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ABSTRACT

Five issues must be considered if a more effective information and bibliographic delivery system is to be developed for Canadian education. (1) The size and characteristics of the reference group in Canadian education should be studied. With all its subgroups, this group may comprise as many as 200,000 people. (2) The number and types of documents being produced in Canadian education should be reviewed. There may be as many as 5,000 items produced each year in Canada. (2) The number of documents produced in Canada that actually enter the existing information delivery system must be examined. There is no well conceived, systematic procedure to insure that every document produced on Canadian education actually is disseminated. (4) An evaluation of current practices in describing, organizing, and providing information about education documents is needed. The best sources of bibliographic information include "Canadiana" and the "Canadian Education Index." (5) Existing bibliographic materials on Canadian education should be documented, and unmet needs should be noted. The preparation of a "Guide to Information and Bibliographic Resources Related to Canadian Education" and the formation of a task group on the improvement of information and bibliographic services in Canadian education are recommended. (DGC)

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Information and Bibliographic  
Needs in Canadian Education

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Paper prepared for the National Conference on the State of Canadian Bibliography,  
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Information and Bibliographic  
Needs in Canadian Education

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When I was asked to prepare this position paper it was my understanding that my role was to look broadly at information and bibliography and provide content in the subject area of education for consideration and deliberation by the conferees, the goal of the total conference being to arrive at some estimate of the adequacy of current and retrospective bibliographies in recording documents published in Canada, by Canadian authors, or in subject fields relating to Canada. Thus, it seemed best to begin with the assumption that a complete system, judged to be totally effective by the professional compatriots needing access to it, does not at present exist for the effective delivery of timely information in the subject area of Canadian education to the total array of users needing such information. This should in no way be construed as adverse criticism of what does exist. Bibliography in Canadian education is alive and doing well in professional associations, school districts, libraries, research centres, colleges and universities and local, provincial and national government agencies. Good efforts are being made and dedicated people work daily to the end of providing effective delivery of information for education. However, with increasing demands for information, advances in technology and communication, the rapidity of change and the burgeoning growth of documents it is well to engage in some periodic evaluation lest we negate the effect of the efforts being made.

Most of the elements needed to further the development of a more effective delivery system for Canadian educational information already exist. With the ever increasing flood of information, the need is to examine the structure of the present system and develop more effective linkage of these existing elements and add additional elements where needed. The system developed should be open-ended and as free as possible of constraints in terms of document entry and use. Anyone should be free to act as a user - join or leave, take advantage of or ignore the information, although it is recognized that propinquity is always a major factor in terms of access to and use of any system. The delivery system or "configuration of components interconnected for a purpose according to a plan" should organize the series of activities or units that are structured to the end of locating and receiving educational information, processing and organizing the information, and making it available for use in various forms. The cybernetic aspects "continuous feedback of performance data for the purpose of making adjustments in the system" are critical.

The system should concentrate on organizing the document products in education that are uniquely Canadian. However, it would be unwise to restrict the system boundaries too narrowly. Education is an international enterprise and a many faceted discipline. In fact, when considered as a discipline, education is so broad as to almost defy succinct definition. Rather than engage in philosophical discussion of the exact parameters of the field of education, we should accept that Canadian education will inevitably be broadly defined with a concomitant diversity of topics and needs in information and bibliography. The task is to develop a system, building on what now exists, to insure that all obviously Canadian education materials are identified and enter the system with the added caveat that materials from "related"

areas will also be incorporated. It has been my experience that few educators are interested in bibliographies containing exclusively Canadian materials. They are more concerned that materials from all sources be included and that coverage of Canadian material be particularly complete. Recent bibliographies in Canadian education are increasingly inclusive rather than exclusive.

The balance of this paper will present five major question areas that should be considered if a more effective information and bibliographic delivery system is to be developed for Canadian education. Several additional points should be made before moving to these questions.

The total problem of improved bibliography is in actuality many separate problems. Information is handled in many different systems, and each serves a unique segment of the educational community with its own interests and outlook. Thus, education is one sub-system within the larger extremely complex total bibliographic data base of Canadian materials. In fact, Canadian information is likewise only one sub-system within the larger macro structure of world information. Education is most likely a sub-system, within a sub-system, within a sub-system.... Secondly, the bibliographic function, which is the focus of this conference, is a constituent component within the total chainlike process of information transfer. Questions raised about bibliography are inevitably related to the totality of the information process and can seldom be examined completely in and by themselves. Finally, the information process consists of separate stages that can be viewed as units namely; generation, recording and exposition; collection, cataloging, storage, retrieval and dissemination; and exploitation by the user. Generation, recording and exposition are performed by the producers of information and the organizations supporting them. Intermediate stages are performed by the

various professionals and the organizations that handle information. The final stages are related to the users and the organizations supporting them. Much of what has been written about information transfer relates to handling information - analyzing information for the purpose of identification, placing information in its proper place in a classification system, storing information, and matching information with requests - rather than the generation and use of information. Thinking in gross terms, there has perhaps been inadequate linkage between the producers/users and the organizers/retrievers of information. A preliminary statement outlining the goals for this conference stated:

...they (papers) will be discussed both by librarians, and those engaged in research or teaching of Canadian studies. In bringing together these two groups it is hoped to engender an awareness of the complementary roles they can play in the preparation of bibliographies. The librarian, on the one hand, has expertise in identifying, locating and describing documents, and an increasing expertise in the machine handling of bibliographic data. The subject expert, on the other hand, can most clearly characterize the type of documents needed as source materials for a particular field of study, and can most readily select and evaluate them. One aim of the Conference is to bring about a closer collaboration between these two groups in future bibliographic activity.

Such collaboration is much needed and its spirit should be heavily underscored by all those who attend and participate in the conference.

Education can be viewed as a society wide and life long process. However, a distinction should be made between education and schooling. Our concerns are more with providing educators with the kind of information they say they want and/or need as it relates to aspects of formal schooling as a political, social, economic, ideological concept. We have the metaphors for what it means to be schooled but not necessarily for what it means to be "educated". The information system developed should be viewed as a means

to an end - aiding those engaged in the process of formal schooling and ultimately educating - rather than an end in itself. Finally, it should be borne in mind that the ultimate problem of knowledge utilization in education is not necessarily the organization and transfer of the body of educational research and innovation to educators vis-à-vis an information system but problems inherent in the use of information itself. The crux is how to get educators to use extant knowledge, disseminate their own knowledge to each other, and develop their inquiry in a manner that will generate information delivery systems that are realistically tied to their needs. The availability of information and knowledge is a necessary but by no means sufficient condition for stimulation of inquiry and solution of both decision and conclusion oriented problems. No amount of information has much utility if the problem solver is asking the wrong questions or naming the wrong problems.

This brings us to the first of the five major systems constituent questions. What are the size and characteristics of the reference group in Canadian education? The group could be massive if we just assume everyone is interested in and related to education in some way. However, the need is to determine the magnitude and characteristics of the group that consistently relates to education on a day-by-day basis both as producers and/or consumers of information. This establishes a closed sub-system within the Canadian macro information system to a certain degree. The group can be labelled the "reference" group in Canadian education. They have information and bibliographic needs unique to their group but exist within the library and information structure developed with the needs and interests of many other sub-groups in mind. A reasonable estimate of the size of the group could

be made by tabulating the people involved in the 12 provincial departments of education, the close to 200 major school boards, the 60 teacher education institutions and 65 colleges and universities, the approximately 150 junior and community colleges and vocational/technical institutes, the dozen or so Federal departments related to education and units from educational organizations including: 65 national organizations, three dozen miscellaneous provincial organizations, 15 school trustee groups and a dozen home school associations. Layered over all the groups are the tens of thousands of teachers and administrators in public, church and private schools, those holding posts in higher education, and perhaps even publishing industry constituents. This reference groups constitutes the major producing group and the major user group related to the first and final stages in the information transfer paradigm - those responsible for the generation, recording, exposition and use of information. My guess would be that this group, exclusive of obvious overlap such as those who hold membership in a university faculty and also in one or more professional associations, would not exceed a total of 200,000 members. We should be able to sharply pinpoint the information use characteristics and needs of this size reference group. In comparison to other sizable reference groups presently being served by information delivery systems of various types, the information needs of the education group should be manageable and easily within the state-of-the-art in terms of technology and design.

With better definition of the educationreference group, and the sub-groups of which it is made up, we could research useful studies of information habits and needs. We could respond more flexibly to the information needs of educators by basing such response on needs assessment studies



rather than opinion alone. It would not be enough to conduct a once-only survey. We need to look to development of tools and methodologies that enable us to obtain data from perpetual user studies of our constituency. Continuous assessment and feedback is most effective. What would the information gathering and use profiles of educators, from various segments of the reference group, demonstrate to us with respect to the pattern and use of existing information sources? Would such a study indicate vast differences in needs and uses across the sub-components of the group? Would regional variation exist? Would we find that informal, interpersonal channels of information and use are as useful, if not superior to, the more formal channels whose lack of responsiveness to changing information needs is well known? Do educators misjudge information sufficiency in solving problems? Does costly duplication of research and development occur because educators operate in an information vacuum? What kinds of bibliographic efforts would be most productive in bringing information from the ever expanding flood to those who need and can use such information? What is the efficacy of "canned" bibliographies, prepared on general topics, as compared to instant, "demand" bibliographies resulting from a search of a comprehensively organized data base? At what stage in information use is it necessary to obtain full text as compared to only bibliographic citations or abstracts? What are the existing problems in obtaining full text once bibliographic information is available? Do educational users respond negatively to microforms and computer printouts?

How can users best be chauffeured to desired information? What type synthesis and analysis activities would be most useful to the reference group? State-of-the-art reports? Timely review articles? Bibliographies and special literature searches? Abstracts of current literature? Continued

surveillance of subject fields? Quick response on current literature? What is the real effect of timely information on the problem naming and problem solving capabilities of the reference group? Will the users behavior change as he exploits new problem solving powers through better access to information sources? Can we develop techniques to objectively "sense" education information needs and build adequate feedback mechanisms to obtain user reaction on supplied information? Do we dare attempt to ascertain, on a broad scale, Who needs What Forms of information on What Topics and for What Purposes and explicate a better system for the delivery of such information? Users are not automatically aware of what is available nor do they always know exactly what it is they are seeking. Can we afford to develop new patterns of information delivery built on a browsing or serendipity basis? Can we make information available and "see what happens?" Often, sheer availability has the greatest effect on demand and use of information.

Several dimensions could be incorporated in such user research studies. Independent variables could consist of the educators position, the level or locus of activity, and geographical location. Dependent variables could be manipulated in a number of ways and include: information needs bearing on amount of information (citation, abstract, whole text); type of information (research summary, opinion, timely review); user habits, ease of access, and other variables. Evaluation of the use of existing information sources could be conducted and studies also made, through libraries and resource centres, on the general information needs and habits of the education reference group and related sub-groups.

Our second major question emerges at this point. How many and what type documents are being produced by the reference group on a yearly basis? The task here is to identify and tabulate the "critical mass", the quantity

of books, monographs, theses, guides, serials, periodicals, realia and the like produced on a yearly basis that relate to the subject area of Canadian education. My rough estimate would be that this figure does not exceed 5,000 single items per year at most. Each unit in the reference group produces documents related to its purpose and function. The individuals within these units produce unit related documents and their own idiosyncratically oriented publications. To my knowledge, we have yet to organize a systematic, demographic study of the major reference groups comprising Canadian education, the sub-groups within the larger group, and develop an accurate estimate of the type and quantity of information generated by the group on a yearly basis. Such statistics are of importance in developing a reasonable systems approach in improving the delivery of education related information in Canada.

The third question is closely allied to the former and asks, How many of the documents produced by the reference group actually enter the existing information delivery system? The question relates to the identification and acquisition stages in our information transfer paradigm. There is seldom complete isomorphism between the number of documents produced and the number that actually enter the delivery system, appear in bibliographies, and become available to the reference group on a wide-scale basis. For various reasons, such restrictions on original printing, limited distribution policies, poorly conceived and managed acquisitions programs and the like, many otherwise useful documents only see the light of day in very limited quantities. Even with yeoman efforts in correspondence and direct contact, libraries and other repositories have difficulty in acquiring all the materials they desire from that which they know exists. Better coordination between the producers/users and the organizers/retrievers would be helpful. The producing units themselves are often fragmented and move in and out of production in sporadic

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fashion. The sub-groups within the reference group collect documents for diverse purposes. For example, the resource library established for a faculty of education may be seeking and organizing a rather different information collection than the resource library established for a large city school district or the collection assembled by a unit whose purpose is to establish a short term research center in a specified area. All tend to operate independently of the needs and existing collections of the other. As finances for book resources become even tighter, coordination across all units becomes even more necessary. (I recently located 14 copies of one publication in three local libraries while none of them had a single copy of four recent educational publications that were of value to at least five subject areas in education!) In addition to the variation across the sub-groups in the reference group, differences in purpose and scope in information collections by region and locale add to the problem. Thus, a confusing array of document entry points exists. Documents from the small sub-system of education enter the larger, seemingly monolithic, macro system that is designed to organize and deliver Canadian information on a much wider front. However, at the other end of the cycle, the user is faced with the problem of retrieving relevant information from the larger system for his particular needs. Things often simply get lost in the system. Problems also result because the organization, cataloging, and retrieval operations of the macro system cannot be tuned finely enough to accommodate the myriad needs of all the sub-components.

Producers also may not be attuned to the needs of the system in supplying copies, identifying them properly for bibliographic control, and meeting other minimum conditions for effective entry into the system. It is understandable why documents may fall through the cracks--why units within

the system cannot obtain documents they know exist or are often not aware of documents that relate to their mission even though the user is convinced they should have them. Needless duplication also exists in some areas while resources are in short supply in others. Producers still tend to assume limited responsibility, beyond their somewhat narrowly defined reference group, for distribution of what they produce. Could the producers of educational materials also aid in the current attempt to generate more cataloging-in-publication? No well conceived, systematic procedures now exist to insure that every document produced that is related to Canadian education is at least a candidate for entry into the system and can be easily located once in the system. A study needs to be made of the documents produced and the existing problems related to their effective entry into the system, location within the system, and ultimate retrieval from the system in response to user needs. We exist in an ad hoc information milieu, built largely piecemeal through historical accident rather than conscious design, which inadvertently results too often in a closed system in terms of document entry and user access.

Our fourth major systems questions asks, How effective are current practices in describing, organizing and providing information about education related documents once they enter the existing system? Developing answers to this question provides graphic illustration of how closely information and bibliographic questions in education relate to the broader issues now undergoing scrutiny in document acquisition, classification and organization for Canadian library services as a whole. Many aspects of our total system are under review at the present time through various task groups established by the National Library. As these groups conduct their study, it behooves those of us in the education community to be alert to the problems they

examine, their proposed solutions, and the effect on bibliographic services for Canadian education. For example, increasingly objective scrutiny is being given to the publication of Canadiana, the national bibliography. This is usually the starting point in any effort to develop a bibliography of Canadian sources in education and if it is not the most important bibliographic tool for the field, it certainly is among the most important. Canadiana should be the primary entry point for books and monographs, theses, pamphlets, realia, and government publications that relate to Canadian education. Is it? How effectively does Canadiana cover the document output of the reference group for Canadian education? What is included? What is excluded? Why? What problems exist in adequately cataloging education related materials? The time lag between publication of a document and appearance in Canadiana presents major problems. What is the effect of this lag on the effective delivery of information with respect to education publications? Can the production of Canadiana be accelerated to alleviate this problem? Problems of a general nature with respect to the subject headings used in Canadiana also relate to education. As the CLA List of Canadian Subject Readings (1968) is revised and enlarged, can specific needs in the area of education be identified and attended to? The subject area of education has often been mentioned as one area needing such attention. Canadiana is also moving rapidly to computerization of all seven sections. What effect will this have in terms of better delivery of source materials for bibliography--or even demand searching? Can subject headings, with some modification, serve in a computerized, machine readable bibliographic data base? How can the producers/users tap into the tapes and hardcopy output in organizing educational sources and generating knowledge in the field?

The task groups of the National Library have singled out government documents as another area needing improvement. Government documents of all types, particularly working papers and reports, are perhaps the least efficiently utilized of all the information publications. Yet they contain prime sources of data and information for all subject areas. Little or no bibliographic control exists for such documents, subject indexes are scarce and government agencies seldom distribute complete lists of their own publications and the related documents are even harder to obtain. Will needs in education be attended to as developments proceed to improve access to such documents? In actuality, are they a good source of educational information? Priority is now being given to the extension of existing non-conventional computerized bibliographic systems for organizing government documents. If listings are provided of federal, provincial and municipal documents--with a related index--will education oriented materials be adequately catalogued, easily identified, and retrievable? Can we look to better distribution and availability of all such documents with content of interest to education? Will changes in the depository and subscription policies of Information Canada affect access to federal documents related to education? Because of short run problems, and the ever present difficulty of spiralling costs, it would seem reasonable that those in education add their support to the concept of providing more government publications in inexpensive microform. Extant bibliographies related to education have seldom provided adequate access to government publications and there has perhaps been good reason for this.

The publication, distribution, acquisition and retrieval of serial publications is another problem area identified by the National Library for task group activity. Two related problems emerge here, organization of serial titles and access to the contents of serial publications--particularly

journal literature. The publication in 1972 of the Canadian Serials Directory provides excellent access to major titles published in Canada. Present plans call for an annual directory and the total coverage is estimated to eventually reach 12,000 titles. Good subject access is provided for education and close to 250 titles are listed. Of particular interest is the fact that the Directory is programmed for MARC format and computer output. The suggestion has also been recently made that serials be listed for Canadiana as a separate section or that a separate index to serials be provided in each issue. In recent years the publication, Periodicals in the Social Sciences and Humanities Currently Received by Canadian Libraries has aided in collating the periodical resources held by close to 200 Canadian libraries to 1965. This type of listing is particularly important as no single library can possibly maintain a total collection of serials and periodicals and inter-library loan thus becomes a vital necessity. The publication is computer coded and items are keyed to libraries which hold them. The planned 1975 updating is sorely needed.

Access to the contents of serial and periodical publications relating to education is another matter. The Canadian Periodical Index provides an author and subject index to some 80 periodicals of general interest but the great bulk of literature related to education is barely touched. Some two dozen abstracting and indexing services now exist which provide access to Canadian serials and periodicals in various subject areas. However, the timeliness and quality of their coverage is often criticized. So much so that the National Library has recommended that steps be taken to establish abstract and index services in fields where such service is non-existent or now poorly developed. Educators are fortunate in having access to the Canadian Education Association's, Canadian Education Index,



with its highly useful, well conceived set of subject headings. The CEI ranks with Canadiana as a primary tool for any extensive bibliographic work in Canadian education. Coverage includes selected books, pamphlets, reports and 175 education related periodicals. Some two dozen libraries cooperate in its preparation. It is important that this excellent publication, now emerging from its years of growing pains, continue to be supported.

Aside from Canadiana, I consider CEI to be the most important source tool now available for locating Canadian produced documents on education. If it did not now exist it would be absolutely essential to create it forthwith. However, I also feel it has yet to reach its full potential as an information tool. It might be useful to conduct a fairly extensive, rigorous analysis--based on subscribers and other users in the reference group-- and gather information about the strengths and weaknesses of CEI to aid in organizing our thinking about its development and what it could eventually become. A survey could include questions related to CEI coverage of books, reports, pamphlets and periodicals; reaction to the use of subject headings and internal organization; time lag in coverage; format; access to original documents cited; and possible inclusion of annotations or abstracts. My own feeling is that CEI should broaden its coverage, publish monthly, include abstracts and develop semi-annual cumulations. CEI should receive financial support to enable it to become the major information tool for current awareness, retrospective searching and bibliographic work in Canadian education.

Our fifth and final question asks, What bibliographic materials have been produced in Canadian education, how can they be located, and what needs are still unmet? This final question relates closely to the previous four. What quantity of bibliographic material has been developed by the education

reference group in relation to the data base of documents produced, entry of documents into the existing delivery system, and current practices in describing and organizing the documents? What is the goodness of fit between the bibliographic sources available and the need for such materials? It is difficult to supply an accurate answer for these questions. In doing research on topics in Canadian education, it is not long before one recognizes the fact that, outside of a few standard sources, the existing bibliographies have been produced in a fragmented system, are difficult to identify, and even harder to obtain. Obtaining full text listed in such sources presents even greater difficulty. With the present system, generation of bibliographies on demand is a particularly inefficient, time consuming, expensive--and I might add--frustrating proposition for the individual user. Many libraries have partial collections requiring laborious inter-library loan procedures. Units within the reference group often maintain their own collections but these too are often incomplete and the user invariably has great difficulty in obtaining full text.

Canadiana and CEI do list subject bibliographies related to education. However no estimate has been made of the coverage of the two indexes in relation to what is actually produced. I suspect that in recent years both indexes have improved their coverage of education related subject bibliographies. Ryder's Canadian Reference Sources, based largely on the collection of the National Library, lists the major standard bibliographic publications related to education. Lochhead's Bibliography of Canadian Bibliographies indexes approximately three dozen entries related specifically to education. Some of the units within the reference group have been involved in "sensing" the needs of their membership and producing pre-packaged retrospective bibliographies on various topics. The Canadian Education

Association's Directory of Education Studies in Canada has provided comprehensive coverage of research studies issued by faculties of education, provincial departments of education, school boards, education associations and other sources. The directories are organized by subject and most items have useful annotations. Recent editions include an author index and a detailed subject index adding to the utility of the publication. The Association's Information Division also produces separate listings of theses and theses in progress in education.

An interesting recent study, carried out by Mary Bushell - a student in the UBC School of Librarianship, examined entries in the 1971-72 Directory of Education Studies in Canada in an attempt to determine how well such studies were covered in secondary sources. With the help of a professor in the School, she identified 1058 of the entries as referring to studies which had "Canadian content". (Note that one study may have several entries in the Directory, but the overlap was not easy to identify in the 1971-72 edition since no cross-references or author index were supplied.) "Canadian content" was identified from words in the title, from the name of the sponsor or publisher (particularly of association or government publications) or from the author's affiliation to a Canadian institution. Of the 1058 entries, 44% were to theses; 11% to articles in serial publications; 19% to reports by all levels of government; 23% to non-government reports; and about 1% of entries were to books, chapters of books or films.

The titles of 287 entries clearly indicated their "Canadian content". These entries were checked in a variety of Canadian and U.S. indexes, for the appropriate span, to determine the extent of coverage. The indexes included: Canadian Education Index (CEI), Current Index to Journals in Education (CIJE), Education Index (EI), and Research in Education (RIE). 41 of the 287

"Canadian content" entries were included in these index publications. None of the theses, books, book chapters or films were found. Nine journal articles, 12 government reports and 19 non-government reports were indexed in the Canadian Education Index. One non-government report was indexed in Research in Education. PEI also indexed two of the non-government reports indexed by CEI, and CIJE indexed 2 journal articles indexed by CEI.

"Canadian content" is implicit in a listing in CEI. In addition, six of the CEI listings had geographical subheadings which indicated that they applied to Canada. Of the rest, CIJE and RIE provide author affiliations and names of publishers and sponsors which may help to identify items as Canadian in scope. However, such designations appear in the resume sections of RIE and CIJE but seldom are included in the indexing as the Thesaurus of ERIC Descriptors includes little that relates to educational terminology that is specific to a country outside the U.S. However, computer searching of the ERIC system for Canadian oriented content could be more fruitful - depending on the search program utilized. Programs are available which search on descriptors alone or a combination of descriptors and identifiers. Those which search using identifiers can produce much Canadian relevant material. (Two recent reports by Summers et al. provide access to Canadian related report and journal literature.) The ERIC Descriptor and Identifier Usage Report for April 1973 indicates close to 600 documents listed in RIE for the identifier "Canada" and over 300 postings to the identifier "Canada" for CIJE. In addition, there are 20 other Canadian oriented identifiers listed for RIE and 25 for CIJE - including the identifier "Canadiana". It would be helpful, as suggested in the recent study by Auster and Lawton, to have descriptors related to Canada available for ERIC indexing. However, this places us in the position of requesting that a project oriented largely to U.S. educational

information make a major adjustment to accommodate literature that is related to another country and which may be entering the system on a sporadic basis at best. It would seem a better strategy to attempt to work out a mutually cooperative arrangement with the National Institute for Education for systematic identification, indexing and input of important Canadian material into the ERIC indexes. It is important to have significant Canadian materials systematically organized for input into indexing publications in other countries covering educational literature.

The titles of the 53 serial publications cited in the Directory were checked against the lists of journals indexed by CEI, CIJE, and EI. CEI covered 20 titles (37%); CIJE covered 24 titles (45%); and EI covered 14 titles (26%). Seven titles were covered by both CEI and CIJE; 13 by both CIJE and EI; and 15 were not covered by any of the three indexing publications. It would appear that the best combination of indexes for coverage of Canadian education articles would be CEI and CIJE, which between them covered 37 titles or 70% of the totals. However, these percentages are relative and we are left with the conclusion that coverage in indexes is still very spotty in any event.

In the late 1960's the Canadian Teachers Federation began a series of bibliographies on selected topics in education. Over three dozen titles have been produced. The bibliographies include most Canadian materials. It is interesting to note that the scope of coverage has broadened to the point where recent bibliographies list Canadian sources found in: CEI, Bibliographie du Québec, the CEA's Directory of Education Studies in Canada and Education Studies Completed in Canadian Universities. In addition, sources from indexes in other countries are now searched including: The British Education Index, Education Index, Cumulative Book Index, Research Studies in Education (PDK), and the two

index publications generated by the Educational Resources Information Centre (ERIC) - Current Index to Journals in Education and Research in Education. The Federation might give some thought to the internal organization of their bibliographies. The current editions list sources by type: books, articles and theses. Some additional internal classification by topic would be useful and cross referencing and an author index helpful. Again, because of the problems in locating full text, an annotation or abstract on each item would be extremely useful.

Other on-going bibliographic efforts exist such as the publications provided by the Information Services Section of the Ontario Institute for Studies in Education, government agencies, other professional associations, school board information services, and the information facilities related to faculties of education. See for example: Cambell's bibliography on Community Colleges in Canada, Department of Administration, University of Calgary; Stevenson and Hamilton's interesting publication on Canadian Education and the Future, University of Western Ontario; the publications on adult education emanating from the University of British Columbia; publications such as, L'enseignant quebecois: sources of etudes recentes, from Laval University; and A Bibliography of Higher Education in Canada by Harris (most recent in a series).

Attempting to answer the second part of this final question and develop some idea of the congruence between the bibliographies and the users need for such bibliographies draws us back to the first major systems question we raised regarding some precise identification of the education reference group and the need to accurately assess their information needs. At this point, a lot more research is needed on this issue. However, one project can be recommended for implementation. We should look immediately to the

development of a publication that would identify and organize all extant bibliographic materials related to Canadian education. This might be titled Guide to Information and Bibliographic Resources Related to Canadian Education. Several extant publications could serve as organizing models. The contents should also include a section that explicates step-by-step strategies to be followed, and the tools to be used, in conducting comprehensive searches of the data base and in developing bibliographic resources. The text could serve as a ready introduction for students as well. It might be useful to also make the bibliographic tools that are identified available in an inexpensive microfiche form. Perhaps the units within the education reference group that have major interests in bibliographic publications could take the lead and coordinate with others in producing such a Guide. Once available materials have been described and organized, gaps could be determined, user needs analyzed and cooperative procedures developed for meeting needs and improving the over-all state-of-the-art in bibliographic services related to Canadian education.

The whole issue of the preparation of students, particularly at the graduate level, as consumers and eventually producers of educational information needs thorough examination. Within the UBC Faculty of Education, a course related to educational information for graduate students is undergoing experimentation. The core content centers around the role of information systems in knowledge production and utilization in education. Content includes concepts related to traditional library and information sources, machine readable quantitative data bases, machine readable bibliographic data bases, and information research and analysis centers as they relate to education. Students develop competencies in hand searching sources and engage in "hands-on" experiences in searching and utilizing a machine

readable bibliographic data base (the ERIC tape data base). The course is one part of the teaching component of the Information/Knowledge Research Centre now developing within the Faculty.

Another problem that is frequently mentioned in discussions on Canadian bibliography is the matter of developing better access to writing by Canadians that appears in sources outside Canada. I suspect this is a major problem in the field of education--particularly at the college and university level--if my scrutiny of publication lists as part of the task of serving on promotions committees is any indicator. I think this problem might best be approached at the source--the Canadian author. It would be extremely costly to establish a surveillance system to monitor all the massive literature sources from other countries, identify materials by Canadian authors, and announce that material to the education reference group in any systematic form. However, with some coordination and cooperation within the reference group, a reasonably complete listing of such materials could be maintained. Could the Canadian author be requested to deposit citation data (and perhaps an offprint) on material that has been accepted for publication in sources in other countries? It might be possible to integrate this material, or develop a separate listing, within existing indexing services related to Canadian education. If the need were made known, and systematic procedures developed, authors would most likely willingly comply. Canadiana does attempt to identify works by Canadian authors, and also publications related to Canada, that appear in sources in other countries. However, looking at it realistically, my subjective opinion is that the coverage can never hope to be complete in the field of education. It may prove enlightening to conduct an objective study and determine the actual coverage of Canadiana in this regard. The



coverage of periodical literature is the most pressing aspect of this issue and would likely be the most frequent information genre from other countries including publications by Canadians. A fruitful study would take a representative sample of the year's output of periodical literature, from say Great Britain and the United States, that relates to education and tabulate the percentage and pattern of Canadian content and authorship appearing in those sources. This research would at least substantiate whether there is in fact a problem.

One final issue should be touched on before leaving this section. Our education related bibliographic sources increasingly announce material that results from searches of abstract and index publications which report literature from other countries. This trend to more inclusive bibliographies was underscored previously. The literature related to education has great cross national utility even though it is also highly ethnocentric. Perhaps we should now also look to more systematic techniques for developing this type coverage and making it as efficient and as inclusive as possible. For example, at least two dozen complete subscription sets to the microfiche output from the ERIC collection are now delivered in Canada to various units in the education reference group. The sets happen to be nicely distributed across Canada geographically and providing ready access to most of the members of the reference group could be an easy matter. Availability of materials of this type gets at the heart of the issue of obtaining full text of documents announced in various bibliographic efforts. However, is availability now widely known? Have attempts been made to coordinate across units holding these collections to provide better service and see to solution of common problems? To my knowledge, there are also at least three units in the reference group that have developed services related to computer searches

of the ERIC Tape Data Base (now numbering in excess of 170,000 citations). These include: the National Library, the University of Calgary, and the Information/Knowledge Research Centre of the Faculty of Education of the University of British Columbia. In addition, some services exist that provide searches on just the journal literature (CIJE) portion of the collection--for example, the York University Institute for Behavioural Research now includes the CIJE tapes in their computer search package. Several sources are now also providing computer searches of other data bases related to education such as Psychological Abstracts and the Social Science Citation Index. Through better awareness and wider availability, these services could be utilized more fully in support of bibliographic efforts related to Canadian education. The total issue of the availability of and access to machine readable bibliographic data bases, and related microform output, should perhaps be included as a section in the proposed Guide to Information and Bibliographic Resources Related to Canadian Education.

Many questions in addition to the five major ones raised here could be posed in modelling an effective open systems information delivery system for documents on Canadian education. Everyone is privileged to view the problem of information and bibliography from their own perspective depending on their role as producer, cataloger, organizer, retriever, resource administrator or user. The questions I have raised, the tentative solutions I sometimes advance, the suggestions I offer, and even the frame of reference within which I have couched the questions, solutions and suggestions, may seem valid to some and off-the-mark and even bizarre to others. Be that as it may, my role in presenting this position paper will be accomplished if the five major questions that have been attacked fuel

the thinking of the conference participants, within a systems paradigm, and move us toward the relevant and eliminating the irrelevant in ascertaining existing needs and modelling improvements in the delivery of information and development of bibliographic sources in Canadian education.

To my knowledge, no adequate statement now exists which specifies, in detail, the total criteria to be met if a nation is to have well rounded, varied and fully mature library and bibliographic services in all areas. Therefore, it is difficult to establish a framework within which a country can evaluate its own progress at a specified point in time or in relation to specific services and plan needed developments. Such standards would of necessity have to incorporate criteria in areas such as publishing and bookselling, library and information laws and regulations, national library and information development plans, library education and personnel, professional associations, institutions and libraries, cataloging tools, codes and performance standards, and statistics and research programs--to mention a few. Adequate provision for national, regional and subject bibliography would be but one component within the total system of such standards. In Canada, we may yet be some distance from developing and meeting such fully articulated standards. The four criteria specified by Robert P. Downs for adequate bibliographic control could serve as a model for analysis. These include: complete recording of all types of printed and other types of library materials as produced; systematic acquisition of these materials in libraries and other depositories; location of materials through union catalogs, union lists, and like devices; and, provision of subject bibliography in all areas. It would be interesting to study authoritative statements on the subject, promulgate a set of criteria for ideal library and bibliographic services, and estimate where we now stand in providing

such service. This does in part constitute one of the major purposes of this conference.

With all this in mind, I would like to conclude with just one recommendation for the future development of information and bibliographic services in Canadian education.

It is suggested that participants of this conference consider giving support to the recommendation that a task group be formed related to intensive further study of this area. The task group shall be called, Task Group on the Improvement of Information and Bibliographic Services in Canadian Education, and should pursue two basic objectives: (1) study the problem and estimate existing and future information and bibliographic needs in the subject field of education, and (2) produce recommendations for implementation that will strengthen existing services and lead to the development of new services where needed.

The Task Group membership should consist of representatives from the library community and representation that adequately reflects the geography, locus of activity, language and interests of the total reference group related to Canadian education in all its phases. The specific terms of reference, and criteria for composition of the task group membership, could be developed by interested members of this conference meeting within a reasonable time after the conclusion of our work here.

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