

Information Needs and Uses in Education

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This paper investigates the relationship between education position and (1) purposes in seeking information, and (2) sources of information used. As part of a larger study, a questionnaire was distributed to a random sample of public school educators in British Columbia, and respondents were asked to indicate the extent to which they sought information for 15 different purposes and their preference for 13 information sources. With respondents stratified into four position groups (Elementary and Secondary Principals and District Administrators, $n = 173$; Secondary Support Personnel and District Support Personnel, $n = 265$; Secondary Teachers and Department Heads, $n = 292$; and, Elementary Teachers and Elementary Support Personnel, $n = 304$), analysis of variance and Scheffé post hoc comparisons revealed highly significant differences among the four groups in purposes for seeking information and expressed preference for information sources. The findings support the notion that characteristics of user groups, including work role, will affect their information seeking and use behaviour and that such characteristics should be given greater consideration in developing delivery systems and designing information products and services. Limitations of the study are discussed and practical and theoretical implications presented within the context of Canadian, American, and British user research in the field of information science.

Cet article étudie (1) les buts visés par les éducateurs lorsqu'ils cherchent de l'information et (2) les sources d'information qu'ils privilégient en relation avec le poste qu'ils occupent dans le système d'éducation. Dans le cadre d'une étude plus vaste, un questionnaire a été administré à un échantillon choisi au hasard parmi la population des éducateurs du système public de la Colombie Britannique: les répondants devaient se situer par rapport à quinze (15) buts différents pouvant orienter leur recherche d'information et indiquer leurs préférences eu égard à treize (13) sources de renseignements. L'échantillon a été stratifié de façon à former quatre groupes de répondants remplissant des fonctions éducatives différentes (les principaux d'écoles élémentaires et secondaires, $n = 173$; les personnels de soutien du district et des écoles secondaires, $n = 265$; les professeurs des écoles secondaires et les chefs de département, $n = 292$; et le personnel de soutien et les professeurs des écoles élémentaires, $n = 304$), une analyse de variance et les comparaisons à posteriori de Scheffer ont été réalisées révélant la présence de différences hautement significatives entre les quatre groupes de répondants en ce qui concerne les buts qu'ils poursuivent lorsqu'ils cherchent de l'information, et leurs préférences à l'égard de différentes sources d'information. Les résultats indiquent que les caractéristiques des groupes d'utilisateurs, incluant leur rôle au travail, affectent la façon dont ils cherchent et utilisent la documentation, et que ces caractéristiques devraient davantage être prises en considération lorsqu'il s'agit d'organiser la distribution de l'information et de planifier les produits et services offerts dans ce domaine. La discussion des limites de la recherche et de ses implications théoriques et pratiques est présentée et située dans le contexte des recherches portant sur les usagers de l'information réalisées au Canada, aux États-Unis et en Grande Bretagne.

As has been observed frequently, a large percentage of the GNP in Canada and other industrialized nations now involves the production and manipulation of information (Serafini and Andrieu, 1981). We exist in an information-rich culture. Various labels have been used to capture the essence of the emerging era of information including: the information age (Hammer, 1976); the information frontier (Branscombe, 1979); the information society (Garfield, 1979; Masuda, 1980; Toffler, 1980); informatics (Taylor, 1978); and, the knowledge society (Holzner and Mark, 1979) in the post-industrial world (Bell, 1974). Whatever the label used to describe the phenomenon, the sheer bulk and pervasive significance of information in the performance of any professional role have led to increasing professional interest in various aspects of the information creation, transfer, and use paradigm. While technological developments in the storage, display, and transformation of information have been extraordinary over the past three decades, particularly in the development of machine readable bibliographic data bases (i.e., ERIC-like systems – see Bourne (1980); Lancaster and Smith (1980)), studies of information interface with and satisfaction of user needs at the macro and micro level have been slower to emerge. Wilson (1981a) explores some of the more salient conceptual and definitional problems responsible for the slow emergence of user research. We do need to broaden both our qualitative and quantitative knowledge about users, their behaviours and environments, in order to design more responsive information delivery systems and tailor them to better meet the needs of specific user groups (Mick, Lindsay, and Callahan, 1980).

User studies represent an increasing proportion of information science research with a tradition of such studies in science and technology going back 30 years. As Wilson (1981a) notes, "Apart from information retrieval there is virtually no other area of information science that has occasioned as much research effort and writing as user studies" (p. 3). Since the late 1960s, user needs in the social and behavioural sciences have also been given some attention.¹ Currently, the primary investigative mode of user studies is still data collection (most often in quantitative survey type research)² to describe the variables which affect information behaviour. With information science being the young discipline that it is, the field is just beginning to recognize the need for broader theoretical formulations to guide and direct user studies. There would be substantial agreement by most writers who have written on this issue. Our inability to develop guiding theory has been rather conspicuous. As Roberts (1982) cogently points out in assessing the state-of-the-art of user research,

If explanation is accepted as a legitimate aim of user studies then, consciously or unconsciously, an interpretive framework must be provided. This function is performed by theory ... As outlined, the research approach characteristic of user studies is inductive ... In the majority of cases neither the statements nor the associated explanations are related to explicit theoretical standpoints; the main concern is with reporting and describing (pp. 96–97).

Thus we find ourselves still rooted in a stage of conceptual simplicity, often seeking the *what* in user studies rather than the *why*, continuing to amass descriptive data based on primitive models rather than employing broader theoretical concepts to comprehend the user and his behaviour.

Discussion of information problems in general and the user dimension in particular have appeared in publications in Canadian education over the last decade. In 1971, the Canadian Teacher's Federation underscored the need to improve the information delivery system for Canadian education users. Auster and Lawton (1973) explored possible user needs and reactions to on-line bibliographic search services for educators in Ontario and recommended various activities to implement relevant user information services (Lawton and Auster, 1974). A later study reported a systems evaluation (through a user questionnaire) of the ERIC and ONTERIS data bases within the context of the Education Information System for Ontario concept (Lawton, Auster, and To, 1978). Meyers (1974) suggested that Canadian education research efforts should be coordinated through some professional body to enable education users to contribute to and take from educational information systems. In 1974, as part of a broad National Library Conference on the state of Canadian bibliography across professional disciplines, Summers (1977) examined information and bibliographic needs in Canadian education. He recommended that producers and consumers of Canadian education information be carefully identified, that perpetual user studies incorporating a range of independent and dependent variables be inaugurated, and that the Canadian Society for the Study of Education play a coordinating role in providing information services and research. In a subsequent paper, the requirements for a systems approach in designing a Canadian education information delivery system were set out for CSSE/SCEE including specific details on the user component involved in such a system (Summers, 1974a). The characteristics of a user-oriented information system (The Information/Knowledge Research Centre), to operate within a faculty of education and provide broad province-wide services, were also delineated by Summers (1974b). Allen and Matheson (1977) later reported an I/KRC study of users' attitudes toward computerized information retrieval services with the ERIC tape data base, using a semantic differential scale and a questionnaire to collect data. Although this sampling of studies contains speculative and descriptive work, it is clear that much remains to be done in developing what Wilson (1981a) termed a "wider holistic view" of the information user before theoretical constructs relevant to user behaviour can be more fully explicated and researched.

The research reported in this study relates to one segment of those who use education information in Canada – the professional groups working in the public education system of a specific province. In 1979, a large-scale study of the use of information sources by educators in British Columbia was reported. We used variables identified in previous research with large

groups of educators in the United States (Paisley, 1972; Hood & Blackwell, 1976) and incorporated additional variables of our own in developing a questionnaire to collect data. More specifically, in a basically descriptive approach – unrelated to any particular theory of information behaviour – we collected quantitative data on personal and professional characteristics and information-seeking behaviour in order to shed light on characteristics of sub-groups of users in the education reference group and determine the extent to which their personal, professional, and psychological attributes influenced use of various sources of information. The results for the complete study are reported in Matheson (1979) and Summers, Matheson, and Conry (1983a).

Wilson (1981a) refers to the user's life world and defines it as the totality of experiences centred upon the individual as an information user. Within the life world, he defines one important sub-world as the work environment, much as Paisley (1968) conceptualized the user as operating within interacting cognitive, emotional, and social systems. Previous research suggests that position, or work group, is a powerful variable which can differentiate the information seeking and use behaviour of users. Thus a person's work group membership can be thought of as playing a crucial role in our understanding of the nature of users' information needs. In fact, in the Summers, Matheson, and Conry (1983a) report, the two variables, position and attitude toward information,³ were the strongest predictors of information behaviour in the multiple regression analysis of the personal, professional, and psychological attributes investigated in the study. Few studies in education, particularly involving Canadian populations, have objectively addressed the possibility that position will directly affect users' purposes in seeking information and the type of information used. The 1979 questionnaire study provided data which allowed us to stratify public school teachers and administrators into four sub-audiences and conduct an exploratory post hoc analysis of the relationship between position, purposes for seeking information, and sources of information used. We developed two typologies (giving 15 reasons for seeking information and describing 13 sources of information) based on a review of research on the information-seeking behaviour of educators, and we collected respondent data to answer two questions about the effect of position: (1) Will educators organized into four specialty groups differ in their expressed purposes for seeking information? (2) Will educators in the four specialty groups differ in their expressed preferences for various sources of information?

METHOD

The Survey Instrument

The user questionnaire was designed to gather information from respondents on personal and professional characteristics and their

information-seeking behaviour. Personal and professional items included position, years of experience, sense of isolation, level of education, habits of information dissemination, and attitude toward information. Information seeking items asked respondents to indicate the frequency with which they sought information for 15 specific purposes, their frequency of use of 13 information sources, the importance of 11 characteristics of information, and the extent to which they encountered 10 problems in finding and using information.

After a pilot study to finalize items, the survey questionnaire was mailed to the sample of educators. Response tabulation and follow-up activities were conducted over a five-week period beginning May of 1978. A total of 1,640 questionnaires were mailed and the response rate was 65.7%.

The Population

Using personnel data provided through Ministry of Education files, a sampling frame was developed based on a random sample of teachers, administrators, and support personnel representative of educators in the 12 regions of British Columbia. With some reorganization of the structure (e.g., elimination of the category-relieving teacher etc.), the following nine major education work roles emerged: elementary teacher, junior and secondary teacher, secondary department head, elementary principal and vice principal, secondary principal and vice principal, support personnel—elementary, support personnel—secondary, support personnel district, and district administrators. Sampling proportions were estimated to approximate accurately the total population and subpopulations of educators in British Columbia.

The nine position categories ranged in size from $n = 31$ to $n = 236$. In order to do the statistical analyses it was desirable to have fewer groups with more nearly equal cell size. Means were computed for each of the nine categories on each of the 15 purposes for seeking information. The resulting 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. A sharp rise in error value indicates that the optimal number of groups have been formed. The analysis generated four position groups: Elementary Teachers and Elementary Support Personnel ($n = 304$); Secondary Teachers and Secondary Department Heads ($n = 292$), Secondary Support Personnel and District Support Personnel ($n = 265$); and, Elementary and Secondary District Administrators ($n = 173$). To check the effectiveness of this grouping, a one-way analysis of variance was performed using the data from the attitude survey as the dependent variable, and the position cluster as the independent variable with the individual respondent as the unit of analysis. The results ($F(3; 1,032) = 55.26, p \leq .001$) indicate that position cluster differentiated attitude responses and is a valid grouping of the nine position categories for purposes of the statistical analyses.

FINDINGS

Relationship of Position to Purposes in Seeking Information

One-way analyses of variance were computed using purpose as the dependent variable and position as the independent variable for each of the 15 purpose-for-seeking-information items. The 15 items appeared in the questionnaire as follows: (1) teaching techniques; (2) finding new materials; (3) facts for classroom use; (4) general awareness of theories, trends; (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 relations and concerns. Respondents were asked to indicate on a three-point scale if they *seldom or never* (1), *sometimes* (2), or *frequently* (3) sought information for the purpose listed. In the preamble to the questionnaire, information was defined as "spoken or written facts or opinions" and sources defined as "people, printed material or places where information can be found."

Table 1 presents the means, *F* ratios and Scheffé comparisons for the effect of position on purposes in seeking information. For the first purpose, the results in Table 1 can be read as follows: "When asked to indicate how frequently (*seldom or never, sometimes, frequently*) they sought information to understand teaching techniques, the four work groups differed significantly ($F(3; 1,032) = 11.0, p < .001$) from each other in their responses. The results for position 2 were significantly different ($p < .05$) from those for positions 4, 1, and 3 with the magnitude of the means ordered from lowest to highest." Position was a significant discriminator for all 15 purposes, well beyond chance occurrences. The data reveal the complexity of the relationship between position and expressed purposes in seeking information. Nearly every purpose reveals a unique ordering of means for the Scheffé comparisons.

The rank ordering of position group means for the 15 purposes in seeking information are more clearly illustrated in Figure 1. Elementary and Secondary Principals and District Administrators ranked first in expressed frequency for six purposes, second for six purposes, third for two purposes, and fourth for one purpose. Secondary Support Personnel and District Support Personnel ranked first in expressed frequency for five purposes, second for five purposes, third for two purposes, and fourth for three purposes. Elementary Teachers and Elementary Support Personnel ranked first in expressed frequency for two purposes, second for two purposes, third for nine purposes, and fourth for two purposes. Secondary Teachers and Secondary Department Heads ranked first in expressed frequency for two purposes, second for two purposes, third for three purposes, and fourth for eight purposes.

TABLE 1
Effect of Position on Purposes: Means, F-ratios, and Significant Comparisons

Purposes	Position Means†						Scheffé Comparisons*
	F‡	ET & SP	ST & DH	S & DA	D & SSP		
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 problems	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, $p < .001$ ($d.f. = 3; 1,078$).

‡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.

FIGURE 1
Rank Ordering of Purposes by Position Group

<i>Position (work group)*</i>	<i>Purposes for seeking information</i>														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Elementary and Secondary Principals and District Adminstrators (<i>n</i> = 173)	3	1	4	1	2	1	2	2	1	1	2	1	2	3	2
Secondary Support Personnel and District Support Personnel (<i>n</i> = 265)	1	4	3	2	3	2	4	1	4	2	1	2	1	2	1
Secondary Teachers and Secondary Department Heads (<i>n</i> = 292)	4	2	1	3	4	3	1	4	2	4	4	4	3	4	4
Elementary Teachers and Elementary Support Personnel (<i>n</i> = 304)	2	3	2	3	1	4	3	3	3	3	3	3	4	1	3

**F* ratios were significant for all 15 items

The findings illustrate clear differences in expressed frequency for the 15 purposes for seeking information with the data organized by position group. Some differences appear when the Elementary and Secondary District Administrators are compared overall with the Secondary Support Personnel and District Support Personnel. Sharper differences appear when Elementary Teachers and Elementary Support Personnel are compared overall with Secondary Teachers and Secondary Department Heads. The sharpest differences appear with the data aggregated into the two broad categories – administrative and support personnel and teachers (Administrative and support personnel ranked first on expressed frequency for 11 purposes, second for 11 purposes, third for four purposes, and fourth for four purposes, while teachers ranked first on expressed frequency for four purposes, second for four purposes, third for 10 purposes, and fourth for 12 purposes.). Differences in expressed purposes for seeking information among the four groups are somewhat predictable (i.e., rankings for items 3, 4, 6, 8, 10, 11, 12, 13, 15) but are also somewhat surprising for some purposes (i.e., rankings for items 1, 2, 5, 7, 9, 14).

Relationship of Position to Sources of Information

One-way analyses of variance were also computed using sources of information as the dependent variable and position as the independent variable for each of the 13 sources of information items. Respondents indicated their frequency of use for each source selecting *never* (1), *rarely* (2), *sometimes* (3), *frequently* (4).

Table 2 presents the means, *F* ratios, and Scheffé comparisons for the effect of position on sources of information used. Position was a significant discriminator for 11 of the 13 sources of information used, well beyond chance occurrences. A unique ordering of means appeared for 11 of the 13 sources as indicated by the Scheffé comparisons.

The rank ordering of position group means for the 13 sources of information items is illustrated in Figure 2. Elementary and Secondary Principals and District Administrators ranked first in expressed frequency of use for 10 information sources, second for one source, third for two sources, and fourth for no sources. Secondary Support Personnel and District Support Personnel ranked first in expressed frequency of use for no information sources, second for eight sources, third for three sources, and fourth for two sources. Elementary Teachers and Elementary Support Personnel ranked first in expressed frequency of use for three sources, second for two sources, third for six sources, and fourth for two sources. Secondary Teachers and Secondary Department Heads ranked first in expressed frequency of use for one source, second for one source, third for three sources, and fourth for eight sources.

The findings illustrate clear differences in expressed frequency of use

TABLE 2
Effect of Position on Sources: Means, F-ratios, and Significant Comparisons

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

*F-ratios reported are all significant, $p < .001$ ($d.f. = 3; 1,078$)

†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.

FIGURE 2
Rank Ordering of Sources of Information by Position Group

Position (work group)*	Sources of information used														
	8	3	5	13	4	2	12	11	10	6	4	7	9	1	7
Elementary and Secondary Principals and District Administrators (n = 265)	3	1	2	3	1	1	1	1	1	1	1	1	1	1	1
Secondary Support Personnel and District Support Personnel (n = 173)	4	3	4	2	3	2	2	2	3	2	2	2	2	2	2
Secondary Teachers and Secondary Department Heads (n = 292)	1	2	3	4	4	3	4	4	4	3	4	4	3	4	4
Elementary Teachers and Elementary Support Personnel (n = 304)	2	3	1	1	1	4	3	3	2	4	3	3	4	3	3
	Factor I (Close at hand traditional sources)						Factor II (Less accessible print sources)						Factor III (organized interpersonal sources)		

**F* ratios were significant for all items except 3 and 10

for 11 of the 13 information sources. The pattern of differential source use by the four position groups is strikingly illustrated with the sources organized into three orthogonal factors as shown in Figure 2. The details of the factor analysis are reported in Summers, Matheson, and Conry (1983a). Differences in source use are apparent when comparing the position group Elementary and Secondary Principals and District Administrators with the Secondary Support Personnel and District Support Personnel group and when comparing the position group Secondary Teachers and Secondary Department Heads with Elementary Teachers and Elementary Support Personnel group. Sharp differences are apparent with the data aggregated into the two broad categories, administrators and support personnel, and teachers. The trend is for teachers as a whole to rate higher use of close at hand, traditional sources of information while the administrators and support personnel rate higher use of less accessible and organized interpersonal information sources. Differences in expressed use of information sources by the four groups are fairly predictable for most sources (i.e., rankings for items, 1, 2, 6, 7, 8, 9, 11, 12, 13) but are also somewhat surprising for rankings for some sources (i.e., rankings for items 4 and 5).

DISCUSSION AND IMPLICATIONS

All aspects of user behaviour were not examined in this study. The focus was on a descriptive, post hoc exploration of the relationship between position and purposes in seeking information and information sources used involving a sampling of Canadian educators from one province. In answering the two questions posed earlier, our findings support the observation that position, or work group, will significantly differentiate purposes for seeking information and sources of information used. Differences in purposes for seeking information and the type of information used were observed in comparing administrative with support personnel and in comparing the elementary and secondary teacher groups. When the data were aggregated to form two large general groups – administrators and support personnel, and teachers – the greatest degree of differences among work groups was observed.

The results have both practical and theoretical implications. Two tentative predictions related to use of information by educators can be set forth.

(1) With respect to purposes for seeking information, as the dimensions of the educational work group vary and incorporate broader organizational responsibility (i.e., moving from teaching, to support, to administration), and more flexible time constraints in scheduling work activities and the like, information will be sought with more intensity and for a broader variety of purposes.

If the first and second ranked purposes for seeking information reported

for each position group are considered, the mean rankings presented in Figure 1 offer tentative support for this prediction. For the teacher groups, purposes for seeking information revolve around teaching techniques, finding new materials, facts for classroom use, motivation, developing new materials, finding new sources, and students with problems. For support personnel, rankings of purposes duplicate the teacher groups for teaching techniques and students with problems but the emphasis shifts to include broader concerns such as awareness of trends, curriculum development, evaluation, professional development, decision making, classroom management, writing reports, and public reaction. The administrative group duplicates purposes with the teaching and support groups (i.e., finding new materials, motivation, developing new materials, finding new sources, and, awareness of trends, curriculum development, evaluation, professional development, decision making, classroom management, writing reports, and public reaction, respectively) and exhibits the broadest and strongest purposes in seeking information.

The second prediction states that:

(2) With respect to sources of information used, as the dimensions of the education work group vary along the lines set out in prediction (1), relative use of information sources will increase and the variety of sources used will broaden.

If the first and second ranked information choices reported for each position group are again considered, the mean rankings organized by the three orthogonal information clusters identified in the factor analysis offer tentative support for this assumption (Figure 2). For the teacher groups, their highest ranked information choice sources occur on items comprising Factor I (close at hand, traditional sources) and include the following: textbooks and books; books, files in my office; school district libraries; curriculum materials; and, abstracts and bibliographies. Their low-ranked choices centre on items in Factor II (less available print sources) and Factor III (organized interpersonal sources).

The highest ranked information source choices for the support personnel occur on items comprising Factor II (less accessible print sources) and include: research, theses; computer retrieval; education journals; abstracts and bibliographies; experts outside; and, Factor III (organized interpersonal sources) including conventions, meetings; workshops, courses; and experts outside. Some Factor I items are also highly ranked including conversations with colleagues, and curriculum materials. The highest ranked information source choices for the administrative group occur on all items for Factors I, II, and III with the exception of textbooks, books, and, curriculum materials. This work group exhibits by far the highest reported frequency and broadest range of information source use.

The support derived for both predictions (1) and (2), based on the

respondent data gathered in this study, is tentative and their generality and applicability would obviously have to be established through further research. If we consider work groups as the primary audience for information services of various types, then the results of this study support the notion that such services should be differentiated by work position – both in terms of the relative purposes of the group in seeking information and their preferred sources of information. The results of the study allow us to endorse the hypothesis put forward by Hood and Blackwell (1976) in their United States study, “If significant meaningful patterns (information behaviour) can be established there would be at least a beginning basis for designing or redesigning information products and services in terms of the needs of different classes of users” (pp. 1–3). Our results also echo the point of view more recently expressed by Wilson (1981a) in his analysis of user needs in the British information context:

An “information science” firmly founded upon an understanding of information users in the context of their work or social life is also likely to be of more use to the information practitioner by pointing the way to practical innovations in information services, and to potentially beneficial association with other communication-information-related sub-systems (p. 12).

The results of the study begin to identify specific and unique characteristics in the information-seeking behaviour of the four position groups. We collected data through a quantitative survey approach, but qualitative approaches should also be used to provide a more valid multimeasure data collection methodology. For example, Wilson and Streatfield (1981) suggest that survey instruments could be effectively augmented by including such qualitative measures as written records (diaries, worksheets, etc.), discussions or interviews with subjects, and direct observation of subjects performing their work in structured environments. The developers of information services should see to it that information from users is more actively involved in the design phase and that the environments within which the services are used, in all their sociological and psychological complexity, are also taken into account (Dewe & Deunette, 1979). To accomplish this we need closer study of the work role and the social setting which generates the need for and use of information (Wilson, 1981a, p. 10).

The results of this study may have broader theoretical implications as well. As has been pointed out, advances in the understanding of user information behaviour must go beyond description and explanation with the formulation of predictive models embracing the complexity of the phenomenon. In general, user research has only been able to describe behavioural phenomena and is not yet able to predict such phenomena. A large gap exists between description and prediction. If such research is to become more theoretically oriented, it must concentrate on the causal factors underlying user behaviour and begin to isolate predictive

elements in such behaviour. Wilson (1981a) makes much the same point: "If we wish to uncover the determining factors of (information) behaviour we must do so by first undertaking in-depth studies of well-defined categories of persons, developing explanatory concepts and then testing these concepts in related but different settings" (p. 11). In any such theory-based modelling of user behaviour, the effects of position, both in describing the user environment and accounting for purpose and source use, would certainly seem important as a unifying intervening variable in the nomothetic network related to developing more conceptually oriented user research (attitudinal and motivational variables would also appear to be crucial in this regard). There is no guarantee that developing the ability to make better empirical predictions will eventually lead to broader theoretical explanation, but such predictions could provide the insight needed to at least generate more fruitful theory-oriented hypotheses for studying user information research.

Educators seek and use different kinds of information in their work for various purposes. The array of hypothetical knowledge and information which may be of potential interest to educators is very broad. In the age of information, that storehouse of resources will continue to expand and it is probable that such resources will become more readily available through improved delivery systems. The need for better practical and theoretical understanding of user needs and behaviour is crucial if the wealth of information available is to be used to the best advantage of education.

NOTES

- ¹ See Brittain (1979) and Wilson (1980) for the history of the 15-year life of information research in the social sciences and discussion of the linkage between information science and social science. State-of-the-art reviews on information needs and uses can be found in the *Annual Review of Information Science and Technology* beginning with Menzel (1966). See Paisley (1968) and Crawford (1978) for *ARIST* reviews which provide particularly good summaries of research status on information users in the social sciences. For further information on user research see: D. W. King and V. E. Palmour, 'User behaviour,' in C. Fenichel (Ed.), *Changing patterns in information retrieval*, and D. W. King and V. E. Palmour, 'User research,' in *Aslib Proceedings*.
- ² An emerging trend in social science information studies is the urging for the use of qualitative methodology to complement the quantitative approaches already widely employed. A full issue of *Social Science Information Studies* (Wilson, 1981b) was devoted to the topic and provides a number of excellent papers.
- ³ Complete results for the attitude analysis can be found in Summers, Matheson, and Conry (1983b).

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Dieser Aufsatz untersucht das Verhältnis zwischen der Stellung im Erziehungswesen und (1) der Absicht für die Suche nach Information und (2) der angewendeten Informationsquellen. Als Teil einer grösseren Untersuchung wurde ein Fragebogen an eine wahllose Gruppe von Volksschulern in Britisch Kolumbia ausgeteilt, in denen die Antwortenden gebeten wurden darzustellen, in welchem Umfang sie mit fünfzehn verschiedenen Absichten nach Information gesucht haben sowie ihre Bevorzugung von 13 Informationsquellen. Mit der Einteilung der antwortenden Personen in vier Gruppen (Grundschul- und höhere Schulleitenden und Bezirksverwalter, $n = 173$; anderes Oberschul- und Bezirkspersonal, $n = 265$; Oberschullehrer und Fachleiter, $n = 292$; und Grundschullehrer und anderes Grundschulpersonal, $n = 304$) zeigten Varianzanalyse und Scheffe post hoc Vergleiche bedeutende Unterschiede zwischen den vier Gruppen in der Absicht für Forschung und die zum Ausdruck gebrachte Bevorzugung von Informationsquellen. Das Ermittlungsergebnis bestätigt die Annahme, daß Eigenschaften der Gebrauchergruppen, einschließlich Arbeitsfunktion, das Verhalten der Informationssuchenden und Nutzenden

beeinträchtigen, und daß solche Eigenschaften berücksichtigt werden müssen in der Entwicklung von Lieferungssystemen und Entwerfung von Informationsprodukten und Diensten. Beschränkungen der Untersuchung werden besprochen und praktische sowie theoretische Folgerungen im Zusammenhang mit kanadischer, amerikanischer und englischer Gebraucherforschung auf dem Gebiet der Informationswissenschaft werden dargestellt.

Este artículo estudia la relación entre el puesto educativo y (1) el propósito de la información que se busca, y (2) las fuentes de información usadas. Dentro del marco de un estudio más amplio, se administró un cuestionario a una muestra elegida al azar de educadores del sistema público de la Colombia Británica, en la que los encuestados debían indicar hasta qué punto buscaron información para 15 fines diferentes así como su preferencia por 13 fuentes de información. Los que contestaron fueron divididos en cuatro grupos según sus puestos (directores de escuelas primarias y secundarias y administradores de distrito, $n = 173$; personal de respaldo de secundaria y personal de respaldo distrital, $n = 265$; profesores de secundaria y jefes de departamento, $n = 292$; y maestros de primaria y personal de respaldo de primaria, $n = 304$). Se llevó a cabo un análisis de varianza y una comparación a posteriori de Scheffe; ambos revelaron diferencias altamente significativas entre los cuatro grupos en cuanto a los fines para los que buscaban la información y a las preferencias indicadas por las fuentes de información. Los resultados confirman la idea de que las características de los grupos de usuarios, incluyendo su papel en el trabajo, afectan su comportamiento en cuanto a la búsqueda y uso de información, y que tales características deberían de ser tomadas más en cuenta cuando se desarrollan sistemas de entrega y se planifican los productos y sistemas en ese campo. Se discuten las limitaciones del estudio y se presentan las implicaciones prácticas y teóricas dentro del contexto de la investigación del usuario canadiense, americano e inglés en el campo de la ciencia de la información.

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