, perhaps they tend to use the sources which they themselves prefer instead of looking for sources that might be more acceptable to the groups to be served.

The relationship between isolation and sources was not strong; it was significant for only four sources. The most interesting feature of this analysis was that those who felt "extremely" isolated reported more frequent use of sources than

those who felt "considerably" isolated. This seems to indicate that those who felt "extremely" isolated are those who feel a strong desire to use educational information, and therefore put forward more effort to get it, while those who feel "considerably" isolated may be revealing a sense of isolation from information that is of less concern to them because they have no strong attraction to or sense of need for the information.

When level of education and sources were analyzed, eight of the thirteen sources had significant F-ratios and seven of those had significant contrasts between means. In six of these contrasts, those with more than one degree were significantly different from the other two groups. Graduate studies seems to increase the reported use of all information sources except curriculum materials. For only one source was there a difference between those with no degree and those with a bachelor's degree. This suggests that undergraduate courses may presently do very little to influence students and future teachers to use many sources of educational information.

The frequency of use of sources was significantly related to years of experience for only one source, educational journals. Those with more experience use this source more. For no other source does frequency of use increase with years in the field. If there are any programs attempting to persuade teachers and administrators and support personnel to look for helpful information, they are having no effect.

The relationship between frequency of use of sources and

dissemination was much more direct than that between sources or purposes and position. For all the significant comparisons, those who are asked for or give information least make the least use of information sources.

Frequency of use of sources and attitude had the same straightforward relationship. Those with low total scores on the attitude to information scale use the information sources least.

When multiple regression analysis of sources was performed using a priori ordering of the independent variables, a general picture of the relationships between frequency of use of each source and the six personal and professional factors developed. Experience and education, although they were entered into the equation first and second, explained significant amounts of the variance for only five and eight of the thirteen sources respectively. Position, as measured by three planned contrasts, and dissemination accounted for significant amounts of the variance for most of the sources. Isolation was significant for only three sources. By far the strongest factor in explaining variance in source use was attitude, which, although it was entered into the regression equation after all other independent variables, explained a significant amount of variance for every source.

Although many of the steps in the regression were statistically significant, the actual percentage of the variance explained ranged from 5.5% to 25%; hence a large proportion of variance in the use of every source is unexplained by these six predictors.

Factor analysis of sources resulted in three orthogonal factors: 1) close at hand, traditional print sources, 2) less accessible print sources, and 3) traditional in-service sources, both print and interpersonal. These results reveal that there are three quite distinct groups of sources and suggest that information should be offered to educational practitioners in more than one way.

Characteristics. Eleven characteristics of sources were rated on importance to the user. All characteristics had means above the neutral point of the scale. The rank ordering of characteristics in this study was similar to the rank ordering of characteristics in the Hood & Blackwell (1976) study, except for item three, "Is authoritative, accurate, reliable and objective" which was ranked first by the respondents in this study. In the Hood and Blackwell study, this item was listed as two separate items, "is authoritative, accurate, reliable" and "is objective, impartial, not biased" which ranked ninth and fifteenth respectively. Possible reasons for this discrepency include: the difference in populations (the Hood and Blackwell study included state level educators, state legislators and their aides, and members of district school boards, as well as local and district teachers and administrators); some basic difference in attitude between American and Canadian educators; or combining the two items may have produced a single item with so many positive attributes that no one would rank it as unimportant. The low ranking of "is free or inexpensive" and "gives access without involving others" suggests that users may

be prepared to pay for some information services, and that they would not find a human interceder unwelcome.

Attitude was significant in explaining the variance of eight of the eleven characteristics. In seven cases, persons with a high positive attitude to information also tended to rate the characteristic as most important. Only for "is free or inexpensive" was the order reversed.

The final major section was concerned with problems faced by educators in finding and using information. "Finding time to look for information" was the only problem with a mean greater than the midpoint of the scale. "Getting information quickly enough" ranked second as a problem, confirming the concern for speed of retrieval discussed in the Hood and Blackwell study.

Attitude to Information. The final purpose of the study was to determine the extent to which the attitude to information scale reflected a hierarchy of attitude development and growth. A total attitude score was calculated for each respondent, and an analysis was performed to examine the validity of the assumption that a hierarchy exists.

Analyses using the total score achieved on this test indicated that a measure of attitude to information had been obtained that related significantly and logically to the other factors in the study. That total score was correlated with the personal and professional factors of position, experience, isolation, education and dissemination, and it also explained significantly large portions of the variance (exclusive of that

explained by other factors) when stepwise multiple regression was performed on the reported frequency of use of information sources.

The scale was constructed to measure the five stages of Krathwohl's Taxonomy of Educational Objectives: the Affective Domain (1964). Mikulecky (1976) had been able to verify the five major stages of the taxonomy in the analysis of his MBRAM reading attitude test. In this study, a cumulative (Guttman) analysis was performed on the responses to the fifteen items of the attitude scale. Although it was not possible to confirm all five stages, a three-level scale was strongly confirmed. Although a hierarchy of only three levels is not particulary potent in terms of utility, it poses promise and suggests that further analysis and rewriting of the items could, perhaps, lead to a four- or five-level validated hierarchy.

Position Groups as Information Seekers and Users

One of the important goals of this study was to identify specific and unique facets of the four major position groups of educators. If the information about each group is assembled, a valuable description of each and its profile of information-seeking behavior emerges.

Elementary Teachers and Elementary Support Personnel. The members of this group have the fewest years of experience, the lowest level of education and the second lowest reported level of information dissemination. They also have the second lowest scores on the attitude to information scale. Their major purposes for seeking information are "finding new materials", "students with problems", and "developing new materials".

Regarding sources, they report most frequent use of "conversations with colleagues", "books and textbooks", and they are the most frequent users of "school and district libraries" and "curriculum materials".

The most important characteristics of sources for the elementary teachers and support personnel include "is near at hand and usually available", "is easy to use", and "is free or inexpensive". Their problems in seeking and using information were similar to the problems of the other three groups.

Secondary Teachers and Secondary Department Heads. The members of this group were quite different from their elementary counterparts. They had more years of experience, and a higher level of education. They felt the most isolated of all the groups, and reported the lowest level of information dissemination. Their major purposes for seeking information were "finding new materials", "developing new materials" and "facts for classroom use". For eight of the fifteen purposes, this secondary group had the lowest means, and for only two did they have the highest.

A similar pattern emerged from the results regarding sources used. Secondary teachers and department heads reported using "books and textbooks", "conversations with colleagues", and "books and files in my office" most frequently. For eight of the thirteen sources, this was the least frequent user group. Only for "books and textbooks" did it report the highest level of use.

Characteristics of sources that were important to the secondary teachers revealed no substantial differences from any other group. However, when compared to other groups with regard to problems faced, they reported significantly less difficulty regarding "making information understandable to others" and "resolving differences between reports". Perhaps this lack of difficulty is an artifact of their minimal use of sources and their reported lack of disseminating activity.

Elementary Principals and Vice principals, Secondary Principals and Vice principals, and District Administrators. The third major group includes administrators and supervisors at the elementary, secondary and district levels. The range of experience within this group is quite broad, with school principals having much less experience than the district administrators, yet as a group it is the most experienced by a large margin. As a group it projects a strong sense of isolation. The level of education is much higher than that of all other groups, and includes most of those in the study who have more than one degree. The administrators report the highest level of information dissemination; and their attitude to

information is highly favorable --very close to that of the support personnel.

The major purposes for seeking information are "finding new materials", "professional development", "awareness of new trends", and "developing new materials". They were the least interested in "facts for classroom use" and scored highest on four purposes, including "teaching techniques".

The sources they used most are "conversations with colleagues", "books and files in my office", and "books and textbooks". For the first two of these sources, and for eight others, the administrators reported the greatest use, and for none of the sources were they the least frequent users.

When characteristics of sources were examined, the most important characteristics for administrators were "keeps me aware of new developments", and "is authoritative, accurate, reliable and objective". The least important characteristics were "is free or inexpensive", "is near at hand and usually available" and "is easy to use". It seems likely that this group has more access to ways of delegating information retrieval.

Problems in seeking and using information were no different for administrators than for other groups.

Secondary Support Personnel and District Support Personnel. This group had the second lowest number of years of experience, a moderate sense of isolation, and the second highest levels of education and dissemination. The secondary and district support personnel had the highest average scores on the attitude-to-

information scale.

The main purposes for seeking information were "evaluation", "curriculum development", "finding new materials" and "students with problems". Support personnel, along with the administrative group, were significantly more frequent users of four sources: "educational journals", "conventions and meetings", "computer retrieval" and "research reports, theses and dissertations".

For both characteristics of sources and problems in seeking and using educational information, the support group was not significantly different from the other position groups.

Recommendations for Further Study

Recommendations for further study are divided into two main categories, practice and research.

Recommendations for Practice

Preservice. The results from this study indicate a real need for an undergraduate course on the sources of information and their potential value to teachers. Teachers should not enter the profession completely unaware of the research and practical advice available to them through journals, indexes and bibliographies, and computer retrieval systems(ERIC, etc.). If educators are to continue to learn and grow in their professional competence, they must not remain ignorant of the information sources that have been designed to serve their needs.

Undergraduate courses should be designed to make students aware of the sources, to sensitize them to the stores of information and knowledge available, and to make them conscious of the value of continuing to learn about their profession. The undergraduate years provide the time and place to reduce the apathy, suspicion and hostility toward educational research (Line, 1971), and to foster positive attitudes toward new information.

Inservice. There are several implications for practical application of the results of this study to designing and delivering in-service training.

The questionnaire would be valuable in identifying the characteristics of a population before designing systems for delivering educational information. The present use of sources, the important characteristics of sources, and the problems identified in seeking information are all important considerations in planning teacher or information centres or other information dissemination systems.

Used in conjunction with an instrument to identify specific information needs, this questionnaire, in its present form or revised to suit a specific district or region, would provide the basis for a sound needs assessment instrument for proposed in-service programs.

Recommendations for Research

The results from several sections of the questionnaire suggest further research problems.

1. The measure of the sense of isolation needs further study to identify the factors that influence it. Some factors that could be investigated include the number and quality of libraries available, the number and quality of resource personnel in the area, the extent of in-service programs and their impact, and the quality of the needs assessment that precedes in-service programs.

2. The self-report of dissemination activities needs confirmation. It is important to identify natural "linkers" in information dissemination. The self report of dissemination and the attitude scale in this questionnaire are a starting point, but there is a need to verify the validity of responses. Submitting those two questions to the total population of staffs of several schools and including a question asking for the names of "those to whom you would go for educational information" would provide simple verification or contradiction of the self report.

3. Empirical studies should be carried out on whether attitude to information or frequency of use of specific information sources can be changed through workshops, seminars, pamphlets or journal articles. The relevent items in the questionnaire would provide 'before' data; unobtrusive measures of behavior or a similar survey administered several months

later could measure the changes achieved by specific treatments.

4. The attitude to information scale is promising. The items should be carefully reanalyzed and poor items should be replaced. A revised version could be submitted to other, comparable populations for verification. The partial success of the attitude scale would suggest further experimentation in the use of Krathwohl's taxonomy as a conceptual framework for the design of attitude scales in this field.

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APPENDIX A

Pilot Study Questionnaire

SURVEY OF THE

INFORMATION NEEDS

OF EDUCATORS

Pilot study
June 1977

Introduction

This is a pilot study for a survey of the information needs of educators. From this study we hope to learn about the present practices of educators when they look for answers to their educational questions. In this survey, "information" means spoken or written facts or opinions, and "sources" refers to people, printed material or places where information can be found.

You will notice that there is no space provided for your name. All responses will be anonymous.

Thank you for completing this questionnaire. Please keep the enclosed pen as a token of appreciation.

SURVEY OF INFORMATION NEEDS OF EDUCATORS

1. Position:

If your work involves more than one of these positions, please check the appropriate combination.

Elementary school teacher ..... ☐

Junior or secondary school teacher .... ☐

Principal or vice principal ..... ☐

Support person in a school (librarian, counsellor, LAC teacher, etc. ..... ☐

District administrator, superintendent, or assistant superintendent ..... ☐

District support person (consultant, supervisor, researcher, etc.) ..... ☐

2. Work activities:

Needs for information are affected by the nature of the work one does. To help us identify the general nature of your work, please consider the following types of activities. If you are involved in significant activities that are not included in the list, please write a brief description of them on the line provided.

Please check the appropriate column to indicate the approximate percentage of time you spend at each of the following activities.

Work activities	% of time spent				
	none	0-10%	10-30%	30-60%	over 60%
A. determining needs and/or establishing goals and objectives					
B. curriculum planning, developing, and implementing					
C. developing or selecting materials for classroom use					
D. classroom teaching					
E. evaluation of personnel or programs.					
F. personnel matters (hiring, scheduling negotiating, administering)					
G. financial matters (budgets)					
H. facilities (planning, acquiring, scheduling, maintaining)					
I. liaison (with community, boards, or governments)					
J. consulting with or advising others					
K. conducting research studies					
L. support services (planning, maintaining, scheduling)					
M. preparing articles, speeches, reports					
N. counselling students					
O. providing in-service training (planning or giving)					
P. legal or legislative concerns					
Q. others					

3. Experience:

Approximately how many years of professional educational experience do you have?

..... years.

4. Sense of isolation:

How would you describe your degree of isolation from the information sources you would like to use? (Please check one.)

not isolated; I have ready access to any source I need ..... ☐

somewhat isolated; I may have to spend a little time and effort to find what I want ..... ☐

considerably isolated; I sometimes forego using information sources I would like to use ..... ☐

seriously isolated; I seldom get to sources I would like to use ..... ☐

5. Education:

Please check your highest earned degree.

High School ..... ☐

Bachelor's ..... ☐

Master's ..... ☐

Doctorate ..... ☐

Other (please specify) ..... ☐

6. Information dissemination:

How often do colleagues either come to you for educational information or do you give such information to them?

several times a day ..... ☐

at least once daily ..... ☐

about once a week ..... ☐

about once a month ..... ☐

less than once a month ..... ☐

7. Response to information:

Listed below are fifteen statements. Please respond by indicating how much each statement is like you or unlike you.

For "very unlike you" please circle the number 1.
For "a little like you " please circle number 2.
For "moderately like you" circle 3 .
For "very like you" circle 4.

For example, if you often cut out articles from newspapers and pass them on to your collleaques, you would likely circle 3 in this example.

You have read an article that will be helpful to you in your work. You would make an effort to share the information with your colleaques.

very unlike me 1 2 (3) 4 very like me

1. You are leafing through a magazine or newspaper and notice an article on education. You start to read the article.

very unlike me 1 2 3 4 very like me

2. Colleaques often come to you for information on educational matters.

very unlike me 1 2 3 4 very like me

3. You encourage other educators to read journal articles or books on educational matters.

very unlike me 1 2 3 4 very like me

4. When you are faced with an educational problem, your first move is to locate relevant books or articles on the topic.

very unlike me 1 2 3 4 very like me

5. You are aware that there are several journals that contain information about your line of work.

very unlike me 1 2 3 4 very like me

6. Your principal or supervisor offers you a copy of a three page article and suggests that it may be of value to you. You decide to read it.

very unlike me 1 2 3 4 very like me

7. You read journals or books about general educational matters or about your own specialty fairly often. (several times a week).

very unlike me 1 2 3 4 very like me

8. You have written more than one article for a professional newsletter or journal.

very unlike me 1 2 3 4 very like me

9. You believe that your own work would be improved if you had access to better sources of information.

very unlike me 1 2 3 4 very like me

10. You enjoy learning about new methods, materials and techniques related to your work activities.

very unlike me 1 2 3 4 very like me

11. You regularly read a section of a magazine or newspaper that deals with broad educational matters or your specific areas of interest.

very unlike me 1 2 3 4 very like me

12. You would offer to research a topic and put together a package of information for your colleagues.

very unlike me 1 2 3 4 very like me

13. You would find it difficult to accept educational changes unless they were supported by factual information.

very unlike me 1 2 3 4 very like me

14. Your colleagues often send people who are looking for educational information to you.

very unlike me 1 2 3 4 very like me

15. You subscribe to one or more professional journals in your field of interest.

very unlike me 1 2 3 4 very like me

8. Purposes:

Educators need information for many different purposes. We would like you to identify, and rank in order of importance, your major purposes for seeking educational information.

Please write your purposes on the chart provided on the next page. In order to help you consider the broad range of alternatives, here is a list of suggestions. It is not complete. You may choose from the list, but please feel free to use some of your own that are not included.

SUGGESTIONS

I seek information for the purpose of:
- getting a general awareness of
  - -general educational practices
  - -trends and theories
  - -learning theories
- learning about new methods of
  - -teaching
  - -managing
  - -evaluating
  - -motivating
  - -scheduling
- finding specific facts for
  - -classroom use
  - -writing reports or papers
  - -decision making
  - -problem solving
  - -curriculum development
- getting "how-to" information on
  - -teaching methods
  - -materials development
- finding new
  - -materials
  - -sources
  - -facilities
  - -expert people

Please list your purposes, (at least 3 but not more than 8), on the lines provided below, and rank order them by writing numbers in the boxes.

Most important 1
next most important 2
and so on.

I seek information for the purpose of

Rank

A. .....

B. .....

C. .....

D. .....

E. .....

F. .....

G. .....

H. .....

9. Sources:

When you need educational information, there are many sources you can go to. Please rate the following sources in terms of how often you use them to obtain information.

Check in column 1 if you never use the source.
Check in column 2 if you rarely use the source.
Check in column 3 if you sometimes use the source.
Check in column 4 if you frequently use the source.

Source	I use this source			
	1	2	3	4
1. Workshops, courses, or seminars				
2. Conversations with colleagues				
3. Abstracts or literature reviews				
4. District or school library				
5. Educational journals				
6. Experts outside my school				
7. Books or textbooks				
8. Conventions or meetings				
9. Public or university library				
10. Computer or retrieval systems				
11. Bibliographies or booklists				
12. Unpublished research reports				
13. Dissertations or theses				
14. Curriculum materials (guides, manuals)				
15. Others				
16.				

10. Characteristics of sources:

Different users have different criteria for judging information sources. Please consider the following list of characteristics. For each characteristic, please indicate how important it is to you.

Check column 1 if it is of no importance.
Check column 2 if it is of little importance.
Check column 3 if it is quite important.
Check column 4 if it is one of the most important.

Characteristics	Importance to me			
	1	2	3	4
1. Is near at hand and usually available				
2. Is easy to use				
3. Is authoritative, accurate, reliable and objective				
4. Provides a variety of viewpoints and/or means for discussion				
5. Provides access without involving others				
6. Leads me to other sources				
7. Is free or inexpensive				
8. Is complete, comprehensive and up-to-date				
9. Others				
10.				

11. Problems in finding and using information:

Certain problems exist in finding and using information. Please consider each of the following problems and indicate the amount of difficulty you have experienced for each.

If you have had no difficulty, check in column 1.
If you have had very little difficulty, check column 2.
If you have had considerable difficulty, check column 3.
If you have had extreme difficulty, check column 4.

Problems	Difficulty			
	1	2	3	4
1.Finding suitable sources				
2.Finding understandable information				
3.Getting the information quickly enough				
4.Resolving differences between reports				
5.Getting up-to-date information				
6.Understanding research reports				
7.Financial costs				
8.Finding time to look for information				
9.Understanding procedures for getting information from indexes, ERIC , etc.				
10.Making information understandable to others				
11.Others				
12.				

12. Your "ideal" system:

Assuming unrestricted financing and technical know-how, what would you consider an ideal way of seeking and getting educational information?

Thank you for responding to this preliminary survey of information needs. To help us improve this questionnaire, we would appreciate your comments on it as a whole, or on any specific problems you had in filling it out. Thanks.

APPENDIX B

Final Study Questionnaire

SURVEY OF THE

INFORMATION NEEDS

OF EDUCATORS

IN BRITISH COLUMBIA

Introduction

This is a survey of the information needs of educators. From this study we hope to learn about the present practices of educators when they look for answers to their educational questions.

In this survey, "INFORMATION" means spoken or written facts or opinions, and "SOURCES" refers to people, printed material or places where information can be found.

You will notice that there is no space provided for your name. All responses will be anonymous.

Thank you for completing this questionnaire.

SURVEY OF THE INFORMATION NEEDS OF EDUCATORS

I. DESCRIPTION OF THE USER.

1. Position:

If your work involves more than one of these positions, please check the appropriate combination.

- Elementary school teacher ..... ☐
- Junior or secondary high school teacher ..... ☐
- Secondary school department head ..... ☐
- Principal or vice-principal (elementary) .... ☐
- Principal or vice-principal (secondary) ..... ☐
- Support person in an elementary school (librarian, counsellor, LAC teacher, etc.) .. ☐
- Support person in a secondary school (librarian, counsellor, LAC teacher, etc.) .. ☐
- District administrator, (superintendent, or assistant superintendent) ..... ☐
- District support person (consultant, supervisor, researcher, etc.) ..... ☐

if you are a teacher, please indicate the grade or grades you are teaching this term by checking all the appropriate boxes.

K	1	2	3	4	5	6	7	8	9	10	11	12
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

If you are a district person, please indicate the work activity which takes up thelargest portion of your time.

- Assisting teachers ..... ☐
- Supervising teachers ..... ☐
- Administrative duties ..... ☐

I am employed in the .....school district.

3. Experience:

Approximately how many years of professional educational experience do you have?

..... years

4. Sense of isolation

How would you describe your degree of isolation from the information sources you would like to use? Please check one.

Not isolated: I have ready access to any source I need ..... ☐

Somewhat isolated: I may have to spend a little time and effort to find what I want ..... ☐

Considerably isolated: I sometimes forego using information sources I would like to use ..... ☐

Seriously isolated: I seldom get to sources I would like to use ..... ☐

5. Level of education

Please check your highest earned academic degree.

High School ..... ☐

Bachelor's ..... ☐

Master's ..... ☐

Doctorate ..... ☐

Other (please specify) ..... ☐

6. Information dissemination

How often do colleagues either come to you for educational information or do you give such information to them?

Less than once a month ..... ☐

About once a month ..... ☐

About once a week ..... ☐

At least once daily ..... ☐

Several times a day ..... ☐

7. Attitude to information:

On the next two pages there are fifteen statements about information. Please respond by indicating how much each statement is like you or unlike you.

For very unlike you, please circle the number 1.
For a little unlike you, please circle number 2.
For moderately like you, circle 3.
For very like you, circle 4.

For example, if you often tell colleagues about interesting articles you have read, you would circle 3 in this example.

You have read an article that will be helpful to you in your work. You would make an effort to share the information with your colleagues.

Very unlike me	1	2	3	4	Very like me

1. You are leafing through a magazine or newspaper and notice an article on education. You start to read the article.

Very unlike me	1	2	3	4	Very like me

2. Colleagues often come to you for information on educational matters.

Very unlike me	1	2	3	4	Very like me

3. If you have to make an important curriculum or classroom decision, your first step would be to find an expert person or some good printed material (articles, books) to help you make your decision.

Very unlike me	1	2	3	4	Very like me

4. You are aware that there are several journals and books that contain articles and information about education in general or about your specific field of work.

Very unlike me	1	2	3	4	Very like me

5. A colleague you respect offers you a copy of a three page article and suggest that you might find it helpful. You decide to read it.

Very unlike me	1	2	3	4	Very like me

6. If you found an article or book that you felt would help one of your colleagues, you would recommend it or offer a copy to him or her.

Very unlike me	1	2	3	4	Very like me

7. You have written articles or given workshops on educational matters.

Very unlike me	1	2	3	4	Very like me

8. You read journals or books about general educational matters or your own subject area fairly often, (at least two or three times a month).

Very unlike me	1	2	3	4	Very like me

9. You look forward to attending a workshop or hearing a speaker about an educational topic or problem that interests you.

Very unlike me	1	2	3	4	Very like me

10. You regularly discuss educational problems and issues with other educators.

Very unlike me	1	2	3	4	Very like me

11. You subscribe to two or more professional journals.

Very unlike me	1	2	3	4	Very like me

12. You regularly read a section of a magazine or newspaper that deals with educational matters.

Very unlike me	1	2	3	4	Very like me

13. You would offer to research a topic and put together a package of information for your colleagues.

Very unlike me	1	2	3	4	Very like me

14. You believe that your own work would be improved if you could find the right people to talk to or the right materials to read.

Very unlike me	1	2	3	4	Very like me

15. Your colleagues often send people who are looking for information to you.

Very unlike me	1	2	3	4	Very like me

II User information seeking behavior

1. Purposes for seeking information

Below is a list of fifteen purposes for seeking information.

FIRST: Check the appropriate column to indicate how frequently you seek information for each of the purposes listed.

Check column 1 if you seldom or never seek information for that purpose.

Check column 2 if you sometimes seek information for that purpose.

Check column 3 if it is a purpose for which you frequently seek information.

NEXT: For each of the purposes for which you marked column 1, please list their rank order of importance to you. (1=most important, 2= next most important, etc.) Place these rank scores in the column labelled "RANK"

Purposes	Frequency			
	1	2	3	RANK
1. Teaching techniques				
2. Finding new materials				
3. Facts for classroom use				
4. General awareness of trends, theories				
5. Motivation				
6. Curriculum development				
7. Developing new materials				
8. Evaluation				
9. Finding new sources, experts				
10. Personal and professional development				
11. Decision making and problem solving				
12. Classroom management				
13. Writing reports, articles				
14. Students with special problems				
15. Public reactions and concerns				

2. Sources.

When you need educational information, there are many sources you can go to. Please rate the following sources in terms of how often you use them to obtain information.

Check in column 1 if you never use this source.
Check in column 2 if you rarely use this source. (once or twice a year.)
Check in column 3 if you sometimes use this source. (once or twice a month).
Check in column 4 if you use this source frequently. (several times a week).

Source	I use this source			
	1	2	3	4
1. Workshops, courses and seminars ...				
2. Conversations with colleagues				
3. Notes, files, book in my office				
4. Abstracts, indexes, book lists or bibliographies				
5. School or district libraries				
6. Educational journals				
7. Experts outside my school or district				
8. Books or textbooks				
9. Conventions or meetings				
10. Public or university libraries				
11. Computer or retrieval systems				
12. Research reports or dissertaions ..				
13. Curriculum materials (guides, etc.) .				
14. Other (please specify)				

3. Characteristics of sources.

Different users have different criteria for judging information sources. Please consider the following list of characteristics, and for each of them indicate how important it is to you.

Check column 1 if it is of no importance.
Check column 2 is it is on little importance.
Check column 3 if it is quite important.
Check column 4 if it is very important.

Characteristics	Importance to me			
	1	2	3	4
1. Is near at hand and usually available				
2. Is easy to use				
3. Is authorative, accurate, reliable and objective				
4. Provides a variety of view points or discussion				
5. Provides access without involving others				
6. Leads me to other sources				
7. Is responsive to my particular problem				
8. Keeps me aware of new developments				
9. Is free or inexpensive				
10. Is complete, comprehensive, and up-to-date				
11. Is likely to have the information I want				
12. Others (please specify)				

4. Problems in finding and using information

Certain problems exist in finding and using information. Please consider the following problems and indicate the amount of difficulty you have experienced with each.

If you have had no problem, check in column 1.
If you have had very little problem, check in column 2.
If you have had considerable difficulty, check in 3.
If you have had extreme difficulty, check in column 4.

Problems	Difficulty for me.			
	1	2	3	4
1. Locating suitable sources				
2. Knowing how to use indexes, ERIC etc.				
3. Getting the information quickly enough				
4. Getting up-to-date material				
5. Understanding research reports or statistical analyses				
6. Financial costs				
7. Lack of qualified personnel to help locate information				
8. Finding time to look for or read information				
9. Making information under standable to others				
10. Resolving differences between reports				

III Your "ideal" system.

Assuming unresticted financing and technical know-how, what would you consider an ideal way of seeking and getting educational information?

Thank you for your help.

APPENDIX C

Definitions of Krathwohl's stages and the items representing each stage from the proposed final questionnaire.

I. ATTENDING

Definition: A continuum of receiving a phenomenon. The continuum extends from passive awareness of the phenomenon through self-directed attention toward the stimuli (Krathwohl, p.99).

Items:

4. You are aware that there are several journals and books that contain articles and information about education in general and about your specific field of work.

1. You are leafing through a magazine or newspaper and notice an article on education. You start to read the article.

10. You regularly discuss educational problems and issues with other educators.

II. RESPONDING

Definition: A continuum of responding to a phenomenon. The continuum extends from obedient acquiescence of response, through freely willed response, to emotional pleasure or satisfaction in response (Krathwohl, p.118).

Items:

5. A colleague you respect offers you a copy of a three page article and suggests that you might find it helpful. You decide to read it.

12. You regularly read a section of a magazine or newspaper that deals with educational matters.

9. You look forward to attending a workshop or hearing a speaker on an educational topic or problem that interests you.

III. VALUING

Definition: A continuum of value internalization. The continuum extends from accepting a phenomenon as being of value, through preferring the phenomenon over other values, to open commitment to and extension of the phenomenon as a value (Krathwohl, p.139-40).

Items:

8. You read journals or books about general educational matters or your own subject matter faily often (at least two or three times a month).

2. Colleagues often come to you for information on educational problems.

14. You believe that your own work would be improved if you could find the right people to talk to or the right materials to read.

IV. ORGANIZATION

Definition: A continuum of value interaction. The continuum extends from conceptualizing the value in relationship with othr important values to organizing the value as dominant and nearly instinctive in a system of values (Krathwohl, p.154).

Items:

3. If you have to make an important curriculum or classroom decision, your first step would be to find an expert person or some good printed material (articles, books) to help you make that decision.

13. You would offer to research a topic and put together a package of information for your colleagues.

6. If you found an article or book that you feel would help one of your colleagues, you would recommend it or offer a copy to him or her.

V. CHARACTERIZATION

Definition: Continuum of value internalization and personality characterization. The continuum extends from a generalized philosophy or set of beliefs that consistently dictate action to a complex of deeply held personal beliefs and actions that clearly and centrally characterize the individual (Krathwohl, p.165).

Items:

11. You subscribe to two or more professional journals.

15. Your colleagues often send people who are looking for educational information to you.

7. You have written articles or given workshops on educational matters.

APPENDIX D

Letter To Responents

APPENDIX E

Letter To District Superintendents

APPENDIX F

Postcard Reminder

APPENDIX G

Correlations Between and Among User Characteristics and Sources

Appendix G.1
Intercorrelations* Among User Characteristics

Characteristics	1	2	3	4	5	6	7	8
1. Experience	100	18	20	21	15	-26	08	08
2. Isolation		100	12	14	06	-04	-02	03
3. Education			100	21	26	-33	19	-02
4. Dissemin.				100	41	-41	00	-09
5. Attitude					100	-36	02	-17
6. Pos.Con.1						100	-01	17
7. Pos.Con.2							100	00
8. Pos.Con.3								100

* rounded to two significant figures, decimals omitted.

Appendix G.2
Correlations* Between Sources and User Characteristics**

Sources	Characteristics of Respondents							
	1	2	3	4	5	6	7	8
1.Workshops	00	09	00	08	20	-13	-09	-03
2.Conversations	-04	02	03	19	15	-03	-09	-09
3.Files, office	-08	-04	03	06	14	-02	05	-05
4.Abstracts	03	05	06	15	24	-01	04	-08
5.Sch.Libr.	-09	07	-14	02	05	16	-21	-01
6.Ed.Journals	15	09	17	27	48	-24	-03	-10
7.Experts	01	02	09	19	37	-20	-04	-09
8.Textbooks	-03	02	-04	-05	05	19	07	-02
9.Meetings	-06	04	11	17	22	-21	-12	-06
10.Pub.Libr.	-01	09	09	07	19	-03	-06	-07
11.Computers	04	08	19	19	20	-20	05	-06
12.Research	13	06	16	25	37	-25	-01	-07
13.Curr.Mat.	-03	04	-10	00	06	05	-21	11

* rounded to two significant figures, decimals omitted.
** user characteristics defined in previous table.

Appendix G.3

Intercorrelations* Among Sources

Sources	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Workshops	100	08	05	02	07	14	27	06	48	01	69	13	11
2. Convers.		100	21	11	16	08	14	13	13	03	02	08	15
3. Office			100	29	17	13	05	31	00	11	03	08	13
4. Abstracts				100	31	27	18	20	02	28	24	31	11
5. Sc. Library					100	14	00	26	08	25	07	09	26
6. Ed. Journals						100	23	09	22	19	21	37	11
7. Experts							100	04	25	20	24	31	02
8. Books								100	-07	16	02	06	23
9. Meetings									100	12	13	21	12
10. Pub. library										100	30	32	11
11. Computers											100	45	05
12. Research												100	45
13. Curr. materials													100

* rounded to two significant figures, decimals omitted.

APPENDIX H

Multiple Regression Summary Tables for All Sources

Table H.1

Multiple Regression Summary Table for
Source 1: Workshops, Courses and Seminars

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig. Level
Experience	.0000	.0000		
Education	.0000	.0000		
Position				.01
C.1	.0185	.0185	19.0771	.01
C.2	.0249	.0063	6.5711	.05
C.3	.0249	.0000		
Isolation	.0342	.0092	9.6469	.01
Dissemination	.0350	.0008		
Attitude	.0650	.0299	32.2042	.01

Table H. 2

Multiple Regression Summary Table for
Source 2: Conversation with Colleagues

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig. Level
Experience	.0018	.0018		
Education	.0025	.0007		
Position				.01
C.2	.0095	.0069	7.0805	.01
C.1	.0112	.0018		
C.3	.0112	.0000		
Dissemination	.0548	.0436	46.4790	.01
Isolation	.0549	.0001		
Attitude	.0661	.0112	12.0885	.01

Table H. 3

Multiple Regression Summary Table for
Source 3: Notes and Files in my Office

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0063	.0063	6.4301	.05
Education	.0083	.0020		
Position				
C.2	.0106	.0023		
C.3	.0127	.0021		
C.1	.0132	.0005		
Dissemination	.0181	.0049	5.0090	.05
Isolation	.0190	.0009		
Attitude	.0351	.0161	16.7607	.01

Table H. 4

Multiple Regression Summary Table for
Source 4: Abstracts,Indexes and Bibliographies

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0008	.0008		
Education	.0041	.0034		
Position				.01
C.1	.0126	.0085	8.6841	.01
C.3	.0164	.0038	3.8761	.05
C.2	.0176	.0012		
Dissemination	.0290	.0115	11.9003	.01
Isolation	.0340	.0014		
Attitude	.0659	.0354	38.1298	.01

Table H. 5

Multiple Regression Summary Table for
Source 5: School or District Libraries

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0072	.0072	7.3770	.01
Education	.0226	.0153	15.8821	.01
Position				.01
C.2	.0584	.0358	38.4288	.01
C.1	.0748	.0165	17.9973	.01
C.3	.0763	.0015		
Dissemination	.0873	.0110	12.1301	.01
Isolation	.0928	.0054	6.0430	.05
Attitude	.1024	.0096	10.7709	.01

Table H. 6

Multiple Regression Summary Table for
Source 6: Educational Journals

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0219	.0219	22.6289	.01
Education	.0424	.0205	21.6830	.01
Position				.01
C.1	.0731	.0307	33.5219	.01
C.3	.0799	.0068	7.5071	.01
C.2	.0832	.0033	3.6190	.05
Dissemination	.1095	.0263	29.7831	.01
Isolation	.1107	.0012		
Attitude	.2497	.1390	186.3006	.01

Table H. 7

Multiple Regression Summary Table for
Source 7 Experts outside my School

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0002	.0002		
Education	.0082	.0080		
Position				.01
C.1	.0437	.0355	37.5715	.01
C.3	.0470	.0033	3.4756	.05
C.2	.0491	.0021		
Dissemination	.0637	.0146	15.6970	.01
Isolation	.0637	.0000		
Attitude	.1500	.0863	102.1092	.01

Table H. 8

Multiple Regression Summary Table for
Source 8: Books and Textbooks

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.level
Experience	.0011	.0011		
Education	.0021	.0011		
Position				.01
C.1	.0368	.0346	36.3445	.01
C.2	.0415	.0047	4.9873	.05
C.3	.0444	.0029		
Dissemination	.0450	.0006		
Isolation	.0455	.0005		
Attitude	.0600	.0145	15.5375	.01

Table H. 9

Multiple Regression Summary Table for
Source 9: Conventions, Meetings

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0036	.0036	3.6729	.05
Education	.0132	.0096	9.8622	.01
Position				.01
C.1	.0439	.0306	32.3849	.01
C.2	.0453	.0014		
C.3	.0460	.0007		
Dissemination	.0529	.0070	7.4044	.01
Isolation	.0532	.0003		
Attitude	.0705	.0173	18.7273	.01

Table H. 10

Multiple Regression Summary Table for
Source 10: Public or University Libraries

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0001	.0001		
Education	.0078	.0077	7.8438	.01
Position				
C.2	.0133	.0055		
C.3	.0133	.0000		
C.1	.0133	.0000		
Isolation	.0201	.0068	7.0272	.01
Dissemination	.0219	.0018		
Attitude	.0545	.0321	34.6531	.01

Table H. 11

Multiple Regression Summary Table for
Source 11: Computer Retrieval

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0013	.0013		
Education	.0349	.0336	35.2272	.01
Position				.01
C.1	.0572	.0223	23.8814	.01
C.2	.0580	.0008		
C.3	.0587	.0007		
Dissemination	.0698	.0111	12.0632	.01
Isolation	.0734	.0036	3.8735	.05
Attitude	.0819	.0085	9.3555	.01

Table H. 12

Multiple Regression Summary Table for
Source 12: Research Reports, Dissertations

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0180	.0180	18.5205	.01
Education	.0374	.0195	20.4690	.01
Position				.01
C.1	.0719	.0345	37.5611	.01
C.3	.0734	.0015		
C.2	.0748	.0014		
Dissemination	.0965	.0217	24.2221	.01
Isolation	.0863	.0003		
Attitude	.1598	.0629	75.3556	.01

Table H. 13

Multiple Regression Summary Table for
Source 13: Curriculum Materials

Variable	$R.^2$	Inc. $R.^2$	F-ratio	Sig.Level
Experience	.0008	.0008		
Education	.0095	.0087	8.8958	.01
Position				.01
C.2	.0464	.0369	39.1605	.01
C.3	.0572	.0108	11.5402	.01
C.1	.0572	.0000		
Isolation	.0589	.0017		
Dissemination	.0601	.0011		
Attitude	.0698	.0096	10.3872	.01

APPENDIX I

Form J

Ministry Of Education

Province Of British Columbia

PLEASE READ INSTRUCTIONS ON BACK. DO NOT PRINT IN SHADED AREAS. FOR CORRECTIONS, DRAW A HEAVY LINE THROUGH THE ERROR AND PRINT YOUR RESPONSE IN THE UNSHADED SPACE PROVIDED

FORM J

FOR MINISTERIAL USE ONLY

00 District no | 01 School no | SCHOOL NAME | SCHOOL DISTRICT NAME

02 Date you began uninterrupted employment with this District (e.g. 01 09 65) — Day | Month | Year

03 ¹Mr ²Mrs ³Miss ⁴Dr ⁵Ms

04 Surname | 05 First name | 06 Initial | 07 Maiden Name or Previous Surname

08 | 09 Street name or box number | 10 Apt number | 11 City, town, village | 12 Postal code | 13 Sex check (✓) Male 1, Female 2 | 14 Marital status: Single, including divorced or widowed 1; Married or separated 2

15 Date of birth (e.g. 21 07 42) Day | Month | Year

16 Social insurance number

17 Salary Category Placement: 1 | 2 | 3 | 4 | 5 | 6

22 Increment Step

Annual salary (TO NEAREST DOLLAR) at rate applicable this September (e.g. $10,367.68 is to be reported as $10 368)

18 Basic salary | 19 Administrative allowance | 20 Other allowances | 21 Total salary

30 Employment status: Full time 16; Part time 26

31 PART TIME TEACHERS ONLY: % of full time that you are employed

32 All respondents check (✓) ONE ONLY. Scope of assignment: One school only 1; More than one school but not district wide 2; District wide 3; More than one district 4

33 Position: check (✓) ONE ONLY

- Regular classroom teacher (if head teacher, specify head teacher below) 01
- Relieving teacher assigned to a specific school 02
- Principal of one school 03
- Vice Principal 04
- Department Head ... specify below 05
- Other School instructional staff (check and specify below, e.g. School Librarian, Special Counsellor) 06
- ... 07
- ... 08
- ... (check and specify below, e.g. Special Counsellor ... Relieving Teacher) 09

34 ... CODE

35 Grades you teach (✓) see INSTRUCTIONS on back — K or 01 02 03 04 05 06 07 08 09 10 11 12 | SPECIAL 20 21

36 Grades you supervise (✓) see INSTRUCTIONS on back — K or 01 02 03 04 05 06 07 08 09 10 11 12 | SPECIAL 20 21

37 If you have responsibilities at BOTH the elementary and secondary levels ... — % of time spent at secondary level

38-43 Indicate the percentage of your school week assigned to:

Teaching (include team teaching and assigned tutorial instruction) — EXCLUDE ALL SPECIAL EDUCATION	38	%
Teaching Special Education	39	%
Library	39	%
Supervising of study periods	40	%
Counselling	41	%
Administration and supervision of instruction	42	%
Time free of duties above (including free periods)	43	%
NOTE: The % reported here must add to 100% for both full time and part time teachers (no decimal places)		100%

44-45 Grade I to VII class size (see instructions on back). Do not complete for Kindergarten classes, see items 46-59. If you record the attendance of a Grade I to VII class (including primary and intermediate special) then

44 give the enrolment of this class

45 check (✓) the grade(s) of the class: 01 02 03 04 05 06 07 20

46-59 KINDERGARTEN AND SECONDARY CLASS SIZE. See instructions on back. Include all regular classes taught (including guidance) but EXCLUDE any classes involving team teaching, assigned tutorials, library and counselling. REPORT ONLY CLASSES BEING TAUGHT AT THE PRESENT TIME. See INSTRUCTIONS on back!

	Course code (see list on back)	Name of Course (e.g. ENGLISH MATH)	Grade level (see instructions on back)	Enrolment of Each Single Class: Total	Males	Females	% of your school week assigned to this class (See notes on back)
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							

Grade Code: 00 Kgn; 08 VIII; 09 IX; 10 X; 11 XI; 12 XII; 20 Special; 90 Multi Grade

The male female breakdown is to be completed for the following classes only:

Home Economics	11800
Industrial Educ.	13000
Physical Educ.	13900
Commerce	10900
Special Education	12100
Programmes for Particular Occ'ns	14800

E.G. If an English 9 class was taught 6 periods out of a 40-period school week, then 6/40 x 100 = 15% would be reported.

COMMON CONVERSIONS

1/6 = 17%
1/7 = 14%
1/8 = 13%
1/9 = 11%

If you teach a class 100% of your time write in 100 even though there are only two boxes.

Round percentage to nearest whole number

60 MAJOR activity or occupation last school year check (✓) ONE ONLY

- Teaching or supervising
  - In a B.C. public school
    - In present school district 01
    - In another school district 02
  - In a B.C. non-public school 04
  - Outside B.C. (check and specify below in 62) 03
- Attending university or post-secondary institution
  - In B.C. 05
  - Outside B.C. (check and specify below in 62) 06
- Housekeeping 07
- In another occupation 08
- Substitute teaching 10
- Unemployed 11
- Other 09

62 Indicate province in Canada or country if outside Canada if you checked 03, 06, 07, 08, 09, 10, or 11 in item 60

Years of teaching experience to end of last June (See notes on back)

63 In this district
64 Elsewhere in B.C. public school system
65 Outside B.C. public school system

66 Current B.C. TEACHING CERTIFICATE NOT SALARY CATEGORY. Check (✓) ONE ONLY. See INSTRUCTIONS on Back

Professional	40	Professional Advanced	61
Standard	30	Professional Basic	51
		Professional Conditional	41
Teaching licence	20	Elementary Advanced	31
		Elementary Basic	21
Letter of Permission	90	Elementary Conditional	11
		Vocational Instructor's	98
Instructor's Diploma	94		

67 If you hold an interim certificate give expiry date (e.g. 06 76) — Month | Year

69-71 Indicate the province in Canada (or country if outside Canada) where you

69 last attended secondary or high school — Code
70 received your initial teaching certificate — Code
71 received the post-secondary education that first qualified you as a teacher — Code

72 If your response to item 71 was British Columbia indicate the ONE institution you attended to FIRST qualify as a teacher: UBC 01; ... Vic. Coll. 02; SFU 03; NDU 04; B.C. Normal School 05; Other 06

68 Year Initial Teacher Training Completed: 19

List earned degrees (NOT diplomas). Give codes from List 3 on back

	Degree Code	Degree abbreviation (e.g. B. Ed.)		Year obtained	If in Canada indicate university. If outside Canada indicate country	
73			74	19		75
76			77	19		78
79			80	19		81
82			83	19		84

Using lists 1 and 2 on back of this document code the major subject areas or fields in which you have completed 3 or more UNIVERSITY OR UNIVERSITY TRANSFER courses and give the total number of full courses completed in each area (1 full course = 3 units = 6 semester hours, 9 quarter hours). If your subject area is not on either list, please print your subject area and the number of courses completed. E.G. If you completed 3 full university courses (English 100, 200 and 300) enter code 31802 in code column and enter "3" in "number of courses completed" column.

	Code		No. of courses completed	Subject area
85		86		
87		88		
89		90		
91		92		
93		94		

I certify that the information given herein is complete and accurate

Completion Date | Signature of Teacher