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ABSTRACT

This final report describing the operation and research of the EISO project, which provides online bibliographic search services to educators of Ontario, briefly summarizes the first and second interim reports. In addition, it discusses users and the uses of EISO information by providing mini-case studies to illustrate quantitative data and identifying factors contributing to use or non-use of search results. The monthly and yearly satisfaction levels of users who did and did not utilize the services of intermediaries--Educational Information Consultants--are also explored. The negotiation process between user and intermediary is analyzed and a preliminary model of the process is developed. A systems evaluation of user satisfaction employing sociological and process variables is also included. Recent trends and developments in online searching are reviewed to illustrate how these trends and EISO's own research and experience have resulted in the project's operation. Appendices include user evaluation questionnaires, EISO order forms, and publicity brochures. (Author/MBR)

# EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

*Final Report*

March 1977 - April 1978

Ethel Auster

Stephen B. Lawton

The Ontario Institute for Studies in Education

THIS RESEARCH PROJECT FUNDED UNDER CONTRACT
BY THE MINISTRY OF EDUCATION, ONTARIO
Toronto 1978

## ABSTRACT

This volume is the third and final report describing the operation and research of the Educational Information System for Ontario project funded by the Ontario Ministry of Education in March 1975 to provide online bibliographic search services to the educators of this province.

This report begins by briefly summarizing the first and second Interim Reports that described the scope of the research, the conceptual framework, data collection techniques, the implementation of the service, and preliminary evaluation results. It then devotes a chapter to the users and the uses of EISO information providing mini-case studies to flesh out the quantitative data and identifying factors contributing to the use or non-use of search results. Chapter 3 presents monthly and yearly satisfaction averages of EISO users and compares satisfaction levels of users who did and did not go through intermediaries or Educational Information Consultants. The negotiation process between the user and the search analyst in analyzed in Chapter 4 and a preliminary model of the process developed. Chapter 5 presents a systems evaluation of user satisfaction employing sociological and process variables. The concluding chapter reviews recent trends and developments in online searching and shows how these and the findings of our own research and experience have resulted in the operation of EISO as it is carried on in 1978.

## ACKNOWLEDGEMENTS

iii

# TABLE OF CONTENTS

vi

# LIST OF TABLES

## LIST OF FIGURES

This volume is the third and final report of the Educational
Information System for Ontario, a research contract funded in
March 1975 by the Ministry of Education of the Province of
Ontario. Though much of the research component of the project
is now completed the service aspect of EISO continues to pro-
vide Ontario educators with online bibliographic retrieval of
references in education and the social sciences and with
access to original documents.

## Background

EISO was funded to develop, evaluate, and analyze an
information dissemination system based upon computerized
retrieval of bibliographies. It differed from the usual
research contract in that it was not only to provide a
rigorous research study firmly grounded in theoretical con-
cepts, but it was also to have a largely developmental com-
ponent in the implementation of a search service available to
educators on a fee-paying basis. Thus, not only were normal
aspects of contract research such as research design, data
collection and analysis required, but also some more unusual
activities. Among these were the creation of a business
system, publicity materials, promotional workshops, and a
program to train Educational Information Consultants who were
to act as information intermediaries or linkage agents in
geographically remote areas. Professional development acti-
vities, seminars, and demonstrations added still other aspects

to the study. The aspect of the contract that was most readily
apparent to educators and the one that still continues was,
however, the actual creation of a fully operational information
service offering an interactive online bibliographic search
service to the educators of Ontario by providing them access
to existing data bases such as the Ontario Educational Research
Information System (ONTERIS), ERIC, *Psychological Abstracts*,
*Exceptional Child Education Abstracts*, *Social Sciences Cita-
tion Index*, *Dissertation Abstracts International* and other
data bases relevant to educators.

## The EISO Service

To use the EISO search service, the educator submits his
information request to the search analyst, a specially trained
reference librarian, who develops a search strategy that is
machine-readable. Bibliographies are printed offline by a
major commercial supplier like Lockheed or System Development
Corporation and mailed to the user who may then order original
documents in either microfiche or paper copy formats. A fee
based on the amount of professional and computer-connect time
used is charged for the search and a flat rate for duplicates
of original items.

## Interim Reports

The *First Interim Report* (Auster and Lawton, 1976)
covered the period March 1975 to February 1976. Divided into
eleven chapters, it recounted the creation of EISO, both its
service and research components. It reviewed the literature
on information centres, intermediaries, and change in educa-
tion, described the problems encountered in introducing a new
service into an established organizational environment, out-
lined the initial training program for the Educational Infor-
mation Consultants, and outlined the design and operation of
the business system that EISO was to follow. That *First
Interim Report* also presented the research design that was
used to monitor and evaluate EISO's operation and the satis-
faction of its users. A systems model using sociological,

2

12

psychological, and economic variables within an adoption of
innovations framework was developed and preliminary data col-
lection instruments were designed. Last, some early tentative
research findings were presented.

EISO's *Second Interim Report* (Lawton and Auster, 1977)
consisted of seven chapters covering the period March 1976 to
February 1977. With the research design completed and the
operation of the service well under way, the second year's
report focused on the clients of EISO: their geographical
location, employing organizations, personal characteristics,
and most important, their levels of satisfaction with EISO.
Reliability of scales and items used to collect data concerning
user satisfaction was detailed as were the trends, social
correlates, and intervening variables of user satisfaction.
Mini-case studies showed the impact that EISO had on the
director, coordinator, principal, and teacher of a school
board. In addition, the economics of operating EISO were
considered, other data base search services in Canada were
identified, and alternative organizational structures for
EISO in the future were posed. Both the first and second
reports included extensive appendices of all data collection
instruments and forms used in the research as well as the
service aspects of the contract.

Final Report

This third and final report presents cumulative satis-
faction data collected over a three-year period. It also
delves into the uses of information obtained through EISO
and examines the negotiation process between the search
analyst and the user when a request is placed. A picture of
EISO as it exists in mid-1978 concludes the volume. Appen-
dices illustrate new business and monitoring forms developed
that reflect the transition and changed emphasis from research
project to service provision.

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# CHAPTER 2

## THE USER AND THE USES OF EISO INFORMATION

The growing importance of the provision of information by
automated means has been reflected in the increasing number
of articles and studies devoted to online reference services.
The focus of much of this work centres around developing
accurate costing techniques (Cooper and De Wath, 1977) and
describing and evaluating specific services (Firschein and
Summit, 1977, and Lancaster, 1969). The users of these
services have received little attention with the notable
exception of Wanger's recent survey (1976). Generally, how-
ever, concern for the user and the way in which he uses the
information he receives has been of greater concern to educa-
tional researchers and sociologists than information special-
ists (Hood, 1978, and Rittenhouse, 1971). This concentration
is understandable. Information managers, librarians, and
search analysts can rarely influence the use of the informa-
tion they provide to the user: local exigencies, administrator
commitment, financial constraints, the political climate may
all impinge on the ultimate use of retrieval information.
Ironically, however, it is the effective use and impact of the
search results that may determine whether or not a user per-
ceives the service to be useful and becomes a satisfied client
who returns to the search service to place further requests.
And it is upon the building up of such a repeat-user clientele
that the survival of a search service may depend.

The purposes of this chapter, therefore, are to identify
EISO users over the past three years, present their reasons for
seeking information, provide mini-case studies of how the

4

information they received impacted upon their local situations, and identify factors that contributed to the use or non-use of information received.

## User Characteristics

The conceptual framework and method for collecting data on EISO users were described in the *First Interim Report*: March 1975-February 1976 (Auster and Lawton, 1976) and the *Second Interim Report*: March 1976-February 1977 (Lawton and Auster, 1977). Briefly, the user was viewed within an adoption of innovation model using sociological, psychological, and economic perspectives. Each user was sent a User Evaluation Questionnaire (Appendix A) six weeks after placing a search. Additional data were collected by the search analyst on a Search Request Form (Appendix B), and on an EISO Service Evaluation Data Sheet (Appendix C). Finally, a sample of users was interviewed using an Interview Schedule (Appendix D). It will be noted that data for second-year searches presented below now include 371 returned evaluation questionnaires covering the period April 1, 1976 to March 31, 1977. Third year data cover the period April 1, 1977 to December 31, 1977.

### Location

As in the past two years, the majority of EISO's most recent users come from the Metropolitan Toronto area, providing the mainstay of the service (Table 1). The fact that this high figure has remained fairly stable is all the more interesting because some professional libraries in local school boards have recently purchased their own terminals and are now offering their own search services. This leads one to suspect that the actual number of users from the greater Toronto area may be going up but that this increase is being partially obscured and absorbed by other available services.

The increased number of users from the Ottawa area (1.9% to 7.8%) may reflect the fact that several workshops and seminars were given to governmental officials and at summer courses held there thus raising awareness of the service and acting as a stimulant for usage.

5

# TABLE 1
## LOCATION OF USER'S ORGANIZATION

| Location | Percent | | |
| --- | --- | --- | --- |
| | Year 1 (n = 386) | Year 2 (n = 371) | Year 3 (n = 129) |
| District | 14.8 | 6.7 | 4.7 |
| County or Regional Government | 23.3 | 25.3 | 27.9 |
| Metropolitan Toronto | 49.5 | 55.8 | 53.5 |
| Ottawa | 1.0 | 1.9 | 2.8 |
| London | 4.9 | 1.3 | 0.0 |
| Hamilton | 0.5 | 1.3 | 0.0 |
| Windsor | 2.6 | 2.2 | 1.6 |
| Sudbury | 1.3 | 3.2 | 0.0 |
| Canada (not Ontario) | 1.0 | 0.8 | 3.9 |
| Not Canada | 1.0 | 1.3 | 0.8 |

The rise of the number of users from provinces other than Ontario (.8% to 3.9%) may reflect EISO's new policy of processing all requests received regardless of their geographical origin.

## Personal Characteristics

The age, sex, education, and professional activities of EISO users have remained stable over the three years the service has been in operation. Two-thirds of the users continue to be male (Table 2), and over three-quarters of all users are between 26 and 45 years of age (Table 3). Most users have occupied their present position for less than two years (Table 4). Over one-half (Table 5) are officers of a professional organization, have participated in an educational research project in the past five years (Table 6), and have presented a professional paper during that time (Table 7). Sixty-nine percent have earned graduate degrees (Table 8) while 57% are currently enrolled in, or are planning to apply for, academic programs leading to a higher degree (Table 9).

Clearly, EISO users are a highly professional, dynamic, well-educated, and ambitious group.

## Organization

While OISE is still the institution with which most users are affiliated, it provides only a little over one-third of the total number of users (36.6%), a decline from 39.5% the previous year. Faculties of education, Ministry of Education, and other government agencies continue to provide increasingly more users while the number of school board clientele remain steady (Table 10).

## Role

The roles performed by EISO users remained for the most part unchanged. Table 11 confirms that administration and teaching are still the most important roles occupied by EISO users. These are followed by graduate work and research. These profiles of user roles have shown little variation over a three-year period and will probably continue to remain stable.

7.

## TABLE 2

### SEX OF EISO USERS

| Sex | Percent | | |
|---|---|---|---|
| | Year 1 (n = 376) | Year 2 (n = 370) | Year 3 (n = 129) |
| Male | 69.7 | 63.5 | 68.2 |
| Female | 30.3 | 36.5 | 31.8 |

## TABLE 3

### AGES OF EISO USERS

| Age Range in Years | Percent | | |
|---|---|---|---|
| | Year 1 (n = 183) | Year 2 (n = 202) | Year 3 (n = 103) |
| 25 or under | 2.2 | 3.5 | 1.9 |
| 26 to 35 | 49.7 | 36.7 | 40.8 |
| 36 to 45 | 36.1 | 41.6 | 38.8 |
| 46 to 55 | 9.3 | 15.8 | 14.6 |
| 56 to 65 | 2.7 | 0.5 | 3.9 |
| over 65 | 0.0 | 1.0 | 0.0 |

8

## TABLE 4.
## NUMBER OF YEARS IN CURRENT POSITION

| | Percent | | |
|---|---|---|---|
| Interval in Years | Year 1 (n = 184) | Year 2 (n = 203) | Year 3 (n = 103) |
| Less than 1 | 21.2 | 13.3 | 18.4 |
| 1 | 10.9 | 11.3 | 15.5 |
| 2 | 9.8 | 15.3 | 14.6 |
| 3 | 11.4 | 11.3 | 6.8 |
| 4 to 6 | 24.5 | 21.7 | 15.5 |
| 7 to 9 | 14.1 | 14.8 | 8.7 |
| 10 or more | 8.2 | 12.3 | 20.4 |

## TABLE 5
## OFFICER OF A PROFESSIONAL ORGANIZATION

| | Percent | | |
|---|---|---|---|
| Response | Year 1 (n = 183) | Year 2 (n = 202) | Year 3 (n = 103) |
| Yes | 61.7 | 58.4 | 59.2 |
| No | 38.3 | 41.6 | 40.8 |

## TABLE 6

### PARTICIPATED IN EDUCATIONAL RESEARCH PROJECT
### IN THE PAST FIVE YEARS

| Response | Percent | | |
|---|---|---|---|
| | Year 1 (n = 185) | Year 2 (n = 200) | Year 3 (n = 99) |
| Yes | 75.7 | 74.5 | 63.6 |
| No | 24.3 | 25.5 | 36.4 |

## TABLE 7

### PRESENTED A PROFESSIONAL PAPER IN THE
### PAST FIVE YEARS

| Response | Percent | | |
|---|---|---|---|
| | Year 1 (n = 185) | Year 2 (n = 200) | Year 3 (n = 103) |
| Yes | 53.1 | 56.0 | 51.5 |
| No | 47.0 | 44.0 | 48.5 |

10

## TABLE 8
### HIGHEST DEGREE EARNED

| Degree | Percent | | |
|---|---|---|---|
| | Year 1 (n = 175) | Year 2 (n = 194) | Year 3 (n = 100) |
| Bachelor's | 30.3 | 28.4 | 31.0 |
| Master's | 54.3 | 56.7 | 50.0 |
| Doctorate | 14.9 | 14.9 | 19.0 |
| Other | 0.6 | 0.0 | 0.0 |

## TABLE 9
### PRESENT OR PLANNED STUDIES FOR HIGHER DEGREE

| Response | Percent | | |
|---|---|---|---|
| | Year 1 (n = 382) | Year 2 (n = 200) | Year 3 (n = 102) |
| Yes | 37.2 | 45.5 | 51.0 |
| Not Sure | 20.7 | 16.5 | 10.8 |
| No | 42.1 | 38.0 | 38.2 |

11.

TABLE 10

ORGANIZATION OF PRIMARY ASSOCIATION

| Organization | Percent | | |
|---|---|---|---|
| | Year 1 (n = 380) | Year 2 (n = 369) | Year 3 (n = 129) |
| Public Board | 34.2 ⎫ | 24.4 ⎫ | 30.2 ⎫ |
| | ⎬ 44.7 | ⎬ 29.5 | ⎬ 31.8 |
| Separate Board | 10.5 ⎭ | 5.1 ⎭ | 1.6 ⎭ |
| Private School | 0.8 | 0.8 | 0.0 |
| CAAT | 4.7 | 4.1 | 2.3 |
| Faculty of Education | 2.1 | 7.3 | 8.5 |
| OISE | 30.8 | 39.5 | 36.6 |
| University | 6.1 | 6.5 | 4.7 |
| Ministry of Education | 3.7 | 5.4 | 7.0 |
| Professional Associations | 0.8 | 3.8 | 2.3 |
| Government | 1.8 | 1.1 | 3.1 |
| Business | 1.8 | 0.5 | 1.6 |
| Other | 2.6 | 1.6 | 2.3 |

## TABLE 11
### PRIMARY PROFESSIONAL ROLE

| Role | Percent | | |
|---|---|---|---|
| | Year 1 (n = 245) | Year 2 (n = 207) | Year 3 (n = 103) |
| Administration or Supervision | 27.8 | 31.4 | 29.1 |
| Teaching | 17.1 | 16.9 | 19.4 |
| Pupil Personnel | 0.8 | 1.0 | 1.0 |
| Research | 10.6 | 13.0 | 14.6 |
| Field Development | 5.7 | 5.3 | 2.9 |
| Ministry Regional Office | 3.3 | 1.9 | 4.9 |
| Library | 6.9 | 8.2 | 1.9 |
| Private Consultant | 2.4 | 1.4 | 1.9 |
| Undergraduate | 0.0 | 0.5 | 0.0 |
| M.Ed. Student | 3.3 | 0.5 | 3.9 |
| Ed.D. Student | 4.9 | 2.4 | 4.9 |
| M.A. Student | 3.7 } 21.7 | 3.4 } 16.0 | 1.0 } 18.5 |
| Ph.D. Student | 9.8 | 9.7 | 8.7 |
| Other | 3.7 | 4.3 | 5.8 |

13

The distribution of users by their roles in various organizations is presented in Table 12. In public boards, users were most likely to be administrators or supervisors (57%) though other staff also used EISO services to a significant degree with teachers, researchers, and librarians comprising another 35% of board users. All users from the separate boards fell within the administrative ranks while users in post-secondary institutions were distributed among administrators (33%), teachers (53%), and students (7%). Most OISE users were students (43%) though other staff categories were also represented. Regional Office personnel were the largest (60%) user group at the Ministry of Education.

It would appear that the patterns that were established in the first two years of the service continue to hold. EISO is used as a resource primarily by administrative personnel in school boards, by faculty in post-secondary institutions, by doctoral students at OISE, and by administrative and Regional Office staff at the Ministry of Education.

## Purpose of Searches

Among all users, the most frequently cited purpose for doing a search was for term papers (Table 13). Research and development reports, policy development, speeches or articles, personnel or recruitment and program development were also listed as the purposes for placing EISO searches. Users tended to approach EISO as a resource to support their primary professional role. For example, within school boards administration was the most frequently mentioned role for doing a search (Table 14). These administrative personnel performed searches to aid them with their responsibilities for program improvement (23%), personnel recruitment (17%), policy development (13%), and curriculum development (13%) (Table 15). Though it would appear that a few administrators did place searches to help with their graduate studies, most sought information for purposes consistent with their professional positions.

14

2ó

## TABLE 12

### PROFESSIONAL ROLE BY ORGANIZATION FOR YEAR 1, 2, AND 3 USERS (N = 245, 207, 103)

| Role | Public Board | | | Separate Board | | | Postsecondary | | | OISE | | | Ministry of Education | | | Other | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | \<center>Organization\</center> | | | | | | | | | | | | | | | | | |
| | Year | | | Year | | | Year | | | Year | | | Year | | | Year | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| Administration or Supervision | 54% | 59% | 57% | 64% | 82% | 100% | 25% | 21% | 33% | 2% | 9% | 10% | 9% | 50% | 40% | 17% | 23% | 0% |
| Teaching or Pupil Personnel | 26 | 6 | 17 | 9 | 18 | 0 | 25 | 49 | 53 | 14 | 14 | 18 | 0 | 0 | 0 | 6 | 15 | 9 |
| Research | 6 | 11 | 13 | 18 | 0 | 0 | 0 | 8 | 7 | 13 | 17 | 15 | 9 | 14 | 0 | 22 | 23 | 36 |
| Field Development or Regional Office | 0 | 4 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 14 | 10 | | 73 | 29 | 60 | 6 | 0 | 9 |
| Library | 10 | 17 | 7 | 5 | 0 | 0 | 8 | 3 | 0 | 7 | 8 | 0 | 0 | 7 | 0 | 0 | 0 | 0 |
| Master's Student | 0 | 0 | 0 | 5 | 0 | 0 | 21 | 5 | 7 | 11 | 8 | 10 | 0 | 0 | 0 | 6 | 0 | 0 |
| Doctoral Student | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 3 | 0 | 36 | 30 | 33 | 0 | 0 | 0 | 0 | 8 | 9 |
| Other | 3 | 4 | 3 | 0 | 0 | 0 | 7 | 2 | 0 | 2 | 1 | 8 | 9 | 0 | 0 | 44 | 31 | 37 |
| Total n = | 78 | 53 | 30 | 22 | 11 | 2 | 24 | 29 | 15 | 90 | 77 | 40 | 11 | 14 | 5 | 18 | 13 | 11 |

15

26

25

## TABLE 13

## PURPOSE OF SEARCH

| Purpose | Percent | | |
|---|---|---|---|
| | Year 1 (n = 386) | Year 2 (n = 371) | Year 3 (n = 129) |
| Term Paper | 31.3 | 30.5 | 33.3 |
| Bibliography | 3.6 | 1.9 | 1.6 |
| Curriculum Development | 7.5 | 8.4 | 5.4 |
| Program Improvement | 12.7 | 12.4 | 8.5 |
| Speech or Article | 2.8 | 3.8 | 9.3 |
| Research and Development Report | 28.8 | 23.5 | 15.5 |
| Browsing | 2.1 | 0.8 | 0.8 |
| Personnel or Recruitment | 2.1 | 4.9 | 9.3 |
| Policy Development | 6.7 | 10.5 | 11.6 |
| Other | 2.4 | 3.5 | 3.9 |

# TABLE 14

## ROLE FOR WHICH BIBLIOGRAPHY WAS REQUESTED BY ORGANIZATION FOR YEAR 2 AND 3 USERS (N = 231, 126)

| Role for Which Request Made | Organization | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public Board | | Separate Board | | Postsecondary | | OISE | | Ministry of Education | | Other | |
| | Year | | Year | | Year | | Year | | Year | | Year | |
| | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| Administration or Supervision | 42% | 51% | 25% | 100% | 9% | 10% | 4% | 0% | 14% | 22% | 17% | 0% |
| Teaching or Pupil Personnel | 11 | 5 | 0 | 0 | 4 | 5 | 5 | 2 | 0 | 0 | 0 | 8 |
| Research | 21 | 23 | 17 | 0 | 29 | 25 | 28 | 25 | 43 | 22 | 25 | 67 |
| Field Development or Regional Office | 3 | 5 | 33 | 0 | 4 | 0 | 6 | 0 | 29 | 44 | 8 | 0 |
| Library | 7 | 8 | 0 | 0 | 0 | 0 | 6 | 2 | 7 | 0 | 0 | 0 |
| Master's Student | 5 | 3 | 0 | 0 | 29 | 40 | 12 | 18 | 0 | 0 | 0 | 0 |
| Doctoral Student | 7 | 3 | 17 | 0 | 11 | 5 | 34 | 43 | 0 | 0 | 17 | 0 |
| Other | 5 | 3 | 8 | 0 | 13 | 15 | 7 | 9 | 7 | 11 | 33 | 25 |
| Total n = | 62 | 39 | 12 | 2 | 45 | 20 | 86 | 44 | 14 | 9 | 12 | 12 |

17

30

<div align="center">TABLE 15</div>

## PROFESSIONAL ROLE BY PURPOSE OF SEARCH FOR YEAR 2 AND 3 USERS (N = 207, 103)

| Purpose | Admin. or Super. | | Teaching or Pupil Pers. | | Research | | Field Dev. or Reg. Off. | | Library | | Master's Student | | Doctoral Student | | Other | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 | Year 1 | 2 |
| Keeping Abreast | 0% | 3% | 0% | 14% | 4% | 7% | 0% | 13% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| Term Paper | 14 | 17 | 32 | 38 | 0 | 13 | 0 | 13 | 6 | 0 | 100 | 80 | 84 | 86 | 7 | 38 |
| Bibliography | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 7 | 0 | 0 |
| Curriculum Dev. | 12 | 13 | 4 | 4 | 7 | 0 | 27 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 31 | 0 |
| Program Improvement | 20 | 23 | 5 | 10 | 11 | 0 | 27 | 13 | 24 | 0 | 0 | 0 | 4 | 0 | 23 | 0 |
| Speech, Article | 7 | 3 | 5 | 14 | 0 | 33 | 0 | 13 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Research & Dev. | 19 | 10 | 32 | 10 | 59 | 27 | 33 | 25 | 12 | 0 | 0 | 20 | 12 | 7 | 8 | 25 |
| Browsing | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Personnel Recruitmt. | 8 | 17 | 5 | 0 | 0 | 7 | 7 | 25 | 6 | 0 | 0 | 0 | 0 | 0 | 15 | 10 |
| Policy Development | 17 | 13 | 5 | 10 | 15 | 13 | 0 | 0 | 18 | 50 | 0 | 0 | 0 | 0 | 15 | 13 |
| Other | 0 | 0 | 5 | 0 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total n = | 65 | 30 | 37 | 21 | 27 | 15 | 15 | 8 | 17 | 2 | 8 | 5 | 25 | 14 | 8 | 8 |

This quantitative data gives a general overview of the user population and their reasons for requesting searches. To provide a more rounded picture of the human motivation that prompts specific searches and the factors that contribute toward the successful use of the information we must turn to descriptive or qualitative data. Such data is of course difficult to document and assess. Often influences beyond the control of the individual are overriding factors in whether or not information is used for the purposes for which it was originally sought. Another limiting factor is that evidence of usage has been compiled through interviews that relied on self-reporting. Though onsite observation may have provided more reliable evidence, these data are nevertheless presented for the insight they provide into some of the elements that determine use or non-use of search results.

## Case Studies

### The Psychologist

Dr. Barton is the dynamic administrator of pupil personnel services for a separate school board in the Metropolitan Toronto area. In her late thirties, she holds a doctorate in her specialty, child psychology, and has had five years experience in her current position. She is an active member of her professional organization, and has written several papers that were either published or presented at conferences. By her own admission, she is an avid information seeker, placing a high value on keeping up to date in her field. She heard about the existence of EISO from colleagues and decided to place a search when she found herself chairing a group of parents and teachers who felt there was an increasing need for a play therapy program for their children. "But one of the problems we had," she explained, "was that we did not have anyone here who had had extensive training or experience in play therapy. So one of the purposes of the group was to educate itself as well as to educate other staff members who would be using the service."

19

A telephone request was submitted to the search analyst who was able to retrieve sixty-three citations on play therapy from the *Psychological Abstracts* data base. The bibliography was mailed to Dr. Barton who subsequently ordered twenty-four journal articles of which EISO supplied her with copies of twelve. These were divided up among the members of the committee who used them as a basis for seminar presentations to their group. The information thus presented broadened the group's view of play therapy, according to Dr. Barton. While they had previously been using a traditional kind of definition, they now encountered an unstructured, non-directive therapy program. They were also introduced to other ideas for use of the play room, such as having mother and child go in together for observation. Toys were placed in waiting rooms and social workers' offices; the play room began to be used for assessment purposes; programs were expanded to educate the mothers as well as the children. Play activity became a means of teaching social skills.

Although the psychologist has become a repeat user of the service, she expressed only moderate satisfaction with the bibliography and materials she received as a result of her automated search. Her enthusiasm was dampened when she discovered that the data base searched for her did not contain early classic works written on play therapy. There was also some question about whether she had obtained all relevant items in the data base since the term "play therapy" seemed to be a recent one. Last, she had had some difficulty obtaining all the relevant articles that had been cited in the bibliography.

The Junior High Principal

Mr. Albert had been the junior high principal for three years. He was not an especially avid information seeker but did make efforts to keep abreast of his field. In the evenings he was pursuing an M.Ed. degree at OISE.

At the time of his search, he was spear-heading a drive in his school to revise the music program from a strictly instrumental to a more diversified one. Having learned about

EISO through his graduate studies and from brochures mailed
to his school, he decided to telephone the search analyst for
help. As he put it:

> We wanted to see what else had been done in
> other jurisdictions, what else had been
> written and tried and was available in the
> field rather than start from scratch. We
> figured a lot of people had probably done
> things before and wanted to avoid making
> the same mistakes.

Searching the ERIC data base, the search analyst
retrieved eighty-three citations that were printed offline
and mailed to the principal. He then turned over the biblio-
graphy to his two music teachers who reviewed it and went to
their own board's professional library to examine the relevant
articles and microfiche. They rated their satisfaction with
the bibliography and materials between "medium" and "high."
Basically, they felt that the search had been valuable but
that too much material had been found. They were frustrated
at not having the time to read twenty-five microfiche and
thought that in future they would confine themselves to
defining their problem more narrowly. They also felt that in
future they would visit the search analyst in person rather
than communicate via telephone. This more personal method
would, they felt, better enable them to clarify their "muddle"
as they put it, and to understand the search process better.

These difficulties aside, the music teachers, with the
principal's support, initiated a diversified music program
for the first half of their grade seven unit. The principal
also saw other positive results from the search.

> There was the indirect benefit of exposing
> the music staff to this kind of information.
> From now on, when they encounter a problem,
> they are more likely to ask whether anything
> has been written on it in the literature
> since they have at least on one occasion
> asked the kind of question that would not
> have been asked before.

The principal testified to the success of the new music program
and credited many of the successful components to ideas gleaned
from materials obtained through the EISO search.

The Program Coordinator

At the separate school board in Hamilton the program coordinator was sitting on a committee looking into the role of the elementary school principal. The group was especially concerned with what their own system could to to prepare staff for the principalship and how principals were evaluated. The committee was composed of an area superintendent who acted as chairman, three principals, a teacher, a vice-principal, and the coordinator. They had been working together for a year and had focused in on a Management by Objectives (MBO) evaluation model. Having settled on a direction for themselves, they decided to consult the professional literature to find out what was going on elsewhere.

The coordinator filled out the search request form on a brochure and mailed it in to the EISO office in Toronto. The search analyst clarified the request over the telephone and eventually retrieved 112 citations on training for and evaluating the role of the principal. This extensive bibliography was divided up among the members of the committee each of whom gave a talk about the relevant items they had examined at their local learning resources center. They were highly satisfied with the bibliography and the materials. The coordinator expressed their feelings this way: "Personally, we were delighted with the whole thing. It gave us what we wanted very quickly." What resulted from their search? She continued:

> Well, out of it came the document "The Role
> of the Elementary School Principal" which
> is now in use. We have a whole evaluation
> process for principals in place based on a
> Management by Objectives model. We had in
> as speaker one of the authors of the
> articles.

In terms of the preparation of principals, the search brought to light the notion of internship programs and a sub-committee was set up to examine the feasibility of that specific idea. Summing up the contribution the EISO search had made to the committee's work, the coordinator said:

It gave us the kind of information that, in spite of the fact that we already had the direction, lent support for our position. It couldn't be regarded as just some silly thing we thought up all by ourselves. It was comforting to be able to wave the literature around when presentations were made.

The use of the materials did not come to an end with the original committee, however. As indicated, a subcommittee was formed to investigate further the internship notion. They too used the articles retrieved. One of the committee members also passed on the materials to a colleague responsible for staff development at a local hospital.

## The Superintendent

George Baxter is a well-known opinion leader in local and provincial educational circles. He has held increasingly responsible positions in school boards and at the time of his search was serving as superintendent of instruction with an expanding, innovative school board adjacent to Metro Toronto. His search was prompted by a series of leadership workshops that he was running for his staff. He wanted specifically to find out more about the phenomenon of "group think."

His search was performed on the ERIC, *Psychological Abstracts*, and *Sociological Abstracts* data bases and he claimed to be very satisfied with the results. He abstracted the articles he examined, created overhead transparencies showing the salient points of each item, and with his packages on group think gave five workshops to a group of department heads. Another group of teachers learned about these sessions and requested that similar presentations be made to them. They in turn borrowed the superintendent's materials and used them with some students in their secondary schools. The same material was further used by a group of principals and administrative staff within the board studying the decision-making process.

Using the service has become the accepted first step of most working committees in this board. The superintendent commented on this widespread usage: "It's the best money we've ever spent." As to his own use of EISO, he stated:

IF I want to give a talk or I'm developing
a paper, very, very often I won't do it
until I do an EISO search. It's good to
know that I can get resources if I want
them. It's nice to know the service exists
whether I want to use it or not, and I do
use it. It has that kind of comforting
psychological effect.

## The Ph.D. Student

As a doctoral student in curriculum, Mr. Abott was
interested in doing a research paper on reading comprehension.
Though he spent forty-five minutes with the search analyst
and they went through the ERIC *Thesaurus* together, the student
was unable to define his topic in much detail. There was some
doubt about whether he was concerned with reading comprehension,
listening ability, or the effect of the teacher on student
achievement in either, neither, or both areas.

An examination of the Search Request Form completed by
the search analyst shows that two searches were performed,
one on the effect that a teacher's attitudes and teaching
methods have on student listening comprehension and another
on the effect that a teacher's attitudes and teaching methods
have on reading comprehension. A total of thirty-four cita-
tions were retrieved and sent to Mr. Abott.

He expressed disappointment in the bibliography that
resulted from his search. Too much of the material, he felt,
dealt with the comprehension of other languages and with the
teaching of reading as a subject whereas his interest now lay
"in the more theoretical stuff, how the brain operates, how
language is developed, how people understand and comprehend
language."

The search results were filed in his office where they
remained unused. At the time of the follow-up evaluation
interview, a year later, the student was still struggling to
define his research topic.

## The M.Ed. Student

As a teacher of industrial arts at an intermediate
school in a Toronto borough, Mr. Taylor had students from both

24

middle- and lower-income areas in his classes. He had begun
to feel that students from these two different types of back-
grounds regarded industrial arts as a subject quite differently.
So as an M.Ed. student at OISE, he decided to focus the topic
of the required paper in one of his courses on this concern.
As he put it:

> I was attempting to find out whether in fact
> children with lower socio-economic back-
> grounds would have different attitudes to
> industrial arts than those from high SES
> backgrounds. I was using the search to find
> out what the literature said.

The search analyst devised a search that retrieved
thirty-seven citations. These proved to be of little use to
Mr. Taylor, however. He glanced through the bibliography
rapidly, and, pressed to hand in his assignment, decided to
rely on articles that had been handed out in class. He did
not order any original materials, or otherwise use the results
of the search in any way. He remembered having difficulty
with the format of the bibliography and feeling that the
effort required of him to order materials, read, and digest
them was too great a burden when added to his full-time
teaching load. For his course assignment, he submitted a
term paper that dealt with experiences in his own classroom.

The Primary Teacher

At a public school board at the opposite end of Metro
Toronto, another industrial arts teacher was also placing an
EISO search. He was hoping to apply for a leave of absence
and placed his search to bolster the presentation he needed
to present to his board to be granted leave.

An examination of his Search Request Form showed that
the search analyst combined the concepts of slow learners,
perceptual-motor coordination, and classroom materials to
yeild a bibliography of fifty citations. These proved to
be irrelevant to the industrial arts teacher, who placed his
search output in his file and forgot about it. When asked if
he could explain what had gone wrong, he gave the following
answer:

The project for which I was applying for funds
dealt with the work-bench approach to teaching
industrial arts in the primary grades. I
didn't really know what to ask for. I knew
what the general topic was, what the general
idea was, but I didn't really know any of the
specific things that the search analyst was
asking me because I hadn't studied it before.
The girl on the phone wanted to know more
about it and I couldn't tell her more. I
couldn't explain to her what I needed because
I didn't know. All I knew was the work-bench
approach.

### Factors Contributing to Use or Non-Use of Search Results

The seven mini-cases described above, though they
represent an admittedly limited sample of users, nevertheless
point to some factors that either encourage or pose barriers
to the use of information received as a result of placing an
EISO search. These factors may be evident during both the
pre-search and post-search and are described in Table 16.
Circumstances pertaining to the intervening search negotiation
are examined elsewhere in this report.

Of the seven users shown in Table 16, the psychologist,
junior high principal, program coordinator, and superintendent
all illustrate degrees of information use while the two
students and the primary teacher are examples of non-users.
To what factors can we attribute these differences?

The psychologist, it will be recalled, was an active
researcher with the typical profile of an innovator. She
was also the chairman of a committee that was motivated to
find answers to a pressing problem and she had the authority
both to see that a search was placed and that its results
were implemented. Upon receipt of the articles, she distri-
buted them to her committee members who then assumed joint
responsibility for putting new programs into effect. The
negative aspects of the search, according to the psychologist,
related to the fact that few "classics" in the field were
retrieved, that the concept of "play therapy" was a relatively
new term and therefore might restrict the number of relevant
citations retrieved, and the difficulty of obtaining some
original articles.

26

## TABLE 16

### FACTORS AFFECTING INFORMATION USAGE

| User | Search Phase | | | |
| --- | --- | --- | --- | --- |
| | Pre-Search Phase | | Post-Search Phase | |
| | Pros | Cons | Pros | Cons |
| **POSITIVE** | | | | |
| Psychologist | 1. Active researcher<br>2. Chairman of committee with information need<br>3. Authority to implement | 1. No "classics"<br>2. Newness of "play therapy" | 1. Articles to committee members<br>2. Committee responsible for implementation | 1. Difficulty in obtaining articles |
| Junior High School Principal | 1. Postgraduate student<br>2. Dissatisfaction with existing programs<br>3. Authority of position | 1. Telephoned request | 1. Support of principal<br>2. Literature reviewed by teachers | 1. Too much material<br>2. Too little time<br>3. Inadequacy of telephone interview |
| Program Coordinator | 1. Committee-initiated search<br>2. Well-defined problem<br>3. Authority | | 1. Articles to committee members<br>2. Each member gave talk<br>3. Author invited as guest speaker<br>4. Information supported position<br>5. New information provided<br>6. Speed | |
| Superintendent | 1. Opinion leader<br>2. Information needed for workshops | | 1. Information made into packages<br>2. Workshops given to department heads | |
| **NEGATIVE** | | | | |
| Ph.D. Student | 1. Postgraduate student | 1. Undefined information problem<br>2. Inability to communicate | | 1. Irrelevant material<br>2. Different topic |
| M.Ed. Student | 1. Postgraduate student | 1. No information need<br>2. Limited course requirements<br>3. Job pressures | | 1. Format of bibliography<br>2. Quantity of information<br>3. Lack of urgency<br>4. Effort required to obtain documents |
| Primary Teacher | | 1. Unable to explain topic | | 1. Irrelevant material |

The junior high school principal, though not as involved in research as the psychologist, nevertheless also made efforts to keep abreast of his field and was pursuing an M.Ed. degree in his spare time. While he did not head a committee, he was the leader of his school with prime responsibility for its programs. In this role, he recognized the inadequacies of his music program and determined to correct them. To achieve his aim, he gained the support of his two music specialists, encouraged them to review the literature he had obtained and to initiate appropriate program changes. Though the information obtained was used, the results of the search presented some problems: too much material was obtained; there was not enough time to read it all; there was some dissatisfaction with placing the request by telephone rather than in person.

The program coordinator, though not chairman of his committee, was also a member of a high-powered group that had been working together for a considerable period of time looking at the role of the elementary school principal. They had determined what their information need was and charged the program coordinator with the responsibility of placing a search. Subsequently, each member of the committee made a presentation using the documents obtained as a result of their search. The information they received was relevant to their concern, supporting their ideas and presenting them with new ones.

The superintendent was not a member of a committee but he was a charismatic leader within his own school board as well as in broader educational circles. He exercised one aspect of his professional role by presenting workshops for his staff. It was to develop these presentations that he placed a search. The information he received was transformed into packages that were used at his workshops and distributed to other teachers requesting them. The superintendent was known to his staff as an avid information seeker and user.

To this point, each of the four requestors represents an active information user. The factors that enabled them to become users, or facilitators of information use are remarkably similar in each case. All had personal characteristics that are normally associated with innovators. They were active,

28

involved, highly educated, outgoing professionals. But most important for this study, there were also articulate, able to define and verbalize their information problem, aware of the sources they could call upon, and possessed with a healthy belief in the efficacy of research and a curiosity to learn about what was going on elsewhere. Furthermore, they were also highly motivated. This motivation may have resulted from personal or professional needs but in every case there was a real, concrete, identified problem to be solved or situation to be changed. Third, each user was in a position of authority to initiate a search himself or to cause others to do so. This authority may have resulted from legal position (the principal), expertise (the psychologist), delegation (the program coordinator), or charisma (the superintendent) but in each case it ensured that a search would be made and its results considered and used, if at all possible.

While all of these variables were crucial in the pre-search phase and continued to be important later, still other elements became important during the post-search period. Here, too, we note that all four cases have certain common features. For example, in each case the original documents obtained were passed on to those responsible for effecting change. The information was shared and in some cases adopted by committee or staff members. Joint ownership and commitment was developed. Those who received, digested, and adapted the information to their own needs were also those with responsibility for carrying through the results of their plans, i.e., the seekers, the receivers, and the users were all the same people. In the case of the superintendent, there was also heavy secondary use of the information packages. Most of this type of usage can be attributed to the charismatic authority of the superintendent, to the raised awareness of his staff, and the value attributed to information use by him.

The last three cases on Table 16 illustrate those factors that pose barriers to information use. The doctoral student was still in an early stage of his program and had not yet defined his research topic with sufficient clarity. He had a vague notion that he might be interested in the effect of

29

teacher attitudes on student achievement but was really unable
to be more specific. In any event, shortly after placing his
search his interests shifted to another area and he found the
bibliography he received of limited value.

The masters' student, while he had a reasonably well-
defined topic, really had no need to place a search. His
instructor had handed out copies of relevant articles to his
class and the course assignment did not seem to require more
extensive resources. There is therefore some question as to
why he placed the search at all. When he received his biblio-
graphy he was discouraged from obtaining or using original
documents by the time constraints placed on him by his regular
job, the discouragingly large amount of material available,
the format of the bibliography, and the fact that he already
possessed sufficient resources to complete his course assign-
ment.

The primary teacher, though having a reason for placing
a search, was nevertheless unable to explain to the search
analyst what his topic was about. He was limited to a single
approach in teaching industrial arts and was unable to expand
upon it or place it in a context for the further edification
of the search analyst. By his own admission, he knew very
little about his topic and did not know what to ask for. Not
surprisingly, he found the bibliography he received irrelevant.

From these brief sketches, we can see that the non-users
of information also share some common characteristics. Among
these are the lack of a clearly defined problem and/or the
inability to articulate that problem to the search analyst.
These were especially true in the cases of the doctoral
student and the primary teacher. Lack of motivation or real
need was a deterrent to usage in the case of the masters'
student although he was also discouraged by the format and
quantity of material, the effort needed to acquire documents,
and the time pressures of his job and course requirements.
These latter factors were operative most clearly in the post-
search phase. Lack of commitment in this later stage also
prevented the doctoral student and the primary teacher from
following through with their original concerns.

# Conclusion

It is interesting to note that whereas in the cases of successful information use each user was spurred on by the need to report to or work with staff or committees, the non-users were all loners. It might be expected, therefore, that they would have to display greater independence, self-reliance, and personal motivation than the successful users and would not have the rewards of immediate positive feedback. In the cases dealt with here, this increased burden of responsibility without positive external support created a barrier to use that was not overcome.

# CHAPTER 3

## USER SATISFACTION WITH EISO

One of the most important and most difficult aspects of an
online search service to evaluate is the satisfaction of the
user. User satisfaction is significant because it will affect
the ultimate success of the service: a satisfied user is more
likely to become a repeat user and an advocate of the system
that has met his needs. And it is the build-up of a steady
clientele and the spread of its success by word of mouth that
will help to ensure its long-term operation. Measuring user
satisfaction, however, is fraught with difficulties for we
are trying to assess what is, after all, a state of mind. Not
only is it highly subjective, but it is in all likelihood
subject to frequent shifts and changes. What may be judged
satisfactory at one point in time may be considered less so
at another. So the problem of when to assess satisfaction is
a real one. Equally troublesome is what to measure. A search
service consists of numerous elements that may each contribute
to the perceived satisfaction of the user. Such elements may
include everything from the user's interview with the search
analyst to the speed with which original documents are received.
Performance at each of numerous stages will influence the satis-
faction of the user.

Recognizing this complexity the Educational Information
System for Ontario developed an evaluation scheme based on a
systems model using psychological, sociological, and economic
variables within an adoption of innovations framework. This
schema and its reliability were described in detail in earlier
reports (Auster and Lawton, 1976, pp. 56-84; and Lawton and

32

Auster, 1977, pp. 30-68). It is the purpose of this chapter, therefore, to present satisfaction data for a three-year period and to examine an aspect of the service not reported on before, namely comparison of the satisfaction levels of users who did and did not go through Educational Information Consultants (EICs) in order to use the service.

The five scales used to measure user satisfaction are listed in Table 17. These are: Publicity Materials and Directions, Quality of Service, Timeliness of Service, Quality of Technology, and Value of Bibliography and Materials. A sixth composite scale measures Overall Satisfaction.

## Yearly Satisfaction Averages

A comparison of the average satisfaction of EISO users over the three years of the service's operation shows a remarkable consistency. Changes in average level of satisfaction ranged from an increase of .20 for Timeliness of Service to a decrease of .04 for Quality of Technology. There was virtually no significant variation in perceived satisfaction among EISO users over the three-year period with the average user being highly satisfied with the service he received. This high average satisfaction was expressed by means of 2.61 and 2.78 for Overall Satisfaction and Quality of Service, respectively, on a three-point scale. Table 18 shows that fewer than 5% of users were not satisfied with the outputs of the service, the Value of the Bibliography and Materials, during the most recent year of operation. This represents a significant improvement from the more than 12% who expressed reservations the previous year or the almost 10% in the first year. Clearly, EISO continues to improve, with over 95% of users being satisfied with the service provided.

A more detailed breakdown of the five rating scales in Table 19 reveals similar responses to the scale items. On the same three-point scale mentioned earlier the least satisfactory item was judged to be the time taken to deliver materials from EDRS with a mean of 2.09 and no aspect of the service was judged to be unsatisfactory. It should be noted

## TABLE 17

### SATISFACTION SCALE MEANS, STANDARD DEVIATIONS, AND FREQUENCIES[1]

| Scale | Satisfaction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | | | Year 2 | | | Year 3 | | |
| | $\bar{X}$ | s | n | $\bar{X}$ | s | n | $\bar{X}$ | s | n |
| Publicity Materials and Directions | 2.57 | 1.00 | 88 | 2.58 | 0.45 | 198 | 2.56 | 0.40 | 114 |
| Quality of Service | 2.81 | 0.60 | 200 | 2.76 | 0.39 | 211 | 2.78 | 0.37 | 110 |
| Timeliness of Service | 2.31 | 1.09 | 25 | 2.40 | 0.44 | 36 | 2.60 | 0.42 | 19 |
| Quality of Technology | 2.42 | 0.76 | 56 | 2.53 | 0.38 | 87 | 2.49 | 0.40 | 47 |
| Value of Bibliography and Materials | 2.24 | 0.87 | 133 | 2.30 | 0.67 | 179 | 2.36 | 0.57 | 102 |
| Overall Satisfaction | 2.61 | 0.77 | 180 | 2.60 | 0.35 | 188 | 2.61 | 0.30 | 100 |

[1]Scale means relate to a three-point scale: 3 = high satisfaction, 2 = medium satisfaction, and 1 = low satisfaction.

34

## TABLE 18

### PERCENTAGE DISTRIBUTION FOR SATISFACTION WITH QUALITY OF BIBLIOGRAPHY AND MATERIALS BY YEAR

| Level of Satisfaction[1] | Percent | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| High | 45.1 | 52.5 | 51.9 |
| Medium | 45.1 | 35.2 | 43.1 |
| Low | 9.8 | 12.3 | 4.9 |
| Total n = | 133 | 179 | 102 |

[1]Classifications are as follows: high, 2.50 or 3.0; medium, 1.5 or 2.0; and low, 1.00.

## TABLE 19
### SATISFACTION ITEM MEANS, STANDARD DEVIATIONS, AND FREQUENCIES

| Scale Item | Satisfaction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | | | Year 2 | | | Year 3 | | |
| | $\bar{X}$ | s | n | $\bar{X}$ | s | n | $\bar{X}$ | s | n |
| *Publicity Materials and Directions* | | | | | | | | | |
| Accuracy and comprehensiveness of publicity materials. | 2.45 | 0.66 | 112 | 2.47 | 0.61 | 208 | 2.42 | 0.55 | 116 |
| Adequacy of directions for submitting search requests[1] | 2.68 | 0.55 | 143 | -- | -- | -- | -- | -- | -- |
| Convenience of arrangements and adequacy of directions[1] | -- | -- | -- | 2.70 | 0.52 | 225 | 2.69 | 0.51 | 124 |
| Adequacy of directions for ordering copies of materials | 2.51 | 0.69 | 182 | 2.55 | 0.62 | 212 | 2.57 | 0.55 | 122 |
| *Quality of Service* | | | | | | | | | |
| Convenience of arrangements to obtain EISO searches[1] | 2.84 | 0.41 | 237 | -- | -- | -- | -- | -- | -- |
| Convenience of arrangements and adequacy of directions[1] | -- | -- | -- | 2.70 | 0.52 | 225 | 2.69 | 0.51 | 124 |
| Helpfulness of Search Analyst or EIC | 2.88 | 0.37 | 225 | 2.81 | 0.47 | 218 | 2.86 | 0.37 | 114 |
| Time devoted to search interview[2] | 2.71 | 0.58 | 208 | -- | -- | -- | -- | -- | -- |

36.

53

TABLE 19 (Cont'd.)

| Scale Item | Satisfaction | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Year 1 | | | Year 2 | | | Year 3 | | |
| | $\bar{X}$ | s | n | $\bar{X}$ | s | n | $\bar{X}$ | s | n |
| *Timeliness of Service* | | | | | | | | | |
| Time taken to deliver bibliography | 2.64 | 0.63 | 224 | 2.50 | 0.65 | 227 | 2.66 | 0.51 | 125 |
| Time taken to deliver materials from EDRS | 2.24 | 0.83 | 33 | 2.06 | 0.66 | 54 | 2.09 | 0.71 | 34 |
| Time taken to deliver materials from EISO | 2.42 | 0.72 | 53 | 2.54 | 0.61 | 65 | 2.86 | 0.44 | 29 |
| *Quality of Technology* | | | | | | | | | |
| Length of bibliography | 2.41 | 0.66 | 227 | 2.51 | 0.60 | 216 | 2.50 | 0.61 | 118 |
| Readability of microfiche copies | 2.33 | 0.70 | 93 | 2.38 | 0.59 | 123 | 2.35 | 0.63 | 60 |
| Availability of microfiche readers | 2.58 | 0.67 | 121 | 2.56 | 0.63 | 118 | 2.55 | 0.62 | 62 |
| *Value of Bibliography and Materials* | | | | | | | | | |
| Bibliography itself | 2.19 | 0.69 | 221 | 2.33 | 0.70 | 216 | 2.40 | 0.63 | 116 |
| Materials located via bibliography | 2.25 | 0.68 | 134 | 2.28 | 0.72 | 182 | 2.31 | 0.61 | 10: |

[1]Separate questions concerning convenience of arrangements and adequacy of directions for submitting search requests were asked in Year 1, but the two items were combined in Year 2 and Year 3.

[2]Item on time devoted to search interview did not appear on Year 2 or Year 3 questionnaires.

37

55

that corrective action was taken to provide more effective document delivery by contracting with MicroMedia, a local firm, to provide paper copies from fiche. Thus the long wait formerly necessary for users dealing with ERIC Document Reproduction Service (EDRS) in the U.S. has been eliminated.

Those aspects of the service that were felt to be most satisfactory, with 2.86 on a possible scale of 3, were the time taken to deliver materials from EISO, and the helpfulness of search analyst or EIC. Since the speed of the service and the interaction with the search analyst are two of the main distinguishing characteristics (and therefore selling points) of online retrieval, it is gratifying to know that these important aspects are being carried out well. On the whole, then, these statistics show a service that has established high standards and is succeeding in maintaining them.

## Monthly Satisfaction Averages

While it is true that, on the whole, the EISO service is maintaining high standards, fluctuations do occur from month to month depending on the time of year, major changes in system operations, and the size of the sample for whom responses were received. It is as well to recognize that these variations do occur and in fact appear to be a normal part of the service environment so that undue anxiety or uncalled for shifts in policy are avoided.

Among the most important measures assessing the satisfaction of users with EISO are those evaluating their perception about the Quality of Service and the Value of Bibliography and Materials. Because of the importance of these aspects, mean satisfaction levels of users regarding them were plotted on a monthly basis from July 1975 through October 1977. An average Overall Satisfaction level was also obtained. A graphic description of the results is seen in Figure 1.

Trends during the tenure of the first search analyst were analyzed in EISO's *Second Interim Report: March 1976 - February 1977* (Lawton and Auster, 1977, pp. 44-50). Briefly, it was found that Overall Satisfaction was remarkably steady, ranging between 2.4 and 2.7 on the three-point scale employed.

# FIGURE 1
## AVERAGE USER SATISFACTION BY MONTH
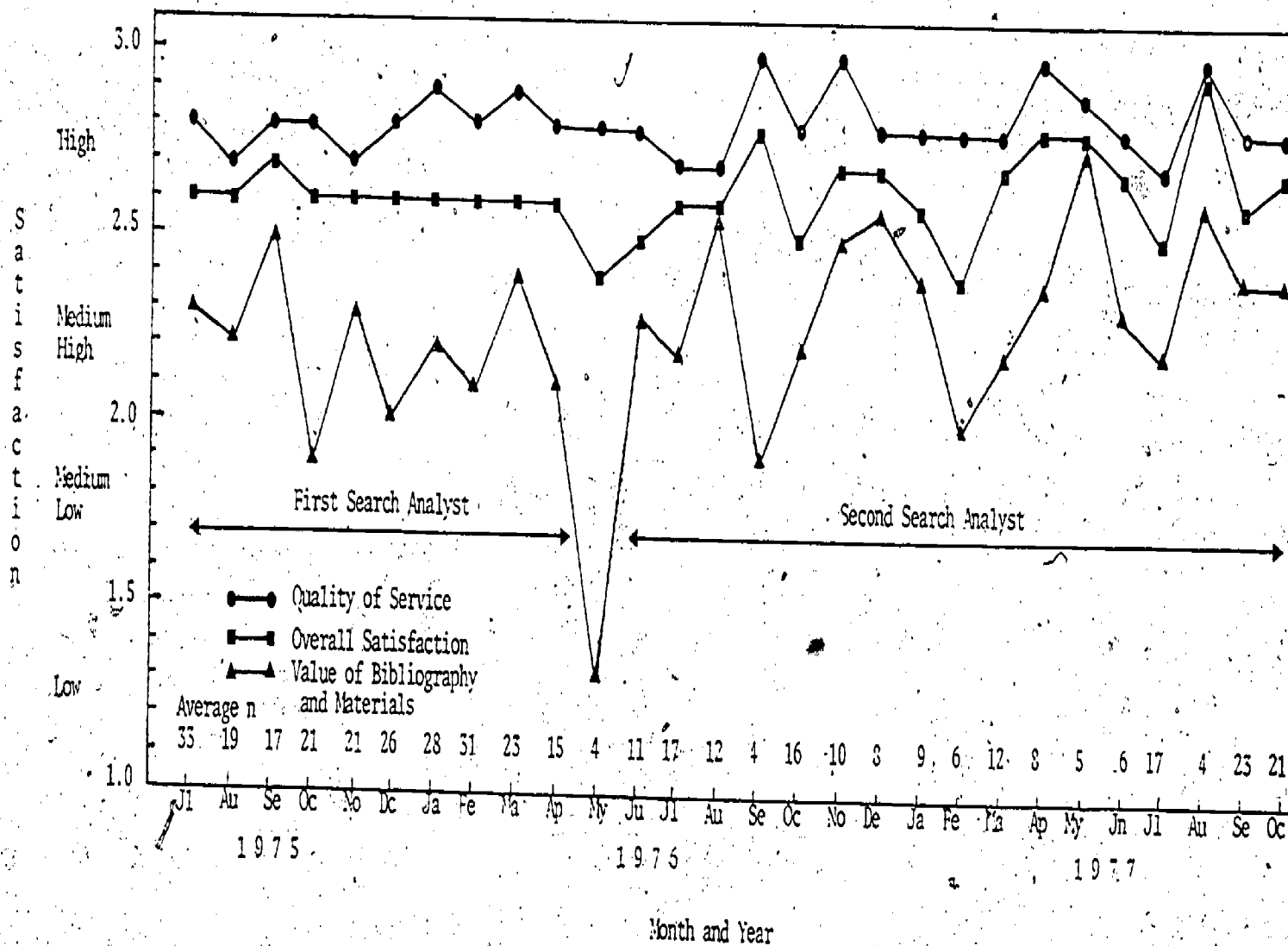
The monthly average remained within ±0.1 units of 2.6.
A noticeable drop did occur, however, during the Spring of
1976 but this was attributed to the hiring and "breaking in"
period of a new search analyst. It was also noted that over-
all satisfaction tended to decline during those periods when
demands for searches reached peak levels of 55 or more per
month.

An analysis of trends since the employment of the second
search analyst reveals two interesting features. First, the
previously observed decline in satisfaction levels with the
Value of Bibliography and Materials during hectic periods
seems to be continuing, though with less frequency. It should
be noted, however, that this "decline" in satisfaction is a
relative thing. That is, the satisfaction level for this item
never fell below 2.0 between October 1976 and October 1977.
This means that even at its worst, the service was never seen
to be below a medium-high level of performance.

Second, the Quality of Service has on four separate
occasions (September 1976, November 1976, April 1977, August
1977) been assessed at 3.0; the highest level attainable on
a scale of three points. During that same October 1976 to
October 1977 period Quality of Service never fell below 2.7
and hovered at the 2.8 level. These statistics confirm that
the perceived performance of the search analyst is critical
in maintaining high user satisfaction with the search service.
It also points to the fact that the user is able to make dis-
tinctions between the service he received from the analyst and
the final output of the system, i.e., the bibliography and
materials he receives. It also seems reasonable to assume
that he may also be able and willing to ascribe his lesser
satisfaction with his bibliography to factors beyond the
immediate influence or control of the search analyst, such as
appropriateness of topic, extent of materials available, or
system features. This ability to separate and distinguish
between the performance of the analyst and that of the search
system is important because it suggests that a user will be
more willing to place another search on a different topic if
he feels that everything humanly possible will be done to meet
his needs.

## Satisfaction of EIC Versus Non-EIC Users

Because the human element of relaying and using information was, from the very beginning of this research project, regarded as critical, it was felt that some special provision had to be made for users who were located at a distance from Metropolitan Toronto and thus did not have immediate access to the service. The basic assumption was that the provision of an intermediary, called an Educational Information Consultant, or EIC, familiar with local conditions and needs, would lead to a more satisfied user and more effective dissemination and utilization of knowledge. In turn, a satisfied user, according to adoption of innovation models, could be expected to become a repeat user who would have the obvious effect of ensuring the maintenance and growth of the information service.

To test whether or not such assumptions could be proved empirically, special treatment was given to the Northwestern Region of Ontario. There, four EICs in different types of institutions were trained, demonstrations of the service were held, and reduced rates were instituted for the first year of the service's operation. It was expected that this greater effort would result in a disproportionately large number of search requests from this area. Table 20 below shows that this effort was successful, at least initially. In the first

## TABLE 20
### USERS LOCATED IN NORTHEASTERN REGION (REGION 3)

| Response | Percent | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| Yes | 13.9 | 5.4 | 3.9 |
| No | 86.1 | 94.6 | 96.1 |
| Total n = | 380 | 371 | 129 |

two years, the region, with only 4% of the province's enrol-
ment in elementary and secondary schools, was overrepresented.
The decline in the second year from 14% to 5% is due in part
to the exhaustion of free searches. The 4% usage level in
the third year is in keeping with the proportion of the area's
population.

Of these users, however, not all went through EICs.
Table 21 shows whether the user went directly to the search
analyst or through a local intermediary to have his search
formulated. The reasons for the decline from almost 10% to
2% between the first and second years are uncertain but may

TABLE 21

WHO ASSISTED IN FORMULATING SEARCH REQUEST

| Role of Assistant | Percent | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| Search Analyst | 85.9 | 97.8 | 97.7 |
| Field Centre EIC | 7.3 | 1.1 | 0 |
| Faculty of Education/CAAT EIC | 0.8 } 9.7 | 0.8 } 1.9 | 2.4 } 2.4 |
| Ministry of Education EIC | 1.6 | 0 | 0 |
| Not Sure | 1.3 | 0 | 0 |
| Other | 3.1 | 0.3 | 0 |
| Total n = | 382 | 371 | 129 |

reflect, among other things, the exhaustion of free searches
in the area, or simply a poor return of questionnaires. It
is also worth noting that these statistics do not take into
account the activities of the EIC associated with a local
school board. Nevertheless, it was later found that 61 users
in the Northeastern Region had used ETSO. Of these 61, 18
had returned questionnaires showing they had gone through
EICs, while a further 43 had not gone through EICs.

42

Table 22 shows the means, standard deviations, and frequencies for that sub-sample of users who returned their evaluation questionnaires. Though statistical significance is important, it is not, however, the sole criterion for determining the importance of a relationship. Particularly when one is concerned with policy decisions, the strength of a relationship can indicate its practical importance. In the present case, a difference between means of 0.2 on the three-point satisfaction scale is considered to be of no practical significance. Differences of 0.4, 0.6, and 0.8 or greater are considered to be of low, medium, or high practical significance, respectively. Due to the small sample size, analyses of both statistical and practical significance are given, recognizing that where only the latter obtains, further research is needed to confirm the existence of the relationship. For the convenience of the reader the 15 satisfaction items are grouped into the same five categories used earlier.

In the present context, the five main groupings in Table 22 might be regarded as corresponding to the stages that a typical user would go through to place a search. First, he would obviously have to become aware of the existence of the service. Publicity Materials and Directions covers those aspects that explain the technical points about using the service to the user. These instructions were available in a variety of written formats and appeared as articles in professional journals, advertisements, and brochures. It was expected, though, according to the literature, that personal contact, either informally or through staff meetings and planned presentations, would be the most effective method of informing users about the service. And indeed, the first goal the EICs were asked to achieve in their initial training was to make users aware of their availability and the services they could provide. Therefore, one would expect the EIC users to be somewhat more satisfied with their information about the service than non-EIC users who were not exposed to such personal efforts. There is evidence to support that this was in fact the case.

43

62

TABLE 22

MEANS, STANDARD DEVIATIONS, AND FREQUENCIES FOR SATISFACTION OF EIC VERSUS NON-EIC USERS

| Aspects of EISO | EIC User | | | Non-EIC User | | | F-Ratio |
|---|---|---|---|---|---|---|---|
| | $\bar{X}$ | s | n | $\bar{X}$ | s | n | |
| *Publicity Materials and Directions* | | | | | | | |
| Accuracy of publicity materials, EISO presentations, etc. | 2.8 | 0.45 | 5 | 2.4 | 0.79 | 12 | 1.01 |
| Comprehensiveness of publicity materials, EISO presentations, etc. | 2.7 | 0.52 | 6 | 2.2 | 0.67 | 9 | 1.89 |
| Adequacy of directions for submitting search requests to EISO | 2.5 | 0.76 | 8 | 2.3 | 0.76 | 12 | 0.53 |
| Adequacy of directions for ordering copies of materials | 2.6 | 0.73 | 9 | 2.1 | 0.90 | 18 | 1.65 |
| *Quality of Service* | | | | | | | |
| Convenience of arrangements to obtain EISO searches | 2.9 | 0.33 | 9 | 2.6 | 0.61 | 20 | 2.46 |
| Helpfulness of search analyst or Educational Information Consultant. | 2.8 | 0.62 | 12 | 2.6 | 0.62 | 16 | 0.28 |
| Time devoted to search interviews with search analyst or Educational Information Consultant | 2.2 | 0.84 | 5 | 2.4 | 0.79 | 13 | 0.20 |

44

TABLE 22 (Cont'd.)

| Aspects of EISO | EIC User | | | Non-EIC User | | | F-Ratio |
|---|---|---|---|---|---|---|---|
| | $\bar{X}$ | 2 | n | $\bar{X}$ | s | n | |
| *Timeliness of Service* | | | | | | | |
| Time taken to deliver the EISO bibliography | 2.1 | 0.83 | 11 | 2.7 | 0.48 | 16 | 5.61[†] |
| Time taken to deliver microfiche or paper copies ordered from EDRS in the U.S., if applicable | 2.0 | 0 | 2 | 2.3 | 0.58 | 3 | 0.60 |
| Time taken to deliver microfiche or paper copies ordered from EISO | 2.3 | 0.58 | 3 | 2.4 | 0.55 | 5 | 0.03 |
| *Quality of Technology* | | | | | | | |
| Length of bibliography | 2.8 | 0.44 | 9 | 2.2 | 0.66 | 17 | 4.82[†] |
| Readability of microfiche copies, if applicable | 2.5 | 0.55 | 6 | 2.1 | 0.69 | 7 | 1.04 |
| Availability of microfiche readers | 2.8 | 0.44 | 9 | 2.4 | 0.92 | 8 | 1.39 |
| *Value of Search Output* | | | | | | | |
| Value of bibliography | 2.2 | 0.79 | 10 | 2.3 | 0.60 | 16 | 0.17 |
| Value of materials | 2.5 | 0.55 | 6 | 2.2 | 0.83 | 9 | 0.51 |

[†]Significant at the .05 level.

45

Looking at the four items in Table 22 that apply to providing the user with Publicity Materials and Directions, we find that, measured on a three-point scale with three being the highest level achievable, the mean satisfaction level for EIC users was consistently higher than for non-EIC users. For accuracy of publicity materials it was 2.8 as against 2.4; for comprehensiveness of publicity materials it was 2.7 as against 2.2; for adequacy of directions for submitting search requests to EISO it was 2.5 to 2.3; for adequacy of directions for ordering copies of materials it was 2.6 as compared with 2.1. While it is true that these figures are not statistically significant, all of these differences are either of low or medium practical significance. Such a consistent relationship between the use of an EIC and higher satisfaction is of interest to the policy maker pending confirmation.

Since one of the main reasons for having EICs in the Northeastern Region was to improve the accessibility to the information service for geographically remote users, one would expect EIC users to be more satisfied with the Quality of Service than those who did not use the service through a local intermediary. This did not appear to be the case, however, since there was no difference of practical or statistical significance between the satisfaction levels of EIC and non-EIC users with the convenience of arrangements to obtain EISO searches (2.9 to 2.6) or the helpfulness of the search analyst or Educational Information Consultant (2.8 to 2.6). It will be noted that both groups of users were very satisfied with these aspects of the service and less satisfied (2.2 and 2.4) with the time devoted to the search interview with the search analyst or Education Information Consultant. This lower satisfaction -- again showing no practical or statistical differences -- may be explained by the fact that, whether a user goes through an EIC or directly to the search analyst, there are constraints. Some EIC users negotiated their searches "on the run" because of their own job situations, and thus the result may be as much a reflection of the user's own ability to take time out for an adequate interview as the availability

of the EIC.    Non-EIC users may never, in fact, have spoken to
the analyst because they submitted their request by mail or,
if they did speak to her, it may have been rather hurriedly
by long-distance telephone, a mode not conducive to leisurely
problem definition because of the costs involved.

The areas where one would expect the non-EIC user to
have the advantage over the EIC user are those that relate to
time.   For the non-EIC user would typically receive his biblio-
graphy directly from the search analyst; he would be respon-
sible for ordering his own materials, and he would receive
these original documents in microfiche or paper copy without
the intervention of an intermediary who would represent an-
other step in the delivery process.   The results shown for
the items included under Timeliness of Service seem to bear
this out for one aspect: time taken to deliver the EISO bib-
liography, where the non-EIC user has a satisfaction level of
2.7 and the EIC user one of 2.1.   This difference is great
enough to be of statistical significance as well as medium
practical significance.   Since the other two items in this
area, time taken to deliver microfiche or paper copies from
EDRS in the U.S., and time taken to deliver microfiche or
paper copies from EISO, showed no statistical significance
and low (2.3 to 2.0) and no (2.4 to 2.3) practical signifi-
cance respectively, the results may suggest that going through
an EIC is influential at the first stage of the delivery pro-
cess but does not affect the later stages involving delivery
of materials from EDRS or EISO.

In the items related to the Quality of Technology, there
is one that shows a statistical and medium level of practical
significance in favour of EIC users' satisfaction with the
length of bibliography.   This difference (2.8 to 2.2) might
be attributed to the greater familiarity of the EIC with the
precise needs of his client.   Differences between the satis-
faction levels on the two other items listed in this section,
readability of microfiche copies, and availability of micro-
fiche readers, are not statistically significant and are of
low practical significance, 2.5 to 2.1 and 2.8 to 2.4, respec-
tively.

The final stage of the search process as assessed by the User Evaluation Questionnaire refers to the Value of the Search Output. The output referred to consists of two separate products, the bibliography and the original materials ordered, if any, which might be either copies of journal articles or microfiche duplicates of ERIC documents or a combination of the two. The mean satisfaction levels for EIC and non-EIC users with the value of the bibliography (2.2 and 2.3) and the value of materials (2.5 and 2:2) are so close that the differences are of no statistical or practical significance.

## Conclusion

It would appear that there is a slight tendency for EIC users to be more satisfied with some aspects of the automated bibliographic retrieval service than non-EIC users. These areas of greater mean satisfaction focus on the publicity about and directions for using the service and the quality of the technology. EIC users are less satisfied than their non-EIC counterparts with those aspects of the service that add another step to the ordering process and therefore slows down their receipt of the information. This suggests that the EICs role might be most useful in the preliminary stages of raising awareness and providing directions for using the service. It would appear that the intermediate stage of search negotiation might best be left to the search analyst and the ordering of materials to the user. In that way, maximum use might be made of the local availability of the EIC, the technical expertise of the analyst, and the enthusiastic need of the user for a more speedy delivery time.

CHAPTER 4

THE NEGOTIATION PROCESS IN ONLINE
BIBLIOGRAPHIC RETRIEVAL

One of the most important aspects of online search services
is the negotiation process that takes place between the
librarian or search analyst and the user seeking information.
For it is during that encounter that the user must make his
needs known, the search analyst must comprehend the request,
and translate it into the terminology and configuration that
will result in the successful retrieval of appropriate cita-
tions. Yet little has been written that attempts to analyze
what happens during the negotiation process. The purposes
of this chapter, therefore, are to review the literature rele-
vant to the negotiation process, to identify the major
elements of that process as outlined in the literature, to
apply these theoretical components to actual negotiation
interviews and ascertain their applicability thereto, and to
develop a model that describes the component elements of the
negotiation process. The development of such a model is seen
as having implications for the training and performance of
search analysts and therefore contributing to the improvement
of automated search services.

Review of the Literature

Though online services have now been in existence for
more than a decade and their growth and evaluation have become
the subject of scholarly attention (Fry, 1972; Wanger *et al.*,
1976), a recent survey of library science publications has
shown that little has been written on the negotiation process

between the user seeking information and the search analyst
working at the computer terminal. While this newer field has
remained unexplored, however, there exists an abundant litera-
ture dealing with the more traditional form of the user/analyst
interface, the classic reference interview. That literature
treats as its major concerns empathy and non-verbal behaviour;
the interview process itself, including its structure, and
the thought processes involved in the negotiation and formu-
lation of questions; the examination of the establishment and
enactment of roles by the participants, and other factors
which affect the interaction between the reference librarian
and the user. It is to these areas that we now turn for the
insight they can lend to the online negotiation process.

Empathy and Non-Verbal Behaviour

Both Peck (1975) and Pierce (1971) have taken the view
that there is a strong affinity between the interviews that
are part of reference services and those that are integral
to therapy and counselling. They feel, therefore, that an
awareness of the techniques employed by counsellors would be
beneficial to librarians in enabling them to improve their
services. One such technique is empathy. Peck quotes Delaney
and Eisenberg, who describe empathy as:

> . . . the counselor's ability to understand
> how the client feels at any given moment in
> the counseling process and how he feels about
> the situations he is describing to the coun-
> selor. Empathy also refers to the ability
> of the counselor to respond to the client
> so as to communicate that the nature and
> intensity of the emotion experienced is
> understood by the counselor (Peck, 1975,
> p. 233).

Applying this to the reference librarian, Peck suggests that
empathy can be shown to have effects in numerous ways: the
demeanour of the librarian at the initial interview can
reduce the anxiety of the user; maintaining eye contact,
smiling, expressing concern can diminish nervousness; prac-
tising a relaxed, slightly forward-leaning body position can
reflect interest. Other non-verbal behaviour such as nodding
the head or gesturing with the hands can indicate awareness
and attention.

50

Pierce adds another dimension to Peck's article by suggesting that

> . . . the importance of empathy does not
> depend exclusively on the empathic ability
> of the therapist, but also on the perception of empathy by the client (Pierce, 1971,
> p. 120).

Using sixty male volunteers enrolled in an undergraduate course in psychology at the Ohio State University, he carried out an experiment to test the relationship between anxiety and perceived empathy. He subjected the students to what he termed an "Appropriate Timing Interview" (where the interviewer attempted to respond appropriately to the students with a statement, did not interrupt the student or allow more than five seconds to elapse), and an "Inappropriate Timing Interview." The latter was dividied into three periods: the first period of two minutes was similar to the "Appropriate Timing Interview;" the second was marked by interviewer interruptions with a statement every five seconds for five minutes; in the third period (five to eight minutes), the interviewer did not respond to the student for a fixed period of twelve seconds after the last utterance of the student. Pierce found that although the timing of statements was not a variable, there was an inverse relationship between anxiety generated by the "Inappropriate Timing Interview" and perceived empathy. The implication for reference librarians is that perceived empathy would lead to greater user satisfaction with and an improvement of the library's services.

In a somewhat similar experiment reported in detail, Matarazzo and Wiens (1967) hypothesized (and validated with reported p values of .001) that if the interviewer waited longer (or shorter) than usual before responding to the user's last comment, the effect would be an increase (or decrease) in the user's own reaction time to the interviewer. Citing other similar studies, they extrapolated that when the interviewer's "speech latency" (the reaction time before responding to the user's last utterance) was short, this, together with head nodding and saying "mm-hmm," acted as "social reinforcing stimuli" and led to the perception of a more positive attitude

by the interviewer, and hence greater satisfaction on the part
of the user with the interview.

In another experiment to test the effect of the quality
of a reference librarian's immediate and non-immediate verbal-
nonverbal communication on user satisfaction, Gothberg (1976)
advanced three hypotheses: immediate rather than non-immediate
verbal-nonverbal communication by the librarian would result
in (1) greater user satisfaction with the reference interview,
(2) greater satisfaction with his own performance in the nego-
tiation of the reference question, and (3) greater user satis-
faction with the transfer of information. Using the immediacy
principle emerging from the investigations of Mehrabian and
his co-workers, a measurement of the construct "satisfaction"
used by Van Kaam, and an ANOVA computer program to analyze the
data, she found that the first two hypotheses were supported
by the results, but not the third. She suggests that more
frequent immediate verbal-nonverbal communication will increase
the level of the librarian's interpersonal functioning, ease
the frustration users often encounter in their search for infor-
mation, and hence increase their satisfaction with the library's
services.

Boucher (1976) also indicates concern for the frustration
experienced by library users and emphasizes the importance of
nonverbal communication in alleviating this. She puts users
into four basic categories: the *lost sheep*, the *irate patron*,
the *habitual user*, and *confidence personified*, and suggests
that librarians, instead of being in the "Preoccupation Mode"
should find themselves in the "Availability Mode" more often
if successful communication is to take place. She defines
the two modes as follows

| *Preoccupation Mode* | *Availability Mode* |
| --- | --- |
| Arms across chest | Arms relaxed, not covering up body |
| Downward gaze so no eye contact possible | Eyes ready to contact those who enter |
| Frown of concentration, firm mouth | Smile of greeting, relaxed mouth, eyebrows lifted in attention |
| Hands busy with books, paper, pencil, telephone | Hands relaxed |
| Turned or leaning away, head bent down | Leaning forward, head up |
| hind desk | Willingness to leave desk |

To contact and inform the user successfully, the reference librarian needs to be skilled in the art of communication, the nonverbal aspect of which, though extremely important, is often overlooked.

## Structure of Negotiation

Although very early in her article Boucher does make mention of the tripartite nature of the negotiation process itself -- it begins with an *acknowledgement*, moves into *interaction*, and concludes with an *informal closure* -- she does not develop this perspective in her article. Gothberg (1973), however, convinced that the negotiation of the reference question is one of the major problems in library communication, believes that the solution lies in an examination of the nature of the interpersonal process, particularly from the perspective of Martin Buber. Turning to his view of the importance of interpersonal relationships, after an examination of the literature in linguistics, kinesic research, and information and transactional theories, she notes that "a few things stand out": the attitudes and feelings of the helping person are more important than his procedures or techniques, and the way in which his attitude and feelings are perceived makes the crucial difference. Taylor (1967) is then cited as finding, in his review of studies done, that ease of access to information is more important to the searcher than the quality of that information.

Taylor (1967) in considering the negotiation process, states his concern with two phases of this interface between library system and library user and has advocated a more dynamic (inquiry-oriented) rather than a static (object-oriented) approach to the structuring of the interview. He suggests that with regard to the first phase, it is crucial to attempt to understand what a question is, and identifies four levels or stages of question formulation. He however cautions that these levels are not separate, but overlap and should be thought of only as convenient points along a continuum. The levels are (1) the actual but unexpressed need for information (the *visceral* need); (2) the conscious,

within-brained description of the need (the *conscious* need);
(3) the formal statement of the need (the *formalized* need);
(4) the question as presented to the information system (the *compromised* need).

> Unless the inquirer knows the information specialist well, he is inclined to pose his first question in positive and well-defined terms, even to the point of specifying a particular package [level 4]. . . . The skill of the reference librarian is to work with the inquirer back to the formalised need [level 3], possibly even to the conscious need [level 2], and then to translate these needs into a useful search strategy (Taylor, 1967, p. 9).

The second phase of the process of negotiating the question is the identification of the "filters" through which a question passes. From interviews with librarians and information specialists, Taylor pinpoints five: (1) subject definition; (2) objective and motivation of the user; (3) personal characteristics of the user; (4) relationship of inquiry description to file organization; (5) anticipated or acceptable answers.

The first "filter" is concerned with provided the librarian with a general delineation of the subject area of inquiry through feedback; the second, which most librarians felt was crucial to the success of any negotiation and consequent search, stems from the observed fact that while users often cannot define *what* they want, they can discuss *why* they need it. This stage further qualifies the subject and helps the user and librarian formulate a better understanding and clarification of the user's need. The third, the personal background of the inquirer, according to Taylor,

> . . . may well determine the urgency, the strategy of the negotiation, the level of any dialogue and the critical acceptance of search results (*Ibid*. p. 14).

In short, it is the context and environment of the entire process. Then, the reference librarian translates, interprets, and restructures the question so that it fits the files as they are organized in the library system. Finally, the user can be made aware of the capabilities of both the librarian

and the system, adjust his search strategy in the process, place limits of time and size on his inquiry and possibly alter his expectations of acceptable answers.

Taylor sets out to show that the negotiation process, in its best form, is structured and can be analyzed. Once the structural elements are understood, they can be isolated (and even further broken down) for fruitful analysis and the eventual improvement of reference librarians and information specialists. This would lead to a better understanding of their role and therefore greater efficiency and effectiveness in serving their various publics.

## Open and Closed Questions

Neill (1975) claims that although there is a fairly accurate notion of *what* happens during the reference process, there is little idea of *how* it happens. He suggests that a knowledge of the thought processes involved in recognizing types of questions being asked, in formulating search strategies, and in selecting the kind of answers required in reference work is needed to improve the teaching and practice of reference service. One model that he feel parallels this process is Guilford's Intellect Model.

An integral part of this model is convergent and divergent thought production, "the operations most relevant to the reference process" (p. 310). In convergent production operations, logical *necessities* are generated from given information, and in divergent production operations, logical *possibilities*. "The crucial differentiation of the two kinds of operation is that the kind of response is completely specified in convergent production and not in divergent production" (p. 313). Fluency, flexibility, originality, and the ability to elaborate detail are abilities associated with the former, while the drawing of deductions that are logically tight from given information (the deductions are essentially uniquely determined by the given information) characterize convergent production ability. The reference librarian must be able to engage in both forms and must therefore be aware of the thought processes involved to emerge with a better definition of the problem.

In concrete, operational terms these two types of thinking are what King (1972) has categorized as "open" and "closed" questions. She advocates that the understanding of the user's request and the supplying of the information required would be immensely facilitated by a more pronounced use of one technique -- the use of the "open" question.

> Questions are open when the response is left
> up to the respondent; when they cannot be
> answered "yes" or "no". Example: "What is
> it that you want to know about soft contact
> lenses?"
>     Questions are closed when the respondent
> does not have a choice in his response other
> than those provided by the questioner. Two
> general types of closed questions are those
> which may be answered "yes" or "no" and
> those which are forced-choice. Examples:
> "Do you want a biography?" (yes or no).
> "Do you want books or information?" (forced
> choice: books or information) (King, 1972,
> p. 158).

Words that preface "open" questions are: "what, when, how, who, where," but the most important is "why." For "closed" questions, "the tools of cross-examination," "is, do, can, will" are usually the words at the beginning of the question. On the major assumption that good reference librarians have to be good interviewers, the "open" question, which encourages the user to talk and allows him rather than the librarian to shape the request, is of prime importance to the successful conduct of the negotiation interview.

Role and Status Relationships

The importance of understanding the part roles play in the communication process is another area that has received some attention. Gothberg (1973) states than in "an organisation such as a library, there exists a structure of roles tied together by lines of communication" (p. 13) and laments the fact that the present situation is one in which neither the role of the library nor that of the librarian is clearly defined. This results in role conflict when the incumbent is not able to fulfill role expectations realistically, is unhappy with his image of the role, or with his perceived image of himself in that role.

This view also finds support in Shosid (1974) and Horn (1974). These authors take the position that neither the librarian nor the client know what to expect from each other. As a result of the confusion of their precise roles, librarians have often resorted to conceptions of users as "patrons," and therefore patronise them, giving them what they want regardless of other issues involved.

According to Shosid (1974) this confusion is fostered by the open-endedness and unscheduled nature of the reference encounter, the lack of control on the part of the librarian, and the concomitant need to establish relative status. The author claims that the reference librarian is thus placed in a situation which Goffman describes as leaving

> . . . the performer in a position of not
> knowing what character he will have to
> project from one moment to the next,
> making it difficult for him to effect a
> dramaturgical success in any one of them
> (Shosid, 1974, p. 220).

Shosid also suggests that the sex of the user is another variable in both status and deference patterns in the interaction. In short, misidentification and/or disagreement as to what the role is influences the judgement of the user regarding the librarian's adequacy, his own satisfaction, and his decision to use the service in the future.

The ambiguity of the situation in which the reference librarian and user find themselves is also intensified by the disparate and often competing combination of functions that comprise a reference service. These include the demand for reports and statistics by the administration who tend to think of the organization of a library as if it were only open during normal working hours (Horn, 1974); the amount of time available to "negotiate" the request; and, most important, the lack of objective measures to judge effective service, both by the user who tends to judge it by the relative status established during the interview, and the reference librarian, who often receives no feedback whatever on the effectiveness of the service provided.

Summary

Although there is as yet a general lack of material
treating the online negotiation process, there exists some
literature that examines the traditional reference interview.
The main areas that literature discusses have been considered
here. These were nonverbal communication, the structure and
thought processes which underlie the interviewing process,
and the establishment and enactment of the roles of the par-
ticipants. It remains for the following sections of this chap-
ter to examine how adequately these areas describe the online
negotiation process.

Design of the Study

There are basically two ways of generating understandings
of what happens during a given process. One method is to use
previous literature and concepts that others have developed
to determine whether they explain what is going on. The other
approach is to study the data to see if there are regularities
in it that allow one to identify new ideas that perhaps others
have not noted. On the one hand, the researcher is trying to
see if pre-existing interpretations can illuminate or explain
what is going on during a process. On the other, the research
is attempting to generate new ideas or theories (Kerlinger,
1973; Glaser and Strauss, 1967). This study uses both methods
on the assumption that different perspectives using different
conceptualizations can lead to a better understanding of the
process in question. Such an improved understanding, it is
felt, will contribute to more effective training programs for
search analysts and better negotiation interviews with users.

This study is mainly an exploratory one. It uses com-
parative analysis of negotiation interviews with different
types of clients in order to maximize the variation between
contrasting data. Negotiation interviews were dichotomized
into academic and non-academic (see Table 23) representing
the main roles of the clients of the Educational Information
System for Ontario. These interviews were further categorized
by the sex of the user, following suggestions in the litera-
ture that different relationships might occur with a given

## TABLE 23

### EISO USER SAMPLE SELECTION

| Characteristics | Sample | | | |
|---|---|---|---|---|
| **User Characteristics** | | | | |
| Type | New[†] | | New[†] | |
| Role | Academic[§] | | Non-Academic[¶] | |
| Sex | Male | Female | Male | Female |
| Category Name | A | B | C | D |
| **File Characteristics** | | | | |
| Total number of files in each category | 17 | 11 | 9 | 7 |
| Number of files in each category containing all required information | 9 | 6 | 3 | 2 |

[†]No complete data sets were available for repeat users.

[§]e.g., OISE

[¶]e.g., Government administration, school board member

59

reference librarian because of the social identities of men and women. Although the total number of users in each of the four categories, male and female academics and non-academics, was 17, 11, 9, and 7, respectively, substantially fewer user files contained all the information needed (transcribed negotiation interviews, Search Request Forms, returned User Evaluation Questionnaires) for analysis. The final selection consisted of one randomly selected interview from each of the four categories of users for whom complete data was available.

## Method of Analysis

In the review of the literature, major concepts relating to reference interviews were identified. It was felt that because negotiation interviews for online information retrieval could be considered similar in many ways to the more traditional type of interaction between librarian and user, and because little existed describing the online process, the literature treating the older topic could be applied with some justification to the more recent one.

Therefore, the first task undertaken was a review of the relevant literature to identify the major concepts that might be applicable. The areas that emerged were: empathy and nonverbal behaviour, the structure of the negotiation (including the use of open and closed questions), and role and status relationships. For these concepts, the method of analysis was a counting scheme to determine how frequently each was used in the EISO negotiation interviews. After the extent to which that variable occurred in the interviews was measured, an attempt was made to account for the different levels of occurrence.

## Description of Findings

### The Negotiation Interviews

#### User A

A Master of Arts' student in the Applied Psychology, User A approached the search analyst in the early stages of formulating a topic for his master's thesis. In answer to

the search analyst's invitation to describe in general terms
what his subject was about he responded:

U-A/R1: My study will involve children of
low social and economic status.
There will be two groups, one con-
trol and the other experimental.
The experimental group will have
low self-concept of ability. The
control group will have high self-
concept of ability.

At this point the search analyst makes her first interjection
and the interview proceeds as follows:

SA/Q2: This is of their own ability —
generally?

U-A/R2: Self-concept is how they see them-
selves in relation to the kids in
class, smarter or dumber. My
hypothesis is that the children
with low self-concept of ability
are more likely to perceive a dis-
tance on certain dimensions between
themselves and the professionals
they come in contact with than
children with high self-concepts of
ability.

SA/Q3: They're more likely to be in awe of
teachers and doctors and such?

U-A/R3: They see a distance between them-
selves and professionals on certain
dimensions. That's basically it.

Even from this brief excerpt, a number of things stand out.
First, the analyst's primary task is to define what the user's
search topic is about. She does this by asking a general,
open, exploratory question which elicits an overview of the
topic from the User (Response 1). The topic is a fairly
specialized one and the search analyst must ask probing,
*definitional* questions (Q2, Q3) to make sure that she knows
what the main conceptual components of the topic are. Though
the user may feel that he has done an adequate job of explana-
tion and may even be prepared to terminate the interview soon
after it has begin (see R3), the search analyst feels the need
to probe further before planning her search. "Are you concerned

---

†User A, Response 1

§Search Analyst, Question 2

61

82

with professionals other than teachers?" (Q4) she asks. "Are you making up your own scale or using one that already exists?" (Q5) she continues. She determines from his answers that he is interested in doctors and lawyers as well as teachers and that he will be using a self-anchoring scale first used by Kilpatrick (R4 and R5). The analyst queries the meaning of a "self-anchoring" scale (Q6). The user explains:

> U-A/R6: What I'm going to do is ask the child to think about who for her is on the top end of the scale on the dimension and who is on the bottom end. Then she given people, including herself, whom she is to place on the scale so that eventually I'll find out where the child sees herself in relation to the professional.

At this point, the search analyst reiterates the topic in her own words and begins to thumb through the thesaurus of terms used in *Psychological Abstracts* looking for appropriate descriptors. As she does so, she seeks confirmation or rejection of her choices through a series of closed questions. She also begins to explain her choice of *Psychological Abstracts* as the data base she will search, describing its features and those of automated searching in general. As she proceeds to identify synonymous terms for the major concepts that comprise the topic and suggests these to the user, the user continues to delve with growing specificity into his topic describing the research design he proposes to use and the techniques he will employ for analyzing his data. This increasing detail and exactitude prompts the analyst to inquire whether the user would be interested in longitudinal or follow-up studies. Further narrowing of terms takes place through another series of closed questions. The search analyst, feeling that she is coming to grips with the topic, spends an increasing amount of time explaining the logic of search strategies and the formats in which descriptors may be entered at the terminal. She prefaces some of her remarks by emphasizing the limitations of the system. "Connections between the concepts you ask for are very hard to specify, so you may get a lot of odd references." The interview concludes with the search

analyst telling the user when the search will be run and when he may expect to receive his bibliography.

From her interview with the user, the analyst constructed a search strategy the next day that combined synonymous terms for the topic's main ideas. The major concepts included were "self-concept," "ranked selves," "described selves," "ability," "career," "professionals," "stereotypes," and "role." In all, ninety-one search statements were needed to adequately refine the topic. At the end of a week the user received a bibliography containing 136 citations. He found much of the material interesting but not relevant. Nevertheless, the user expressed high satisfaction with the search analyst and the forty-minute negotiation interview he had had with her.

*User B*

The second interview to be discussed lasted approximately nine minutes. It began in a similar fashion to the first with open questions eliciting the general nature of the information request:

SA/Q1:     What is your topic about?

U-B/R1:    It has to do with library services in elementary schools. What I'm looking for is: What does research say about the influences of library practices related to the number of books read by kids?

SA/Q2:     What sort of practices did you have in mind?

U-B/R2:    Well, at one time I heard a speaker from the University refer to a study, or three studies it might have been. In one case the kids went to the central library to pick up books; in another case the teachers brought the books back to the rooms and left them for kids to take out; in the third case, the one that intrigues me, the teachers brought the books to the room, created displays, and gave book talks. As I recall, this last case resulted in more kids actually reading.

            This is really related to the negotiations with our school board. The elementary teachers want to negotiate

>                       to have librarians designated above
>                       ratio for the school's allocation
>                       of staff and I'm really trying to
>                       find out whether we need school
>                       librarians and what alternative
>                       practices we might consider.
>
> SA/Q3:               So you're looking for a way that
>                       money could be saved and work dis-
>                       tributed and still produce positive
>                       results?
>
> U-B/R3:              That's right.

The content and reason for the search having been arrived
at fairly quickly, the weight of the dialogue now shifts to the
search analyst who launches into a description of the system.
Again, she cautions the user about its capabilities.

> SA:                  It's going to be hard to get at the
>                       notion of taking books to the class-
>                       room. I don't think there are des-
>                       criptors for that. [She searches
>                       through the *Thesaurus of ERIC Des-
>                       criptors*.] I'll show you what I'm
>                       looking through

There follows a detailed explanation of the use of descriptors
in formulating search strategies.

A lesson in Boolean logic is followed by a rapid exchange
of closed questions and answers in which the search analyst has
the user thumb the *Thesaurus* to suggest descriptors that des-
cribe the main concepts of his topic. She confirms his choice
or suggests new terms.

> U-B:                 Here we go with "elementary school."
>
> SA:                  That would be a good term probably.
>
> U-B:                 "Library programs?" "Library role?"
>
> SA:                  Yes. "Library circulation is a good
>                       one too, I think. We're not going to
>                       find one that's perfect, but we can
>                       put down ones that look useful.
>
> U-B:                 There's "school libraries."
>
> SA:                  Sounds likely, but "elementary
>                       school libraries" might be better.
>
> U-B:                 How about "library instruction?"
>
> SA:                  That would go more with the idea of
>                       a central library I think. If it
>                       was done in the classroom and the
>                       teacher was the main person in charge,
>                       there probably wouldn't really be
>                       anything major enough to be called
>                       "instruction."

64

85

Having exhausted the library-related concept, the interview turns to the definition of staff "designated above ratio." With that defined, the search analyst draws the interview to a close by referring briefly to the cost of the search and assuring the user she will do her utmost to see he gets his money's worth.

From the information gained in the interview the search analyst created a search strategy that retrieved 44 citations. The user rated his satisfaction with the interview, the bibliography, and the original documents he ordered as high and appended an additional complimentary note to his returned evaluation questionnaire.

User C

| | | |
|---|---|---|
| SA: | Could you tell me something about the topic you're interested in? | |
| U-C: | Basically, I want to know about computer assisted instruction. | |
| SA: | Okay. | |
| U-C: | The success or failure of it. | |
| SA: | When we made this appointment you said that the foundation you are with is for the physically handicapped. Is that right? | |
| U-C: | Yeah. It's mainly for cerebral palsied children. | |
| SA: | Uh-huh. | |
| U-C: | Non-verbal kids. | |
| SA: | Right. Would you also be interested in information dealing with normal kids? | |
| U-C: | Sure! But if there's anything on brain-damaged kids, that would be better. | |
| SA: | Fine. | |
| U-C: | Basically, what we're thinking of doing is teaching kids to learn their symbols by computer program. What I'd like to know is if, in fact, I can say that computerized teaching is an improvement over other kinds of teaching. | |
| SA: | Uh-huh. | |

| | |
|---|---|
| U-C: | I need evidence to support their going into using computers to teach these kids. |
| SA: | I see. |
| U-C: | The cost is the major problem. They can always ask why a workbook or a teacher with a blackboard wouldn't be just as useful. |
| SA: | Maybe you could tell me a little more about this symbol-system that's being taught. |

So began an interview dealing with the relative strengths and weaknesses of using computer-assisted instruction for teaching symbolic language to childred affected by cerebral palsy.

After determining the general nature of the topic, the search analyst examined each of the major concepts in turn -- symbolic language, computer-assisted instruction, neurologically handicapped -- finding synonymous terms for each, expanding and contracting the scope of the concepts. The following excerpt is illustrative:

| | |
|---|---|
| SA: | As an addition to the terms that have "computer" in them, we could ask for stuff on programmed instruction. |
| U-C: | Yeah. |
| SA: | It doesn't have to be just computer assisted, does it? |
| U-C: | No, that's the same thing too. In fact that would be a good choice, actually. |
| SA: | As a second choice or an acceptable alternative, perhaps. |
| U-C: | Maybe we could get that with reference to brain damanged kids. |
| SA: | Yeah. We could ask for this type of system or this type of kid and then if we get a small number [of citations] back, we can broaden computer-assisted instruction by adding programmed instruction. |
| U-C: | Uh-huh. |
| SA: | Now let's take a look and see if there is anything [in the *Thesaurus*] on types of symbol systems. |

After checking through the *Thesaurus* and a dictionary, the search analyst hits upon the term "ideography." Other synonymous terms are sought but very few found. She next turns to exploring the concept "computer-assisted instruction."

66

87

SA: — There's going to be a whole lot of terms here, I think. It's even possible that I might well wind up, instead of looking through descriptors only, just saying that the document has to have the word "computer" or the stem "computer" somewhere in it, either in the abstract or the title or the descriptors. That'll get us a huge set.

U-C: Yeah.

SA: With "programmed" I can't use the stem "program." It's too broad. I would have to say "programmed" or "programming."

U-C: Yeah.

SA: I'll also use "teaching machines" -- that usually indicates something close enough. Maybe I might even go so far as to put in things like "educational technology."

U-C: What would that do?

SA: It would get any kind of gadget or gimmick, like teaching machines.

U-C: Oh, really?

SA: I think so.

U-C: Well, put it in because that might be part of the computer.

The analyst draws this part of the interview to a close by assuring the user that she will examine the *Thesaurus* for more related terms when she is alone. She now shifts attention to examining the concept of "brain damaged."

SA: I know "cerebral palsy" is your first choice. But there are a lot of other terms that refer to other kinds of brain damage. Maybe we'd better look up some of those.

U-C: Yeah.

SA: They use "perceptually handicapped."

U-C: With normal kids it's okay too.

SA: That would mean, in effect, that we can if necessary just leave out this cluster.

There follows an explanation of how a search strategy will probably be constructed before the analyst returns to probing the meaning of the third concept.

67

```
SA:        I think I was asking you about some
           of the terms related to "brain
           damaged."  They have "neurologically
           handicapped," and "perceptually handi-
           capped." Those are too mild, aren't
           they?  Or are they?

U-C:       No, not really.

SA:        Okay.  I'll put them down.  They may
           get you as many as 150 citations.
           Would you like to see what form you
           get them in?

U-C:       Sure.
```

The analyst uses sample bibliographies to demonstrate the
various formats for journal and document citations as well as
different indexes.  She next explains the charging system and
with the user's encouragement decides to search the ERIC,
*Exceptional Child Education Abstracts*, and *Psychological
Abstracts* data bases:

```
SA:        If I search more than one data base,
           it'll probably cost you more than
           $30.  Do you think that's okay?

U-C:       Yeah.  That's okay.

SA:        It could be as much as $50 or $60.

U-C:       That's okay.  I think it's worth
           it.
```

Though the interview, which had already lasted twenty-eight
minutes, could very well have concluded here, it goes on for
another five minutes as the analyst recapitulates her search
strategy and, having exhausted the *ERIC Thesaurus*, turns to
*Psychological Abstracts*.  Having differentiated between the
terms used in the various indexes, the search analyst terminates
the interview by informing the user when she may expect her
search to be run and her offline printouts mailed to her.  Two
weeks following the interview, the user received a bibliography
of 155 citations, most of which she felt were relevant.

*User D*

The fourth request was a relatively straightforward one
submitted by an M.A. student working on her thesis.

```
U-D:       I want to do a study to see the
           effects of various televison shows
           on pro-social behaviour and I'm
           going to use altruism as my measure.
```

68

What I'll be doing is showing several different types of shows to kids, aggressive shows, positive shows, and then have them carry out an altruistic task and see if the show has affected them.

SA:  I think that kind of thing shouldn't be too hard to find because there are some very specific words. You're interested mainly in television shows, are you?

U-D:  Yes.

SA:  As opposed to movies or radio?

U-D:  Yes.

SA:  Okay. Now "aggression" or "violence" -- those are quite specific, too. They won't be too hard to get at. On some topics, you know, you do so much typing and it takes so long that if you search two data bases it costs more than $30. But I don't think this one will. I'm not even certain that it would be necessary to search ERIC. It sounds more like *Psych Abstracts* to me.

U-D:  It should all be in psych journals, yes.

SA:  I'll just get out my *Psych Abstracts* thesaurus, but I think this is a topic where we won't need a thesaurus too much. Now, just while you're here, I'll use you to get all the possible synonyms because you're the one who's familiar with the literature. "Aggression" and "violence" are two possibilities. What about things like "anti-social"?

U-D:  Yes, because one of the shows will be that.

SA:  "Hostile," "hostility"?

U-D:  Uh-huh.

SA:  If you happen, as we're going along, to think of a few more synonyms, just interrupt and I'll write them down. Now we'll put down "television" or "radio." I'll also put down "TV" in case somebody's called it that. You're not really interested in movies or books?

There follows some discussion about the inclusion or exclusion of other media such as film, whether or not "children" should be included as a separate descriptor set, and methods of getting at the concept of altruism. Defining the latter presents the search analyst with some difficulty and she asks the user to describe the kind of situation to which the children will be asked to respond.

> U-D: What the kids have to do is bowl on an electric pre-set game. They win a certain number of tokens and they are given the opportunity to share their tokens with the poster of a hungry little boy up on the wall. They are told that if they share with Bobby, he's going to get some toys.

This elaboration prompts the analyst to suggest "sharing," "altruism," "cooperative," and "donating" as likely synonymous descriptors. She explains that the use of too many such terms, however, might pose unnecessary restrictions. The user at this point reminds the analyst that she is just as interested in the effect of positive shows on children as negative ones. They discuss various approaches that might be taken to get at this information and the analyst cautions her about being too specific.

> SA: Whenever I'm doing something for someone that's doing a dissertation or thesis, I feel obliged to warn them that the very same behaviour that you have to engage in to refine and narrow your thesis topic makes it increasingly difficult for the search to come up with anything. Almost all the stuff we find will be tangential or peripheral. Some people are very disappointed. They want their topic to be unique but on the other hand, they want to get a lot of things that are similar. It's kind of hard to have it both ways.

She concludes by saying that she will probably use just the TV and altruism concepts to start and alter the strategy afterwards, if need be. The user is shown a sample bibliography to become familiar with the format of the printout, and the interview ends. Two days later, fifty-seven citations from the *Psychological Abstracts* data base were sent to the user.

## Empathy and Non-Verbal Behaviour

Earlier, several conceptualizations of the negotiation interview were identified. In this section, these concepts will be applied to the preceding interviews to determine their "closeness of fit." Subsequently, in the discussion section, another view of the process will be offered.

It is recognized that the absence of videotapes imposes some limitations on the ability to fully capture the nuances of facial expression, the position of the hands and body of the search analyst, and to identify all exhibited aspects of nonverbal behaviour which the search analyst makes use of to promote empathy with the user. The use of tape-recordings do, however, make it possible to identify one category of empathetic behaviour, the use of verbal and nonverbal expressions "said in a warm, accepting and understanding manner and . . . selected to fit the context of the interview" (Pierce, 1971). A sample of the interviewer statements were: "Uh-hmm," repetiton of the user's last statement, "You feel that [last statement said]," and confirming statements such as "Yes, that seems to make sense." Matarazzo and Wiens (1967), also in the discussion of the results of their experiment, note that interviewer behaviour such as "Mm-hmm"

> . . . is interpreted by the interviewee as
> indicating that the interviewer is more
> interested in, or more empathic toward, the
> interviewee . . . [and] these interviewer
> tactics may be functioning as social rein-
> forcing stimuli.

Other forms of empathic behaviour include humour, and statements such as "Okay," "Uh-huh," "Really," and "Oh, I see." A further implication is that this form of behaviour encourages the user to relax and talk freely, rather than withdraw into uncomfortable monotonic responses. Encouraging the user to talk solicits information about his topic of instrest which is crucial to the understanding of his problem. Only if this first step is completed successfully, can the search analyst move on to the next stage of attempting to interpret the problem in terms of descriptors on the system.

71

A particularly good example of this is demonstrated by the first four minutes (six transcript pages) of the interview with User C who requires information on the use of computer-assisted instruction in teaching symbolic language to children affected by cerebral palsy. Here the user does almost all the talking for the first four minutes, punctuated only by the search analyst's "Okay," "Uh-huh," "Fine," "I see," the statement "Maybe you could tell me a little more about this symbol system that's being taught," and two brief questions about the type of foundation where the user works and whether she wants information on normal as well as cerebral palsied children.

In fact, approximately one-third of the empathic comments (twenty-three out of a total of seventy-three) occurred during the first four minutes of this thirty-three minute interview. In the interview with User B, lasting only nine minutes, out of a total of twenty-eight such comments by the search analyst, fourteen occurred during the first two minutes of the interview, and with User A almost one-quarter of such comments (twenty-one out of a total of ninety) occurred during the first five minutes of the forty-minute interview. In the interview with User D, although there were forty such comments in only twenty-one minutes, only five occurred in the first few minutes, the reason being that the search analyst immediately understood the user's topic and proceeded quickly to the next stage of identifying the major descriptors.

As can be seen, most of the search analyst's empathic comments relative to the total of such comments uttered during the entire interview occur during the opening minutes of the interview when it is vital that the user be at ease and talk about his topic of interest as fully as possible. This undoubtedly will also influence user satisfaction with the service generally, and his decision as to whether he will use the service again and/or favourably recommend it to his colleagues and friends.

The Structure of Negotiation

Even the brief descriptions of the four interviews presented confirm the underlying five-stage pattern or structure that is suggested by the literature.

*Stage One*

The first stage revolves around the analyst's attempt to clearly understand the user's request. This seems to be a most critical stage, for only after its successful completion can the search analyst move to the second stage. The length of the first stage depends on how clearly the user has identified and defined his topic in his own mind, the complexity or uniqueness of the topic itself (*cf.* User A) and how articulate the users are (*cf.* Users B and C) in explaining their need to the analyst. The degree of user articulation in this study tends to be quite high, since users are generally either master's or doctoral students, professors, government administrators, or members of school boards. In this stage also, users may be given a general outline or description (or may even ask for such) of how the system works. This tends to provide some preliminary even if limited understanding of the relationship between the terms (descriptors) and how access to the system is obtained, and seems a valuable prelude in later helping to identify descriptors and key phrases.

*Stage Two*

The second stage involves an effort to identify the major areas of the user's topic of interest and to match these with major descriptors or phrases which will provide access to the data base(s). With the first stage over, the second proceeds fairly rapidly. Since all the users are educators of one sort or another, the terminology used tends to be limited, allowing the search analyst to build up familiarity with the language of the discipline. In most instances, relevant tools such as the *Thesaurus of ERIC Descriptors* located on the analyst's desk is consulted by the user and analyst during their interview.

73

## Stage Three

Next comes the identification of terms related to the major descriptors. In this stage an attempt is usually made to broaden and extend as much as possible the topic first presented by the user. In this stage a list of very specific words (descriptors) is identified. This process may be a fairly lengthy one and with the possible exception of the first stage, may take the most time during the interview.

## Stage Four

During stage four, the search analyst outlines the main and alternate strategies she will use in the search, and ranks and/or combines the related terms with the major descriptors/ headings. This stage usually acts as a further clarification of the topic and the aspects of it that are most important, and the user is asked to further extend, change, or modify the terms as necessary.

## Stage Five

The closing stage is usually devoted to "housekeeping information" when the user's address and billing instructions are obtained and he is told how much material to expect, when, and how much it is likely to cost.

It should be noted that while Stage One usually occurs at the beginning of the interview situation, the remaining stages do not necessarily follow sequentially in the order presented above. For example, an indication of what the user can expect in terms of the volume of material, may occur immediately after the first stage (cf. User A) or the search analyst may proceed to identify related terms during the first stage in an attempt to understand the topic more clearly (especially if it is a complex or unique one) before making an attempt to specify and list major headings. In spite of variations, however, the basic underlying pattern above tends to persist.

74

Open and Closed Questions

The distribution of "open" and "closed" questions asked by the search analyst in the four interviews appears below:

TABLE 24

OPEN AND CLOSED QUESTIONS ASKED IN INTERVIEWS WITH
USERS A, B, C, AND D

| User | Open Questions | Closed Questions | Length of Interview |
|------|----------------|------------------|---------------------|
| A | 13 | 43 | 40 minutes |
| B | 7 | 9 | 9 minutes |
| C | 9 | 27 | 33 minutes |
| D | 4 | 18 | 21 minutes |

In King's opinion (1972), the frequent use of the open question encourages the user to talk and therefore allows him to shape his request. It would be expected, therefore, that more "open" questions would occur in the opening minutes of each interview when the user must explain his request. There seems to be good support for this contention in the four interviews being considered here. In the interview with User C more than one-half of the open questions (five out of nine) were asked in the first four minutes of the interview; in User D's interview, one-half of the total of such questions (two out of four) occurred in the first seven minutes; and almost one-half of those found in the interview with User B (three out of seven) occurred within the first two minutes. The exception was the interview with User A, where, in the first five minutes, only one out of a total of thirteen open questions appeared.

The reason for the lack of such questions at the beginning of the interview with User A seems to lie in the search

analyst's attempt to pin the user down to specific terms very
early in the interview, as, having begun the interview with an
open question, she received the indication that the user's
topic was an unusual one for which there were few applicable
descriptors on the system. Continuing to describe his topic
in general terms, therefore, would be of little use. In con-
trast, the lack of open questions on the whole in the inter-
view with User D (there were only four) seems to occur because,
from the user's first explanatory statement, the search analyst
was able to say "I think that kind of thing wouldn't be too
hard to find . . . actually, because there are some very
specific words" and began to ask closed questions in order to
obtain a specific list of descriptors.

It may be observed that the EISO search analyst spends
the greater part of an interview asking about specific terms,
suggesting particular descriptors from the *Thesaurus of ERIC
Descriptors*, explaining to the user what they mean, and indi-
cating how she will combine them in the search strategy.
Because of this need, then, for a listing of specific headings
and specific combinations of major and related descriptors,
the search analyst's use of the closed questions dominates the
interview after the opening few minutes. A brief look at the
distribution above of the types of questions will indicate the
following: User A was asked more than three times as many
closed as open questions; User C, exactly three times as many;
and User D, more than four times as many closed as open ques-
tions for the duration of the interview. In brief, both the
open and the closed questions have their importance during
the negotiation process -- the former when *a general under-
standing* of the topic as a whole is required at the beginning
of the interview and when this form of understanding of a
section of the topic is required later in the interview; the
latter when, the topic having been understood, *a specific list
of major and related descriptors* are required to gain access
to the system in order to retrieve requested material.

Role and Status Relationships -

With regard to the question of role relationships, the situation in which the EISO search analyst finds herself is in many ways different from that of a reference librarian. While the latter may find the interviews unscheduled and open-ended, the search analyst often makes an appointment with the user beforehand, and many times has at least some prior knowledge of the user's topic. Further, while lack of time and the competing attention of other users may be variables in the library situation, prior appointment and the fact that the EISO office is located in a separate room in the library of The Ontario Institute for Studies in Education, effectively eliminate these difficulties.

In fact, the difficulties mentioned in the review of the literature on the library/library-user interface, the disparate functions of reference (which is not a quiet activity) that annoy the quiet reader, the distance between the desk and the reference collection, the lack of objective measures to judge effective service, all of which affect the successful establishment of status and role relationships, are not present in the search analyst/user situation. The closed office ensures the search analyst's undivided attention; the "reference section" comprises the *Thesaurus of ERIC Descriptors* and other indexes that are always on the desk at which the interview takes place; and the search analyst is provided with some feedback on the efficiency and standard of her performance by means of evaluation questionnaires returned by users.

Initially, also, the sex of the user was presumed to be a variable in both status and deference patterns in the interaction. However, bearing in mind the limitations of a tape-recording, this factor was not found to affect these patterns. This finding has received further support from the results of a separate and independent inquiry of another researcher who conducted follow-up interviews with users of the EISO service which included the user group from which the four considered in this analysis were selected.

However, there can be one factor which may have an effect on raising the status of the search analyst *vis-à-vis* the user, which may result in a feeling of dependency on the part of the user, with added discomfort to the user, especially if he considers himself to be in a "high status" occupation. That is the perceived glamour associated with a new and sophisticated technology represented by the computer and the possible perception that "esoteric knowledge" is required by the search analyst to retrieve necessary materials from such a system.

Yet, there seem to be several factors which preclude this possibility. First, the fact of a prior appointment seems to set a professional tone to the interview. Second, while the reference librarian/user interaction is free of charge, this does not apply to the EISO service. The user would therefore tend not to regard the search analyst as doing him a favour, but as entering into a business transaction with him, and, as such giving him the right to expect certain acceptable standards of service. Third, it was consistently found that the search analyst, during the interview, not only attempted to explain how the system worked (in fact users themselves often ask about this), but also discussed with the user major and alternate strategies that she would use *in terms of the system*, to attempt to retrieve what the user requested. This tended towards a reduction of the feeling in the user (if it existed at all) of the power of the search analyst's "esoteric knowledge." It is worth noting that the majority of new EISO users (83% from previous research) report learning something about the EISO system itself after the interview. The four users in this study who had completed and returned their User Evaluation Questionnaires reported that they had learned "a great deal" about the EISO system and how it works.

While there was no role difference in clients of different sexes, there was a difference that appeared between academic and non-academic clients. The two academic clients, both of whom were by chance master's students in psychology, stated their questions in terms of formal research designs. The first wanted to control for socio-economic conditions by

78

having only children of low status, but had identified both experimental and control groups. Members of the first were to have low self-concept of ability and the second high self-concept; the dependent variable was perceived social distance from groups of professionals.

The second master's student also had identified an experimental variable -- types of TV shows -- and a dependent variable -- altruism as a measure of pro-social behaviour.

In contrast, the questions of the two non-academics were more open-ended. One wished to know about the role school librarians and children's reading habits; the other about computer-assisted instruction for teaching brain-damaged children a mode of symbolic communication.

It is our feeling that the rather rigid definition of the problem statement in the interview with User A may have contributed to the large number of questions and failure of the bibliography to provide highly relevant material, given that the search analyst was not familiar with the line of research in which the client was engaged. Even at the end of the interview, it is questionable whether this was clear to her. In contrast, although the topic in the interview with User D was stated in almost as rigid experimental terms as the first, the search analyst immediately understood the topic, and conducted a brief and successful search.

This contrast suggests that academic users may tend to state questions in a relatively formalized manner that makes inquiry on the part of the search analyst difficult if she is not equally familiar with the paradigm and concepts underlying the question. At the same time, the conventions of the problem statement may tend to obscure what is in fact a poorly-defined question on the part of the user, giving the question the appearance of a validity that it in fact lacks. Non-academic users have no such masque for their confusion; if their question is still at the visceral rather than the cognitive stage; it will be evident.

While recognizing the danger of trying to generalize
outward from a small sample of interviews, a number of points
nevertheless are suggestive.  First, that some of the issues
raised in the literature on the traditional reference inter-
view are also helpful in studying online negotiation processes.
The aspects that hold most relevance seem to be those asso-
ciated with empathy and non-verbal behaviour, the structure
of the negotiation, and the use of open and closed questions.
The one aspect that does not seem to bear much relevance is
that related to role and status relationships.  Second, these
elements seem to be constant at least in some degree regard-
less of the nature of the topic, the user, or the system used.
Such an observation leads one to the notion that it may be
possible to represent these stable elements by constructing
a model.  Such a preliminary attempt to visualize the nego-
tiation process is presented in Figure 2.

From the analysis of the interviews, it became clear
that the negotiation process is not a rigid progression with
a clearly defined beginning, middle, and end that inexorably
follow upon each other but rather it has a more iterative,
repetitive nature as the determination of the specific require-
ment of the user emerges.  It therefore could not be represen-
ted by a simple linear design but called for a more dynamic
mode of representation.  The notions of reiteration and
dynamism brought to mind the model of the spiral curriculum
in education and the double helix in molecular biology.  The
former incorporates the idea of returning to concepts already
introduced to define and learn about them in greater detail
-- a process the analyst uses as she moves from a general
understanding of the user's topic to the more specific choice
of descriptors and search strategies -- while the latter draws
attention to the multiplicity of interwoven links that are
both constant and different in all of nature.  Obviously,
close parallels cannot be drawn, but the notion of using
spiralling strands seemed to combine continuously evolving
specificity with dynamic interaction.  Unlike the elegant

80

# FIGURE 2
## THE NEGOTIATION PROCESS

FINISH

TIME

START

COMPONENT ELEMENTS

KEY:

▬▬▬▬▬ Behaviour

▒▒▒▒▒ Technique
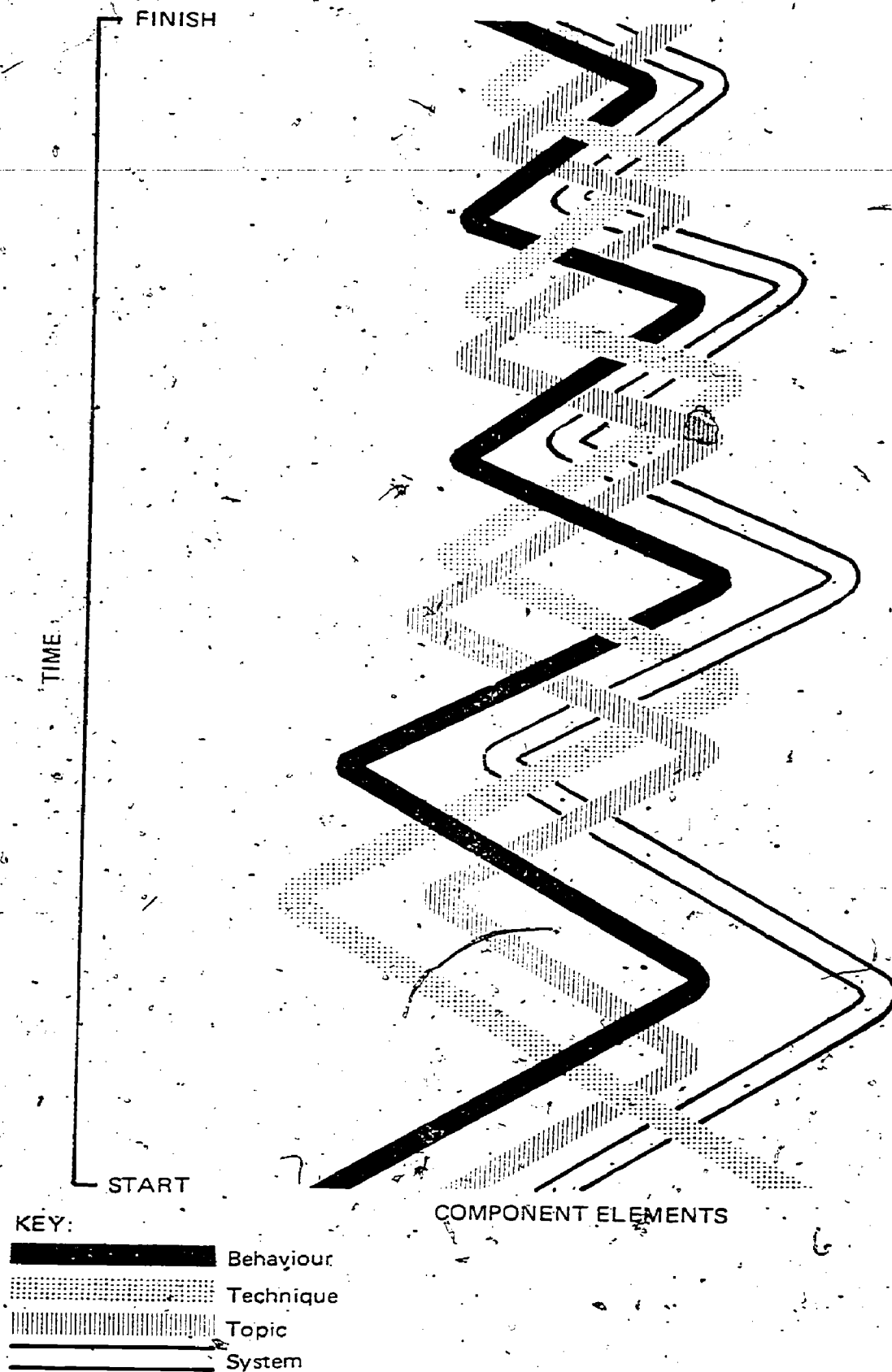
▥▥▥▥▥ Topic

═════ System

simplicity of the double helix, however, the model of the negotiation process was pictured as having at least four component elements. These are associated with the user, the search analyst, the topic to be searched, and the system to be used for searching. It is not the representation of these holistic elements that is the concern here but the depiction of the elements that surface as being important during the negotiation process. At a micro level these have been identified as empathy and non-verbal behaviour, structure, and open and closed questions. At a more macro level, the importance of a specific characteristic such as empathy can be broadened to stand for behavioural characteristics in general and the specific method of using open and closed questions for a broader range of techniques used by the search analyst. The notion of structure is incorporated by the sequential progression of the interview in stages through time. In addition, there are at least two other strands that weave through the typical negotiation process, the substantive content of the request and the technicalities pertaining to the choice of descriptors, the formulation of search strategies, and the operation of the system and data base chosen. The first of these is represented by the term "topic," the second by "system."

While the model is meant to be suggestive of general phenomena, it could be adapted to more closely represent specific negotiation interviews. For example, strands may be broadened or narrowed, lengthened or shortened to show when and the extent to which individual elements occur. They may be divided and color-coded to emphasize the prime participant in the process at any given time, whether it is the search analyst or the user. Specific environmental influences may be shown to effect the turns the interview takes. Such detailed mapping, however, must await in-depth analysis derived from a larger sample of negotiation interviews.

82

## Limitations

The conduct of this study was subject to a number of limitations that severely restrict its generalizability. Since data were being drawn from an existing search service, interviews could be taped only of those users who voluntarily submitted requests during a given period. Thus tye type of user was restricted to the kind of clients using EISO. This sample was further reduced by the need to rely on the user to return filled out evaluation questionnaires to complete research files.

In addition, because real users of a specific service were being studied, the nature of the questions being searched could not be subjected to control. In this regard, it may be argued, however, that the type of topic being searched was at least partly controlled by the choice of the academic, non-academic dichotomy. Academic search topics were expected to be broader and more abstract than those for non-academics which were expected to deal more with immediate applications. It will be recalled also that only four cases of new users being interviewed by a single search analyst are examined. It remains for another study to use a larger sample, comparing new and repeat users with multiple search analysts searching a variety of subject areas. Finally, it is hoped that further studies in this area will use videotapes of the negotiation interview since sole reliance on tapes and transcripts do not reflect the extent of use or importance of body language.

## Conclusion

It is evident that the warm and friendly personality of the present EISO search analyst is a major influence on users' feelings of high satisfaction with regard to her helpfulness and the interview process. Some other factors, however, do emerge from the preceding brief and exploratory analysis of the four user interviews.

The successful completion of the first stage of the interview process, during which an understanding of the user's problem is obtained seemed to be crucial to the success of

the entire interview. The use of the open question, questions pertaining to the organization for which the user works and the reason for the search, all seem to play an important role in providing the search analyst with the information necessary for the success of the crucial first stage of the negotiation process. However, it is even more important that these questions, whether open or closed, be asked in a warm, accepting, and friendly manner, *since the first few minutes of the interview have an important bearing on its progress and eventual outcome.* If we agree with Taylor (1967) who, in his review of studies done on the interview process, found that ease of access to information was more important than the quality of that information, then it is essential that the search analyst display empathy toward the user. Such comments as "Maybe if you described this in a little more detail," "I have the idea now," "Uh-huh," "Hm-mmm," "Okay," all seem to aid in this process.

The development of both a major list and a related list of headings *in the presence of and with the help of the user*; outlining the strategy that will be used to combine these terms in order to retrieve the desired material from the system; developing alternate strategies, and suggesting possible extensions to the topic; all seem to make the user feel more confident, as he understands more and more not only about his topic, but about the process of retrieval from an online computer system which he knew little or nothing about at the start of the interview.

The user is also entitled to a clear statement of realistic expectations. As soon as possible after the interview begins, and certainly before the computer search is executed, he should be apprised of the possible cost of the search, especially if the search analyst believes it will exceed the standard fee. This is even more important when the cost of a search is a flexible matter. He should also be informed how unusual his topic is with regard to the descriptors in the system, and given clear indications of how relevant (or tangential) the material retrieved is likely to be.

84

Our own experience with users indicates that even though low satisfaction may be expressed regarding the value of the retrieved material, high satisfaction with the helpfulness of the search analyst is almost always shown. In fact, those users who have been disappointed with retrieved items have almost always placed the reason for their disappointment on the fact that the data-base itself did not contain the desired material. And, the majority reported that, in spite of this, not only would they use the service again, but they would recommend its use to colleagues and friends. This seems to point to the inescapable conclusion that, regardless of the structure of the interview, the types of questions asked, or even the final documents retrieved, the ultimate success of an online retrieval service depends to a great extent upon an empathetic analyst. Such a conclusion has obvious implications for the selection, training, and evaluation of search analysts.

85.

106

Accompanying the widespread introduction of online bibliogra-
phic retrieval services has been a recognition of the need for
their careful evaluation. Several approaches have been taken
to this problem including price-demand analyses (Cooper and
DeWath, 1977), organizational studies (Wax, 1976), data-base
evaluations (Lancaster, 1969), and end-users (Brickley and
Trohoski, 1974). However, because these studies have taken
relatively narrow perspectives, they have failed to assess
the inter-relationships of various components of the services
in question. In order to facilitate this type of analysis,
a comprehensive framework for the evaluation of online biblio-
graphic retrieval services is needed. The purposes of this
chapter are to present one such framework, and to provide an
example of its use.

A systems approach was used in developing the framework,
incorporating the traditional categories of input, process,
output, and feedback. In its application, particular emphasis
is placed upon assessing the relationships between variables
of interest at different stages, such as input and output,
while controlling for the effects of intervening variables.
It is hoped that in achieving a better understanding of such
relationships, those operating search services can make more
rational decisions about policies and procedures.

Systems Framework for Evaluation

In the evaluation framework proposed here, a systems
approach is used to describe the cycle of activities that

86

occur whenever an online bibliographic retrieval service responds to a user's request. In doing so, four basic questions must be answered. What inputs are required? What processes take place? What outputs are produced? What feedback occurs at each stage? A description of the sequence of events that occur during a search cycle provides answers to these questions.

The search cycle begins with the submission of a request by a user to the search analyst, a specially trained reference librarian. They then "negotiate" the question, until it can be restated in a form that the search analyst can employ to develop a search strategy that can be used to retrieve relevant citations from appropriate data-bases such as the Educational Resources Information Center (ERIC) or the Ontario Educational Research Information System (ONTERIS) files. The analyst then queries the data-base(s) using a retrieval system such as Lockheed Information System (LIS)'s DIALOG, System Development Corporation (SDC)'s ORBIT, or United Nations Educational, Scientific and Cultural Organization (UNESCO)'s CDS/ISIS. When combinations of terms are entered, the number of relevant citations and a few sample citations are printed. If the citations are judged to be relevant to the client's question, the complete bibliography is printed offline and mailed to the requestor.

The user, on receipt of the bibliography, reviews its contents and makes a personal assessment of its relevants and thoroughness. As a result, a request for original documents may be made. When these are delivered and read, the search cycle, as we define it, is complete.

Feedback may occur at almost any stage of the search cycle. During question negotiation the search analyst makes inquiries and suggestions about the search topic, and the user responds. During the retrieval of references, a discovery that an excessive number of citations have been located, that citations are not relevant to the topic, or that other terms should be used, may cause negotiations to be reopened and the search strategy altered. Even at the end of the entire cycle, feedback occurs when an informed and satisfied (or uninformed and dissatisfied) user returns an evaluation questionnaire.

This cycle of activities forms the system portrayed in Figure 3. At each stage, three "actors" are involved: the user, the search analyst, and the retrieval system. Each of the three is the referent for a number of variables which describe the characteristics of the search service's inputs, the nature of its processes, and qualities of its outputs.
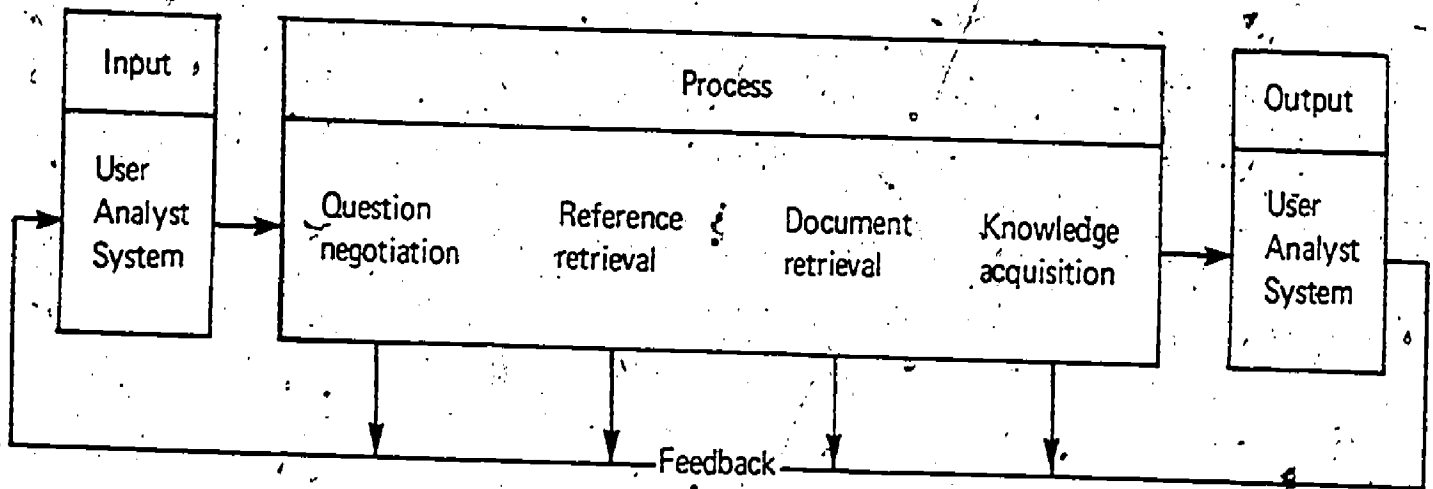
This systems framework provides a temporal sequence to events occurring during a search cycle, thereby allowing the evaluator to make reasonable inferences about cause and effect relationships. This is important, since policy makers must have a realistic idea of the ultimate effects of different decisions about inputs and the organization of processing activities. In addition, the framework suggests a categorization scheme for variables according to their roles as measures of inputs, processes, or outputs. However, it does not provide a guidance in the selection of variables to be measured. For this, we turn to the substantive disciplines of sociology, psychology, and economics.

## Disciplinary Perspectives

The various academic disciplines offer the evaluator a large number of substantive theories and concepts that might profitably be employed in the selection of variables to be measured and, subsequently, relationships to be analyzed. Those concepts that we felt were of particular value in evaluating a retrieval service were those of role and status from sociology; knowledge and opinion from psychology; and cost, price, and demand from economics. The first two in the list provide direction in collecting data on a service's users; the second two suggest how one might determine the effects of a service on the individual; and the third group identifies factors related to a service's fiscal status. Certainly other concepts could be selected as well, but these seven seemed to be adequate since most of the variables reported in the literature on search service evaluation could be considered as measures of one of these concepts.

The concept of role as it is used in sociology is not unlike the concept of role in drama. The actor, or person,

# FIGURE 3
## INFORMATION SYSTEM MODEL

| Input | Process | | | | Output |
|-------|---------|---|---|---|--------|
| User Analyst System | Question negotiation | Reference retrieval | Document retrieval | Knowledge acquisition | User Analyst System |

Feedback

has a part to play and is expected to behave in certain ways, and not others, both by himself and those around him, i.e., his role set. A person can expect to have many different roles at different times, but typically plays only one role at a time (Owens, 1970, pp. 74-77).

By understanding the various roles played by a search service's clients, one can understand and even predict user behaviour and reactions. Since requesting a literature search is an act primarily associated with institutional as opposed to private life, it is apparent that the individual's professional roles are of primary interest.

Social status, the second sociological concept used to guide the selection of variables, refers to a person's standing in the community and the deference the person can expect. It has been identified as an important variable in the literature on the work of reference librarians since the reference interview often reverses status positions. In a particular instance, a user who holds a position of high status may be forced to admit to being ignorant, thereby accepting a temporary status inferior to that of the reference librarian. Such a humbling experience may not be easily accepted by senior professors or administrators and their personal reactions might create a barrier to the open communication of their information (Shosid, 1974). Ultimately, this could affect their level of satisfaction with the service. For this reason, knowledge of the social status of a service's users is of value.

The nature of knowledge and the process of learning provide the subject matter for learning psychologists who have developed a number of theories that might be useful in explaining why an individual requests information and how he or she learns from it. These theories tend to agree on three basic precepts. First, a learner must be motivated to learn. This motivation may be based in the individual's personality (which opens up another realm of psychology) or it may be present in the individual's environment, such as the role the person plays.

Second, a learner must possess some prior knowledge in order to learn a new concept or develop a new understanding. A person almost totally lacking in knowledge about a topic would probably submit an inadequate search request, question negotiation might prove arduous, and the end results might prove less than satisfactory.

Finally, regardless of whether a simple fact or a complex concept involving generalizations and inductive leaps is learned, the learner is changed in the process.

These three generalizations about the learning process emphasize the importance of knowing the extent of a user's motivation, prior knowledge, and new knowledge gained as a result of a given search.

As a search is conducted and the user reviews the results, another psychological process comes into play: the development of opinions. Opinions, which reveal a predisposition to act in a specific way toward some object (the so-called "attitude object"), constitute a major set of output variables. Presumably, opinions about the quality of a search service and its products determine the likelihood of a user's returning to submit additional search requests. Indeed, the recommendation that user satisfaction be assessed on a regular basis is perhaps the most common recommendation in the literature on search-service evaluation.

The concepts of cost, price, and demand, drawn from the field of economics, also guide the selection of specific variables. Costs are typically broken down into fixed costs (or overhead), which represent the dollar expense that continues even when nothing is produced, and variable costs, that are incurred when production is raised to a given level. For a search service, fixed costs include salaries, equipment leases, etc., while variable costs are primarily associated with the charges made by companies providing the retrieval service for connect-time, citations printed, and communications. Costs may be presented as total (aggregate) costs, or in terms of unit costs.

Setting prices has been a controversial and difficult matter for search services, first because library services

91

traditionally have been provided without charge and second because of poor data on total costs. A related concern is the relationship between price and demand. Without knowledge of the elasticity of demand (i.e., the relative change in demand that occurs in response to a change in price) for searches, it is difficult to tell what, if any, effect different pricing policies may have. Hence, measurement of price and demand are of critical importance in the evaluation of search services.

A wide array of variables must be measured to provide data necessary for various types of economic analyses. Some such as staff salaries, are input variables which would be used to determine fixed costs. Others, such as the computer connect-time for a given search, are process variables which would be used to compute variable costs and, perhaps, customer prices. These data may be used in their raw form for some analyses or aggregated into totals for others.

In the preceeding description about the way in which concepts drawn from the disciplines of sociology, psychology, and economics can be used to guide the selection of variables to be measured in evaluating a search service, little was said concerning the level or type of analyses that could be conducted. This ommission was purposeful, since it is anticipated that the framework can be applied at different levels and to explore different relationships. In the application that follows, data are treated in disaggregate form; in contrast, an analysis of price-demand would require aggregate data. Also, the application is "inter-disciplinary" in that relationships between several sociological, psychological, and economic variables are investigated, though a discipline-based theory could just have easily been tested. In short, the level at which the framework is applied and the particular analyses carried out depend upon the specific questions the evaluator or researcher is trying to answer.

The remainder of this chapter describes the evaluation of two aspects of the Educational Information System for Ontario using the systems framework portrayed in Figure 3. The purpose of the first application is to determine to what extent the client's personal and professional background is related to his or her satisfaction with EISO. The purpose of the second is to determine the relationship among the procedures followed in processing a search request and the user's gain in knowledge and degree of satisfaction. Together, these assessments should provide a good understanding of the factors affecting user satisfaction with the service, and thereby suggest methods of maintaining and increasing it.

## Sample

The population for this study is the universe of all 371 searches requested from EISO between May 1, 1976 and April 30, 1977. Though some data were available on all searches, the present analysis was restricted to those which had been run on ERIC and for which the requestor had returned an evaluation questionnaire. The total number was 148 (40% of all searches), but missing responses on some variables result in a smaller number being used for some analyses.

Virtually all searches were placed by users from the professional education community in Ontario, which EISO was designed to serve. In general, 40% of EISO's users were from school boards, 40% were from OISE, 10% from other universities and faculties of education, and 10% miscellaneous. Approximately 30% of the users reported that they were engaged in administration, 17% in teaching, 12% in research, 18% in graduate study, 7% in librarianship, and 14% other.

## Methodology

Path analysis was selected to analyze the relationships among input, process, and output variables because it provides a method of testing the validity of causal inferences for pairs of variables while controlling for the effects of other variables (Nie, 1975, pp. 383-397). In addition, path diagrams

93

112

provide heuristic portrayals of systems relationships which are well suited to the systems framework used to organize the variables in this study.

The analytic technique used in this investigation follows the practices advocated by Goldberger (1970). In particular, the path coefficients presented here are the standardized regression coefficients resulting from regression of the dependent variable in question on those variables directly affecting it, and those alone. In cases where there is but one predecessor variable, the path coefficient is identical to the zero-order correlation coefficient; in other cases it is equivalent to the partial correlation coefficient of the dependent variable on the standardized predecessor variable controlling for other variables directly affecting the dependent variable.

The amount of unexplained variance in any dependent variable $X_i$ is assumed to be accounted for by hypothetical "error" variables denoted by $e_i$. The correlation between $e_i$ and $X_i$ is equal to $\sqrt{1 - R^2}$ where $R^2$ is the multiple correlation between $X_i$ and all predecessor variables directly affecting it.

Not all relationships for which no causal inferences are plausible may be omitted. Second, relationships between exogenous variables (portrayed at the left of the path diagram) are typically unanalyzed, though they are sometimes controlled for if they are considered to interact with one another. Finally, correlations among the $e_i$ are assumed to be zero and remain unanalyzed.

Path analysis requires three principal assumptions which may or may not be valid. First, all relationships are assumed to be linear; second, relationships are assumed to be additive; and third, it is assumed no interaction (i.e., multiplicative effects) exists among variables. As well, some authors would hold that the variables are assumed to be measured on a ratio scale with some fixed unit of measure.

For the dichotomous variables, such as sex, and those measured in standard units of measure, such as the turn-around time, none of the assumptions would be violated. Those measured

on Likert scales, such as satisfaction, may violate assumptions
as to linearity and unitary measurement. However, because
monotonic; if not linear, relations are expected for all re-
lationships involving these variables, violation of the first
assumption would, at worst, cause the relationships to be
underestimated.

## Collection of Data

The major sources of data used in these evaluations were
a User Evaluation Questionnaire (Appendix A) and a Data Sheet
completed by the search analyst (Appendix C). In all, 131 dif-
ferent variables were regularly collected for each search that
was completed. Selection of these items was guided by the
discipline-based concepts noted earlier. Most were drawn
from the literature of previous evaluation studies but only
those that were defensible measures of roles, status, knowledge,
opinion, cost, price, or demand were included. Where gaps
appeared, additional items were developed.

## Measurement of Variables

Descriptions of the items used to measure the variables
included in the first analysis which focuses on the influence
of the sociological background of clients on their level of
satisfaction are listed in Table 25; those for the second
analysis which focuses on the influence of process variables
on client satisfaction appear in Table 26.

The first five variables in Table 25 are input variables
related to the backgrounds of clients. All are dichotomies
coded 1 or 0. LOCATION refers to the location of the organi-
zation in which the user was employed or enrolled as a student.
SEX needs no explanation. ORGANIZN is the organization in
which the user was employed or enrolled as a student. The
PURPOSE of the search refers to the use made of the search,
whether it was for professional or academic purposes.
PROFROLE indicates whether the user was in an administrative
or non-administrative professional position.

95

TABLE 25

VARIABLES USED IN EVALUATION OF USER'S BACKGROUND
AND LEVEL OF SATISFACTION

| Variable[†] | | Item Description and Coding | |
|---|---|---|---|
| Number | Name | Description | Coding |
| 1 | LOCATION | Metropolitan Toronto | 1 |
| | | Outside Metro Toronto | 0 |
| 2 | SEX | Female | 1 |
| | | Male | 0 |
| 3 | ORGANIZN | Student or staff of OISE | 1 |
| | | Non-OISE | 0 |
| 4 | PURPOSE | Purpose of search: | |
| | | Non-academic | 1 |
| | | Academic | 0 |
| 5 | PROFROLE | Professional role: | |
| | | Administrative | 1 |
| | | Non-administrative | 0 |
| 6 | SYSTEM | Search system used: | |
| | | SDC ORBIT | 1 |
| | | LIS DIALOG | 0 |
| 7 | SATIS6[§] | Overall satisfaction | |
| 8 | SATIS1 | Satisfaction with publicity materials and directions | |
| 9 | SATIS2 | Satisfaction with convenience and helpfulness | |
| 10 | SATIS3 | Satisfaction with timeliness of service | |
| 11 | SATIS4 | Satisfaction with quality of technology | |
| 12 | SATIS5 | Satisfaction with value of bibliography | |

[†]Variables 1 through 4 and 6 are recorded by search analyst on data sheets. Variables 5 and 7 through 12 indicated by client on User Evaluation Questionnaire.

[§]See Table 27 for complete list of satisfaction items and construction of subscales.

## TABLE 26
## PROCESS AND OUTPUT VARIABLES USED IN SEARCH SERVICE EVALUATION

| Variable[†] | | Item Description and Coding | |
|---|---|---|---|
| Number | Name | Description | Coding |
| 1 | CONTACT | In person | 1 |
| | | Other | 0 |
| 2 | SYSTEM | SDC ORBIT | 1 |
| | | LIS DIALOG | 0 |
| 3 | TURNARND | Turnaround time in days between receipt of request and online searching | |
| 4 | CNCTIME | Connect-time in minutes | |
| 5 | STRATIME | Interview and strategy time in minutes | |
| 6 | CITPRINT | Number of citations printed | |
| 7 | PRICE | Price charged in dollars | |
| 8 | AMTLRDTC | How much did you learn about your topic as a result of the search? (1) ___ Nothing or very little (2) ___ Some (3) ___ A great deal | |
| 9 | SATIS6[§] | Overall satisfaction | |
| 10 | SATIS1 | Satisfaction with publicity materials and directions | |
| 11 | SATIS2 | Satisfaction with convenience and helpfulness | |
| 12 | SATIS3 | Satisfaction with timeliness of service | |
| 13 | SATIS4 | Satisfaction with quality of technology | |
| 14 | SATIS5 | Satisfaction with value of bibliography | |

[†]Variables 1 through 7 recorded by search analyst on data sheets. Variables 8 through 14 indicated by client on User Evalulation Questionnaire.

[§]See Table 27 for complete list of satisfaction items and construction of subscales.

TABLE 27
ITEMS USED IN SIX SATISFACTION SUBSCALES

Question: Please indicate your satisfaction with the following elements of your EISO search.

SATIS1 - Publicity Material and Directions
    a. Convenience of arrangements and adequacy of directions
    b. Accuracy and comprehensiveness of publicity materials
    c. Adequacy of directions for ordering materials

SATIS2 - Convenience and Helpfulness
    a. Convenience of arrangements and adequacy of direction
    b. Helpfulness of search analyst

SATIS3 - Timeliness of Service
    a. Time taken to deliver bibliography
    b. Time taken to deliver materials from EDRS
    c. Time taken to deliver materials from EISO

SATIS4 - Quality of Technology
    a. Length of bibliography
    b. Readability of microfiche copies
    c. Availability of microfiche readers

SATIS5 - Value of Bibliography and Materials
    a. Bibliography itself
    b. Materials located via bibliography

SATIS6 - Overall Satisfaction
    1a, 2b, 3a, 4a, 5a

Note: Scale scores were adjusted for the number of items by dividing total scale scores by the number of items. Scale: Low = 1; medium = 2; high = 3; NA = 4.

The final input variable, SYSTEM, refers to the computer search service that was used in executing the search: SDC ORBIT or LIS DIALOG. Although this variable is a system rather than user input, it was included in the analysis because differences between the two influenced the selection of the system used in conducting searches. In particular, the direct mail service provided by SDC, which allows the computer-produced bibliography to be sent directly to the client from SDC, meant that this service was often preferred for users located some distance from Toronto.

User satisfaction with various aspects of the search service were measured by five subscales (SATIS1 to SATIS5) consisting of scales that included satisfaction with publicity materials and directions (SATIS1), with convenience and helpfulness (SATIS2), with timeliness of service (SATIS3), with the quality of technology (SATIS4), and with the value of the bibliography (SATIS5).

Individual items used in constructing subscales are reported in Table 27 and include those used in the scale used to measure overall satisfaction (SATIS6). The latter scale used five items selected from the subscales; not all items were included because many clients had not been exposed to all aspects of the service and therefore had failed to respond to some items. Instead, only those items referring to matters to which all clients had been exposed were included in the scale.

Reliability coefficients for the six scales were .80, .62, .78, .27, .79, and .80 respectively. Overall, these coefficients are sufficiently high for the scales to be used in assessing the satisfaction of EISO's users with the service.

The fact that all input variables are dichotomies calls for special care in interpreting correlation or path coefficients between these and other variables. For example, a positive correlation between location and organization would imply that users from Metro Toronto (coded 1) tend to be associated with OISE (also coded 1), whereas those from outside Toronto (coded 0) tend to be associated with other institutions (also coded 0). Where the second variable is continuous,

99

120

as in the case of satisfaction, a positive correlation implies high satisfaction is associated with the trait coded 1 and low satisfaction with the trait coded 0. In the case of the relationship between, say, location and satisfaction, a positive correlation would imply that users from Metro Toronto (coded 1) were more satisfied than those from outside Toronto (coded 0).

A total of 14 variables are used in the second analysis which is devoted to the study of the effect of the search process on user satisfaction (Table 26). Seven are process variables, one is an intervening variable, and the remainder are the satisfaction variables that have been previously described.

The first two variables in the second analysis, method of contact (CONTACT) and system used (SYSTEM), are dichotomies and coded as 1 and 0. As noted earlier, care must be taken in interpreting correlation and path coefficients computed between these and other variables.

Turnaround time (TURNARND) is simply the number of days that elapse between receipt of a search request and execution of the search. In practice, the date of each transaction is recorded, and the difference between the two is calculated at the time data are analyzed.

Connect-time in minutes (CNCTIME) and the number of citations printed (CITPRINT), data listed automatically at the end of each search, are transcribed to the data-sheet used for EISO's records by the search analyst. The analyst is also responsible for recording the estimated amount of time spent in question negotiation and planning the search strategy (STRATIME). Because of the complex and iterative nature of these tasks, the figures recorded for STRATIME are probably accurate only within ±15 minutes.

The price (PRICE) charged for each search is recorded in Canadian dollars. While this is straightforward, the pricing policies in effect during the period data were collected were not. Four different modes of charging were used:

1. free searches allocated to target groups to encourage trial use of the service,

100

2. $20 flat rate for clients from a target area located in Northern Ontario,

3. $30 flat rate for searches without an excessive number of citations,

4. $30 plus a surcharge of $.10 per citation for searches with an excessive number of citations.

The policy on charging for an excessive number of citations was applied in a flexible manner by the search analyst. Typically, it was applied whenever the combination of connect-time, communication, and print costs exceeded $45.00. It must be emphasized that pricing policy has a direct effect on the types of relationships one can expect to find. Because most EISO clients received searches for either $30.00 or nothing during the period under consideration, any effect of PRICE on other variables will be interpretable as the effect of charging $30.00 as opposed to providing free service.

The amount a client learned about his or her topic (AMLTRDTC) as a result of undertaking a search was tapped by the straightforward question listed as variable 8 in Table 26. As with other one-item variables, it is not possible to compute a reliability coefficient for this measure. However, its validity was confirmed by correlating responses on it with questions about the number of original documents read, and the percentage of information that was new to the client. Correlations coefficients were .36 and .40 respectively, both significant at the .05 level.

## Sociological Input Model

Who are EISO's users and how does their identity affect their levels of satisfaction with the service? As suggested above, these are important questions which reflect the success of the service in achieving its goals. By implication, if one kind of client is less satisfied than another, changes in the service might be necessary in order to raise their level of satisfaction.

The question as to the users' identities is answered here in terms of the two sociological concepts noted earlier, role and status. We view these as characteristics that clients

101

bring with them to their encounter with the search service,
and as such represent inputs to the system. Since status is
itself in large part an attribute associated with a given
role, it is difficult to measure these two aspects separately.
Most of the variables we have selected reflect, to one degree
or another, both the role and status of the individual client.

Description of Model

The image guiding the selection of sociological vari-
ables to characterize EISO's users was that of a professional
educator working or studying at some location in Ontario. The
user's geographic location (LOCATION) and sex (SEX) were viewed
as two background variables of possible importance. Location
is a factor of considerable policy importance since one of
EISO's major purposes is to make the resources of a major
research library available to educators throughout the pro-
vince. To be sure, current limitations of automated retrieval
systems make this a distant goal, yet the quick retrieval of
both references and original documents in RIE, CIJE, and
ONTERIS does provide access to a large and important body of
knowledge. While the sex of a client is not, in and of itself,
of primary importance, it is a factor known to be related to
the role of professional educators; in particular, relatively
few women currently hold administrative positions within
Ontario's educational system. Thus, sex was viewed as a
background variable that should be controlled.

A client's organization (ORGANIZN), professional role
(PROFROLE) and purpose in conducting the search (PURPOSE)
were viewed as the major characteristics defining his or her
role. Though the coding scheme used in this analysis greatly
simplifies the original categorization scheme, we originally
determined whether or not a user was in any one of 29 dif-
ferent types of organizations or units; e.g., preshcool,
public school board, separate school board, private school,
College of Applied Arts and Technology, faculty of education,
etc. Professional roles were classified into 14 categories;
e.g., administration or supervision, teaching, pupil person-
nel services, research, etc. Finally, the purpose of the

search, which we saw as an objective in large part determined by the individual's organization and role, was initially placed in one of eleven categories; e.g., keeping abreast of the field, class assignment, preparation of a bibliography, curriculum development, etc.

To illustrate the connection among PROFROLE, ORGANIZN, and PURPOSE, consider two typical users. One might be a full-time graduate student at a faculty of education conducting a literature search for a class assignment; the other might be a senior administrator in a public school board seeking information about curriculum guidelines.

Another input variable related to the service's activities is the particular search system used (SDC's or LIS's). While not a sociological variable, this characteristic (SYSTEM) is included as a factor of possible importance because one of the systems SDC, offers the capability of mailing bibliographic output directly to the client. For those clients in remote locations, therefore, SDC may be a preferred service in terms of their satisfaction with the service's turnaround time.

Finally, the output variable of interest is satisfaction, which was measured by 12 items relative to 5 distinct aspects of the service: publicity materials and directions (SATIS1), convenience and helpfulness (SATIS2), timeliness of service (SATIS3), quality of technology (SATIS4), and value of the bibliography (SATIS5). A subscale of 6 items was also derived to measure overall satisfaction (SATIS6).

Organizing the variables described above into a formal path model results in the diagram pictured in Figure 4. LOCATION and SEX are background variables whose relationship to one another remains unanalyzed, but whose effects on other variables are considered. Location may affect satisfaction both directly and indirectly. One indirect path is through its influence on the system used. The second effect is via its influence on the type of organization from which the client comes. Sex, too, may affect satisfaction both directly and indirectly. The indirect effects may be through the type of organization or the individual's professional role.

Organization stands as a key intervening variable between the background variables and satisfaction, on which it may have a direct effect. However, it may also have indirect effects via the individual's professional role and the purpose of the search. Similarly, professional role may affect satisfaction directly or through the purpose of the search, while the latter variable is postulated to have only direct effects.

It may be noted that other paths than those noted are possible; however, we are including only those which seem logical given known relationships and the meaning of the variables. Thus, for example, we have omitted paths connecting, say, SEX and SYSTEM. It should also be noted that where direct effects are suggested, these effects are residual to the effects through other variables. Thus, the path connecting organization and satisfaction represents the effect on satisfaction of the individual's organizational status after the effects of the person's professional role and purpose in conducting the search have been removed. All residual variation which is not accounted for by any of the variables in the model is assumed to be caused by external variables, represented by the $e_i$'s.

The problem for this particular analysis, then, is to test the validity of the inferences about cause and effect relationships suggested by the path analysis model depicted in Figure 4. While confirmation of the relationships described by the model does not prove the existence of the implied causal relationships, it would provide evidence supporting their plausibility.

Findings

In this section, we shall proceed from the general to the specific, presenting first the findings for the path analysis in which overall satisfaction (SATIS6) is the dependent or output variable, and then the results for the five satisfaction subscales. Table 28 lists the correlation coefficients, means, and standard deviations for the seven variables that appear in the path diagram in Figure 4. The means

FIGURE 4

PATH DIAGRAM FOR SOCIOLOGICAL INPUT MODEL

FIGURE 4

PATH DIAGRAM FOR SOCIOLOGICAL INPUT MODEL
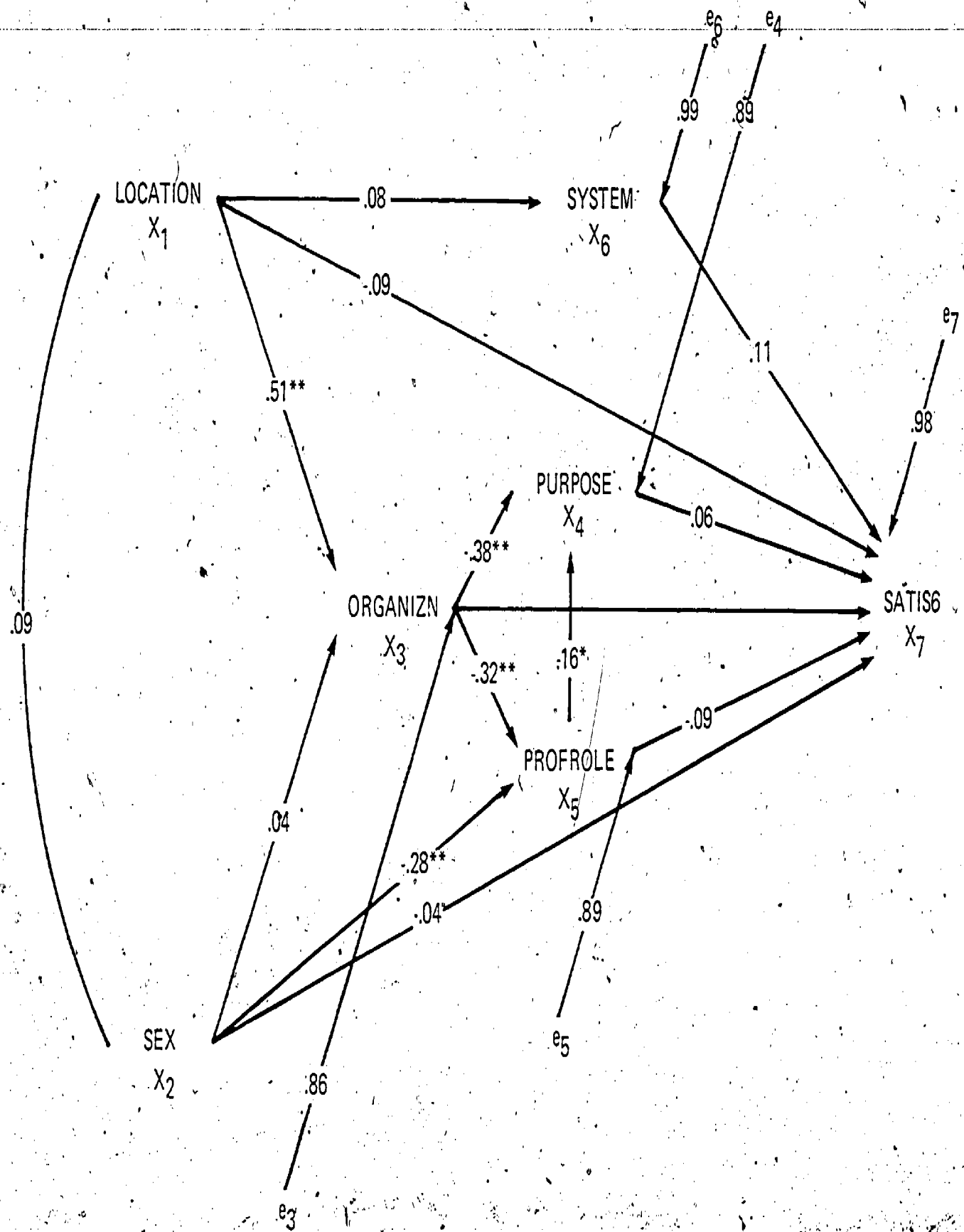
# TABLE 28

CORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS
FOR VARIABLES IN SOCIOLOGICAL INPUT MODEL EXPLAINING
OVERALL SATISFACTION WITH SERVICE

| | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ |
|---|---|---|---|---|---|---|---|
| $X_1$ LOCATION | | | | | | | |
| $X_2$ SEX | .095 | | | | | | |
| $X_3$ ORGANIZN | $.511^{\dagger}$ | $.087$ | | | | | |
| $X_4$ PURPOSE | $-.430^{\dagger}$ | $-.197^{\dagger}$ | $-.434^{\dagger}$ | | | | |
| $X_5$ PROFROLE | $-.135^{\S}$ | $-.309^{\dagger}$ | $-.348^{\dagger}$ | $.294^{\dagger}$ | | | |
| $X_6$ SYSTEM | .093 | .004 | .007 | -.059 | .030 | | |
| $X_7$ SATIS6 | -.050 | -.024 | .053 | .035 | $-.081$ | .094 | |
| Mean | .531 | .364 | .352 | .469 | .327 | .154 | 2.59 |
| Standard Deviation | .501 | .483 | .479 | .501 | .471 | .362 | 0.37 |

N = 162

$^{\dagger}p < .01$

$^{\S}p < .05$

for the sociological background variables need some interpretation since the variables themselves are dichotomies.

The mean of .53 for LOCATION indicates that 53% of the users in the sample were from Metro Toronto and, conversely, that 47% were from outside Toronto. Similarly, the means for SEX, ORGANIZN, PURPOSE, PROFROLE, and SYSTEM can be interpreted in terms of percentages: 36% were students or staff at OISE; 47% of all searches were for professional as opposed to academic purposes; 33% of the clients held administrative positions; and 15% of all searches were conducted using SDC. The mean of 2.59 (on a scale from 1 to 3) for overall satisfaction indicates the average user was highly satisfied.

The zero-order correlations among the five sociological background variables are seen, for the most part, to be statistically significant. In contrast, neither SYSTEM nor SATIS6, overall satisfaction, have and statistically significant relationships with the other variables included in the analysis.

The path analysis in Figure 4 shows that the pattern of correlations exhibited in the correlation matrix are present even when all of the background variables are entered. Tracing the various paths, we see the following relationships.

LOCATION has a very weak, non-significant positive correlation with SYSTEM, indicating that SDC was not used more often for clients distant from Toronto. Given the coding system, a negative relationship would have been indicated. Location has a non-significant negative correlation with satisfaction. What slight relationship there is would suggest greater satisfaction among those users outside the immediate metropolitan area where EISO is located. Finally, location does have a strong positive correlation with organization, confirming that most of OISE's staff and students who use the system are associated with the main campus in Toronto rather than one of its nine field centres.

SEX, the other prior variable contained in the path model, in Figure 4 exhibits only one significant relationship, that with PROFROLE. This relationship implies that EISO's women clients tend to hold non-administrative positions, and that its male clients tend to hold administrative positions.

At the next stage of analysis, ORGANIZN is seen to have significant relationships with both the purpose of the search (the negative path coefficient implies those outside OISE are more likely to request searches for professional rather than academic purposes) and the professional role of the individual (the negative relationship implies that OISE users tend not to be administrators, while professional clients tend to hold administrative positions). Finally, ORGANIZN has a residual positive effect on satisfaction, after the removal of effects due to SEX, LOCATION, PURPOSE, and PROFROLE.

The last stage of the path diagram involves SYSTEM, PURPOSE, and PROFROLE. SYSTEM is seen to have no statistically significant effect on satisfaction. Similar conclusions hold for PURPOSE -- academic and non-academic users are equally satisfied -- and PROFROLE -- administrators and non-administrators are equally satisfied.

Turning now to the path analyses for the satisfaction subscales reported in Table 29, we note that that pattern of path coefficients is very similar to that observed for overall satisfaction. In fact, all coefficients not involving a satisfaction subscale are in fact estimates of the same coefficients reported under the preceding analysis. They differ only because of the different sizes of the subsamples for which complete data were available.

Concentrating on the satisfaction subscales, we note two significant correlations. Since, among the 36 path coefficients, we would expect about this number to statistically significant at the .05 level by chance alone even when there were no real relationships, we should not place much weight upon them. The two paths we refer to are between PURPOSE and SATIS1, satisfaction with publicity materials and directions. This relationship would imply slightly greater satisfaction with these among users requesting searches for non-academic purposes. The second significant relationship between LOCATION and SATIS5, satisfaction with the value of the bibliography and materials, is negative. This would imply that users from outside are more satisfied with the end result of searches than are those from inside Toronto.

## TABLE 29

## PATH COEFFICIENTS FOR SOCIOLOGICAL INPUT MODEL EXPLAINING SUBSCALE SCORES FOR SATISFACTION WITH SERVICE

| Path | Statistic | Variable | | | | | |
|---|---|---|---|---|---|---|---|
| | | SATIS1 | SATIS2 | SATIS3 | SATIS4 | SATIS5 | SATIS6 |
| 1. LOCATION-SEX | $r_{12}$ | .11 | .16§ | -.06 | .11 | .08 | .09 |
| 2. ORGANIZN-LOCATION | $p_{31}$ | .52† | .55† | .25 | .70† | .48† | .51† |
| 3. ORGANIZN-SEX | $p_{32}$ | .05 | .06 | -.01 | -.04 | .04 | .04 |
| 4. PURPOSE-ORGANIZN | $p_{43}$ | -.36† | -.39† | -.36 | -.33† | -.34† | -.38† |
| 5. PURPOSE-PROFROLE | $p_{45}$ | .11 | .15§ | -.07 | .27§ | .15 | .16 |
| 6. PROFROLE-SEX | $p_{52}$ | -.32† | -.28† | -.42§ | -.35† | -.31† | -.28† |
| 7. PROFROLE-ORGANIZN | $p_{53}$ | -.31† | -.34† | -.39† | -.33† | -.30† | -.32† |
| 8. SYSTEM-LOCATION | $p_{61}$ | .06 | .04 | .18 | .02 | .07 | .08 |
| 9. SATIS-LOCATION | $p_{71}$ | .11 | .11 | .57 | -.11 | -.23§ | -.09 |
| 10. SATIS-SEX | $p_{72}$ | .08 | -.05 | -.21 | .11 | .02 | -.04 |
| 11. SATIS-ORGANIZN | $p_{73}$ | .03 | .11 | .06 | .07 | .04 | .10 |
| 12. SATIS-PURPOSE | $p_{74}$ | .18§ | .13 | .19 | .02 | -.08 | .06 |
| 13. SATIS-PROFROLE | $p_{75}$ | -.08 | -.06 | -.31 | -.07 | .03 | -.09 |
| 14. SATIS-SYSTEM | $p_{76}$ | .01 | .11 | .07 | .12 | -.09 | .11 |
| n | | 171 | 182 | 32 | 75 | 148 | 162 |
| $\overline{X}$ | | 2.57 | 2.77 | 2.41 | 2.51 | 2.32 | 2.59 |
| s | | .46 | .37 | .43 | .38 | .66 | .34 |

†$p < .01$

§$p < .05$

109

## Discussion

This path analysis shows that EISO has satisfied both of its major markets with equal effectiveness. One of these markets, the professional market, is composed especially of male administrators located throughout Ontario. The other, academic market, is composed of students and academicians. This group has a higher percentage of women than the other, and is concentrated in Toronto, especially at OISE.

The fact that the sociological input model fails to explain different levels of client satisfaction can be taken as a mark of EISO's success. Housed as it is in an academic library at OISE in Toronto, one would expect a tendency for it to serve its immediate constituency best. The very lack of such a relationship indicates it has been successful in satisfying the needs of professional educators with equal effectiveness.

It should be emphasized that EISO is effective. The mean score for the clients overall satisfaction was 2.6 on a three-point scale. The subscale means in Table 29 show that users are also highly satisfied with EISO's publicity materials and directions (SATIS1) its convenience and helpfulness (SATIS2), and the quality of its technology (SATIS4). The users reported a moderately high level of satisfaction on the remaining two subscales, timeliness of service (SATIS3) and the value of the bibliography and materials (SATIS5). Given that the timeliness of service was in part dependent on delivery of materials from EDRS in the U.S., we can even discount, to some extent, one of these two.

The fact that the sociological input model has failed to explain different levels of satisfaction does not mean the small variation observed in these variables cannot be explained; there may be other models that are more effective at this task. With this in mind, we now describe the second model, which considers process variables which are more directly under the control of the EISO search service.

As with the sociological input model, the process model for explaining levels of user satisfaction represents a sub-system within the larger evaluation framework, and involves only a fraction of the data collected. Key process variables are the method of contact (CONTACT), the system used to search the data base (SYSTEM), the length of time required for the search interview and to plan the search strategy (STRATIME), the connect-time (CNCTIME), the number of citations printed (CITPRINT), and price (PRICE). All of these variables except the method of contact relate directly to the cost of operating the service or the price charged. The method of initial contact describes the actions of the client in playing the role of requestor. Two important variables, the data base being searched and the identity of the search analyst, have been eliminated in this list of process variables since they are being held constant by limiting the analysis to searches of the ERIC data-base conducted by one search analyst.

The output or dependent variables at issue are the amount learned by the client about the topic searched (AMTLRDTC) and his or her satisfaction (SATIS). In fact, satisfaction was measured with 12 items which were grouped to form five subscales (SATIS1 to SATIS5) measuring client satisfaction with different aspects of the service; a subset of five of these items were added to give an indication of overall satisfaction (SATIS6).

## Description of Model

Using the temporal sequence of events provided by the systems framework, we can order the process and output variables and thereby refine the statement of the problem into a series of questions about pair-wise relationships. Method of contact should clearly be the first variable, followed sequentially by strategy time, turnaround time, selection of a system, connect-time, citations printed, price, amount learned, and finally satisfaction. This sequence does not imply that each variable causes the one that follows; however, within the sequence, there are a number of plausible cause-effect pairings.

111

Method of contact may have a direct effect on both connect-time and strategy-time since if a person is present in person far more discussion and searching is likely to occur than if contact is by telephone or letter. Connect-time and strategy-time, in turn, could effect the number of citations printed since more time spent on these probably results in a longer bibliography. The number of citations printed might affect both price, if a variable pricing policy is used, and the amount learned by the client, since a longer bibliography may contain more information. And, both price and amount learned might affect satisfaction.

It is unlikely, in contrast, that the system used or turnaround time will affect any of the process variables, though both might well affect satisfaction: turnaround time because long delays might reduce satisfaction, and system used because one might be more effective than the other at retrieving relevant references. If the latter is the case, then the system used may also affect the amount learned by the client. Finally, the amount a client learned might also be positively influenced by the time spent in negotiating and planning the search strategy, independent of the bibliography.

The problem for investigation thus becomes testing the validity of the preceding inferences about cause and effect relationships between different pairs of variables. The particular method selected for this purpose is path analysis.

The path diagram for the relationships described above is displayed in Figure 5. Both temporal sequence and cause-effect relationships are indicated by the flow of the diagram from left to right. Following the conventions of path diagrams, those variables with no predecessors are aligned to the left. The diagram is helpful in showing the flow of action as a search is executed, and in identifying the relationships being investigated. The path coefficients noted on the diagram are discussed later, but it is worthwhile noting the introduction of hypothetical variables (the e's) which represent external variables whose effects are not explained by variables in the model.

# FIGURE 5

## PATH ANALYSIS FOR PROCESS MODEL
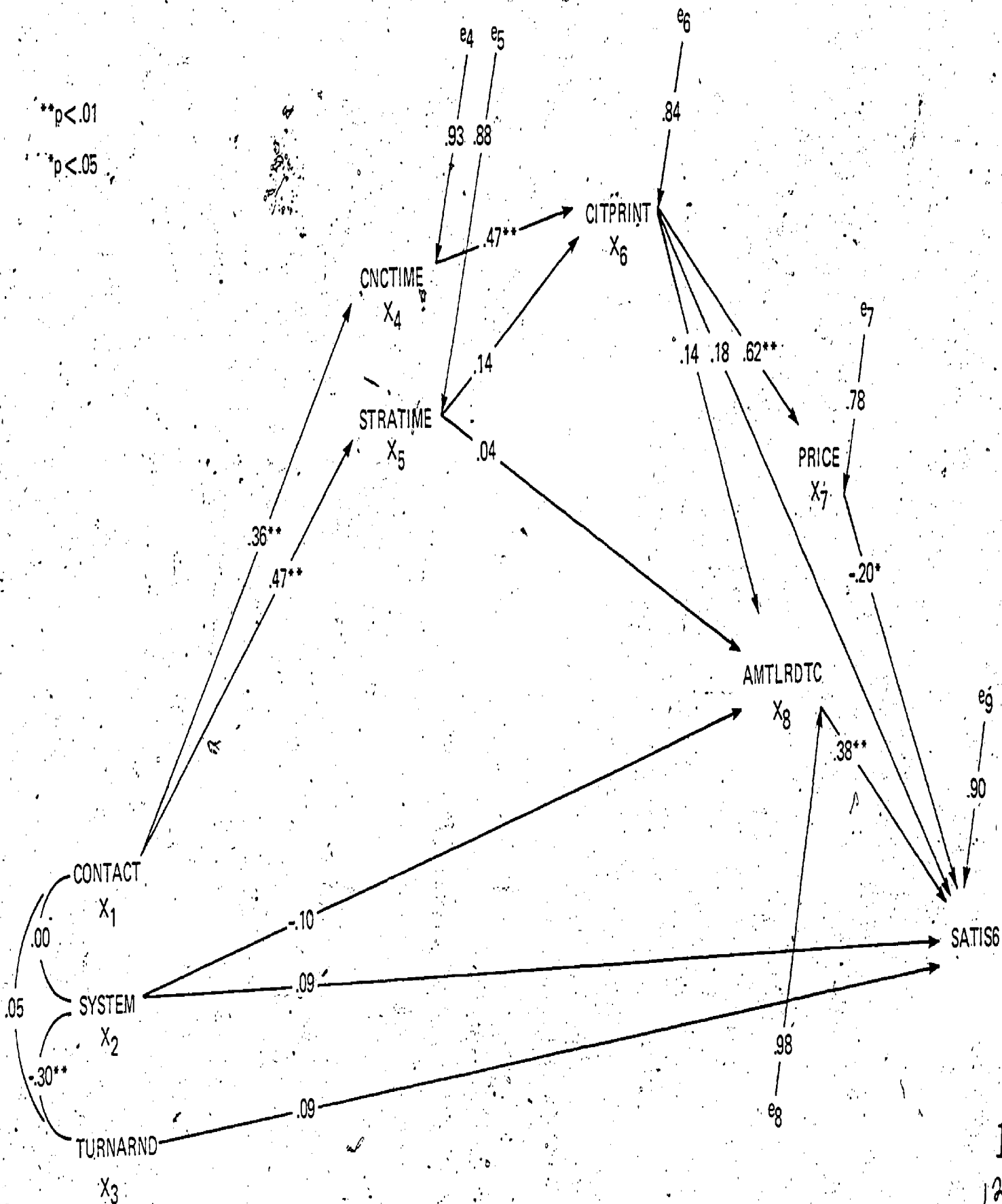
# Findings

In this section we shall proceed from the general to the specific, presenting first the findings for the path analysis in which overall satisfaction (SATIS6) is the dependent or output variable, and then the results for the five satisfaction subscales.

Table 30 lists the correlation coefficients, means, and standard deviations for the nine variables that appear in the path diagram in Figure 5. Several of the means need interpretation to be understood. For CONTACT, $\overline{X}$ = .53 implies that 53% of all clients contacted the search analyst in person; similarly, the mean of .19 for SYSTEM implies that only 19% of all searches were done using SDC's ORBIT while the remaining 81% were carried out using LIS's DIALOG.

The average delay in running a search was 4.3 days, but the actual search process took about 70 minutes, including 46 minutes for interviewing and planning the strategy, and 24 minutes for running the search. The average bibliography included 104 items, and cost the client $28, though this average is of questionable use since most clients either received the search free (9%) or paid $30 (82%). The average client learned "something" about the topic searched (since at 2.2 the mean for AMTLRDTC is near the middle of the three-point scale) and expressed high overall satisfaction (2.6 on a scale of 3).

We will not analyze the correlations in detail since that is the purpose of the path analysis. However, we would note that initially, only the amount learned about the topic has a significant zero-order correlation with overall satisfaction.

Path coefficients for analyzing the causal effect of the seven process variables on the two output variables, AMTLRDTC and SATIS6, are included in Figure 5, where each causal path is indicated by an arrow. The most informative paths are those that can be traced from CONTACT through CNCTIME and STRATIME to CITPRINT, AMTLRDTC, and PRICE, and finally to SATIS6.

# TABLE 30

## CORRELATION MATRIX, MEANS, AND STANDARD DEVIATIONS FOR VARIABLES IN PROCESS MODEL
## EXPLAINING OVERALL SATISFACTION WITH SERVICE

| | | $X_1$ | $X_2$ | $X_3$ | $X_4$ | $X_5$ | $X_6$ | $X_7$ | $X_8$ | $X_9$ |
|---|---|---|---|---|---|---|---|---|---|---|
| $X_1$ | CONTACT | | | | | | | | | |
| $X_2$ | SYSTEM | .005 | | | | | | | | |
| $X_3$ | TURNARND | .049 | -.302† | | | | | | | |
| $X_4$ | CNCTIME | .357† | -.118 | .095 | | | | | | |
| $X_5$ | STRATIME | .474† | -.295† | .465† | .433† | | | | | |
| $X_6$ | CITPRINT | .296† | -.032 | .117 | .530† | .341† | | | | |
| $X_7$ | PRICE | .086 | .070 | .151§ | .311† | .309† | .621† | | | |
| $X_8$ | AMTLRDTC | .025 | -.097 | .006 | .055 | .044 | .117 | .039 | | |
| $X_9$ | SATIS6 | .036 | .003 | .060 | .079 | 0.38 | .120 | -.049 | .394† | |
| Mean | | .531 | .193 | 4.31 | 24.2 | 46.2 | 104 | 28.3 | 2.19 | 2.61 |
| Standard Deviation | | .501 | .396 | 4.26 | 14.5 | 26.3 | 111 | 13.1 | 0.62 | 0.32 |

N = 145

†p < .01

§p < .05

115

14!

Both CNCTIME and STRATIME are positively influenced by the personal contact with the client, but the effect of this on the number of citations printed is relayed almost solely through connect-time. The amount learned about the topic searched (AMTLRDTC) does not appear to be affected by any of the process variables. The small negative coefficient between it and SYSTEM, which might imply that SDC was less effective than LIS (as our search analyst fervently believes), is not statistically significant. Similarly, the positive coefficient from CITPRINT, which would imply more is learned from long bibliographies, is not statistically significant.

CITPRINT is a statistically significant determinant of PRICE as would be expected given the pricing policy in which charges for an "excessive" number of citations are made. Other variables which might affect price, such as being in one of the target groups receiving free searches, are excluded from the model but are represented by $e_i$.

Finally, five causal variables impact upon overall satisfaction (SATIS6) but only two of these relationships are statistically significant: those for AMTLRDTC and PRICE. The first has a positive effect, with those clients who learned more about their topic having a more positive viewpoint. But, controlling for CITPRINT, AMTLRDTC, SYSTEM, and TURNARND, those who paid a higher price were less satisfied overall. That is, all other things being equal, the client who paid a higher rate would report lower overall satisfaction than one who paid a lower rate. Thus, though price did not appear as an important variable in the zero-order correlations, it does appear as a determinant in the final analysis. Of the remaining variables which we thought might affect overall satisfaction, namely TURNARND, SYSTEM, and CITPRINT, a possible relationship is indicated only for the last. Taking the three branches from CITPRINT together, it might be suggested that it does affect satisfaction, with its positive effects being felt both directly and indirectly via the path through amount learned, and its negative effects felt via the path through price.

Table 31 lists the path coefficients for the process models in which not only overall satisfaction is the dependent variable of interest, but also the subscales measure specific characteristics of the search service, SATIS1, through SATIS5. In the table, paths are named with the effect variable first and the causal variable second. The subscripts also reflect this ordering, e.g., $p_{41}$ is the coefficient measuring the effect of $X_1$ (CONTACT) on $X_4$ (CNCTIME). An exception to this rule occurs when the correlations remain unanalyzed, as between the pairs of exogenous variables $X_1$ to $X_3$. For these variables, the zero-order correlation coefficients are presented.

Means, standard deviations, and sample sizes are also given in Table 31. Sample sizes vary according to the satisfaction subscale being considered since not all clients were exposed to all facets of the service, and hence did not respond to some evaluation questions.

Path coefficients for the first 11 paths for the five satisfaction subscales are, in fact, estimates of the same path coefficients already considered in the diagram explaining overall satisfaction. Any variation from earlier estimates is due to variation in the samples on which the estimates are based. In fact, the new estimates are quite similar to the earlier ones, except for the sample size of 31 on which estimates for path coefficients leading to SATIS3 are based. This is to be expected given the small sample size, and serves as a warning against placing too much confidence in estimates drawn from this subsample.

The last five coefficients in each column of Table 31 do present new path coefficients which measure the effects of SYSTEM, TURNARND, CITPRINT, PRICE, and AMTLRDTC on the satisfaction subscales.

Starting with SATIS1, the degree of satisfaction with publicity materials and directions, we note than only PRICE seems to have an effect, and, as before, the effect is negative. A similar conclusion holds for SATIS2, the convenience of the service and helpfulness of its staff.

CITPRINT, PRICE, and AMTLRDTC all have significant effects on the satisfaction of the 31 clients who responded

## TABLE 31

PATH COEFFICIENTS FOR PROCESS MODEL EXPLAINING SUBSCALE SCORES FOR SATISFACTION WITH SERVICE

| Path | Statistic | Variable | | | | | |
|------|-----------|----------|----------|----------|----------|----------|----------|
| | | SATIS1 | SATIS2 | SATIS3 | SATIS4 | SATIS5 | SATIS6 |
| 1. CONTACT-SYSTEM | $r_{12}$ | .03 | -.01 | -.23 | .16 | .06 | .00 |
| 2. CONTACT-TURNARND | $r_{13}$ | .00 | .03 | .19 | -.19 | -.06 | .05 |
| 3. SYSTEM-TURNARND | $r_{23}$ | -.27† | -.29† | .01 | -.32† | -.34† | -.30† |
| 4. CNCTIME-CONTACT | $p_{41}$ | .29§ | .32† | .28 | .20 | .34† | .36† |
| 5. STRATIME-CONTACT | $p_{51}$ | .39† | .41† | .21 | .34† | .40† | .47† |
| 6. CITPRINT-CNCTIME | $p_{64}$ | .47† | .46† | .44§ | .62† | .56† | .47† |
| 7. CITPRINT-STRATIME | $p_{65}$ | .15 | .14 | .21 | -.04 | .03 | .14 |
| 8. PRICE-CITPRINT | $p_{76}$ | .66† | .61† | .29 | .57† | .50† | .62† |
| 9. AMTLRDTC-SYSTEM | $p_{82}$ | -.13 | -.11 | -.33 | -.04 | -.14 | -.10 |
| 10. AMTLRDTC-STRATIME | $p_{85}$ | -.06 | -.01 | -.04 | -.08 | -.03 | -.03 |
| 11. AMTLRDTC-CITPRINT | $p_{86}$ | .15 | .15 | .02 | .01 | .05 | .14 |
| 12. SATIS-SYSTEM | $p_{92}$ | .04 | .04 | .21 | .32§ | -.05 | .09 |
| 13. SATIS-TURNARND | $p_{93}$ | .03 | .05 | .08 | .26§ | .09 | .09 |
| 14. SATIS-CITPRINT | $p_{96}$ | -.13 | .14 | .41§ | -.01 | .03 | .18 |
| 15. SATIS-PRICE | $p_{97}$ | -.24§ | -.22§ | -.39§ | -.11 | -.06 | -.20 |
| 16. SATIS-AMTLRDTC | $p_{98}$ | -.08 | .09 | .43† | .11 | .67† | .38† |
| n | | 148 | 157 | 31 | 70 | 139 | 145 |
| $\bar{X}$ | | 2.60 | 2.75 | 2.40 | 2.59 | 2.32 | 2.61 |
| s | | .42 | .42 | .45 | .37 | .67 | .32 |

†$p < .01$

§$p < .05$

to SATIS3 which measured the timeliness of the service, including document delivery from EDRS and EISO. These coefficients are similar to those noted for overall satisfaction, but are somewhat longer.

In contrast to the preceding case, only TURNARND, and SYSTEM apparently affect SATIS4, which tapped client satisfaction with the quality of the technology, as measured by the length of the bibliography, readability of microfiche, and availability of microfiche readers.

Satisfaction with the value of the bibliography and materials located (SATIS5) was apparently affected by only one variable, the amount learned about the topic. It is notable that, for this specific attitude object -- the value of the bibliography and materials located through it -- the negative effect that price had on other types of satisfaction disappears.

## Discussion

How successful is the process model at explaining user satisfaction? We are embarrassed to admit, having put considerable effort into its development and testing, that it is only slightly more effective than the input model at doing the job for which it was intended. Fortunately, it does provide additional information that increases its overall usefulness.

As far as satisfaction is concerned, only one variable seems to have a consistent effect, namely price. The negative effect of price on satisfaction was apparent with overall satisfaction, and satisfaction with particular components of the service: publicity materials and directions, convenience and helpfulness, and timeliness. It did not affect satisfaction with the technology or materials produced. In interpreting this differential effect of price, it must be recalled that 9% of all users received free searches, and most others paid $30 or more. It would appear, then, that when individuals are paying for a bibliographic search, they expect more in the way of service than they would if they were receiving it for free. Yet, it is important to note that their expectations with regard to service do not carry over to their

assessment of the value of the goods, which they apparently assess independently of amount paid.

We are at a loss to account for the three other significant relationships between process variables and satisfaction scores (SYSTEM and TURNARND with SATIS4, quality of technology; and CITPRINT with SATIS3, timeliness of service). We are inclined to ascribe them to anomalies in the smaller samples involved, or to extraneous variables not in the analysis.

There is, of course, another variable which is related to various satisfaction scores with some consistency, the amount learned about the topic searched (AMTLRDTC). This variable is an output variable in its own right, but intervenes between satisfaction and all process variables except price. It is positively related to overall satisfaction, satisfaction with timeliness of service, and most important, satisfaction with the value of the bibliography and materials. This last relationship helps to validate the satisfaction items, since one would expect a person who learns more than another from a bibliography to be more satisfied with it. But more important, it highlights the idea that the client is motivated to learn, and that if this learning does not occur, dissatisfaction will result.

Though the amount learned has proven to be an important intervening variable explaining client satisfaction, none of the process variables helps to account for the extent of learning that takes place. This failure to account for variation in learning is an important finding in and of itself, since the following possible causes are ruled out: the system used, the number of citations printed, and the interview/strategy time. It would appear that explanations must be sought in the personality or knowledge of the client, the interaction between the client and search analyst, the quality of the search strategy, or the topic being searched.

Relationships for the remainder of the process model have been confirmed. Price is affected by the number of citations printed; the number of citations printed is affected by connect-time -- but not interview/strategy time; and both connect-time and interview/strategy time are affected by the

method of contact.  If there is a surprise here, it is that
while the personal contact is responsible for taking a con-
siderable amount of the search analyst's time, the production
of longer bibliographies and higher prices, it seems to bear
no relationship to either the amount learned or the level of
satisfaction.

## Implications

There are two findings in this study which seem of
immediate import to the search service manager, and one with
implications for future research.  All three are products of
the process model.

First, it is apparent that any search service which
charges for its product must emphasize the *service* as well as
the search output.  It is not enough to provide customers with
a bibliography and materials, but it must be done in a way
that makes the client realize he is paying as much for the
service as for the product, and that he is getting his money's
worth.  Indeed it can be argued that clients only pay for the
service, since what is paid is related not to the ultimate
worth of the material, but to the cost of its retrieval.

Second the finding that process variables have no clear
relationship to user satisfaction or the amount a user learns,
suggests that, where necessary, economies may be possible by
discouraging face-to-face interviews (which take more time)
and by restricting the length of bibliographies as much as
possible.  These recommendations, if imposed on a staff, would
probably fail (we speak from experience).  But for search
analysts who are responsible for their own budgets and who must
defend their existence at least in part on the basis of the
number of clients served, it may be encouraging to note that
it is probably possible to cut a few corners without harming
the quality of the service.

Finally, the need for future research into the deter-
minants of the gain in knowledge experienced by users as a
result of bibliographic searches is apparent, given its strong
relationship with client satisfaction.  While libraries and
information centres have traditionally defined their roles as

providers of information, with no guarantee that their clients benefit from this information, it appears that for search services to succeed in satisfying their client's needs, a better understanding of the personal and psychological factors involved is needed. In particular, if it is possible to establish in advance the likelihood of a search's success in filling a client's needs, then search analysts may be able to better distinguish between those clients who are likely to profit and those who are not. The failure of the input model involving sociological background variables to explain differing levels of satisfaction makes it clear that whatever the variables may be that explain this variation, they are to be found at the individual and not the group level.

## Limitations

The suggestions above were presented without qualification, but it would be emphasized that they are made within the context of a single search service, EISO, serving a special population, the professional educational community in Ontario, Canada. Given the nature of its client group, EISO's staff primarily conducts in-depth, retrospective searches requested as a basis for research reports or background studies. The length of search interviews, connect-time, and the number of citations printed tend to exceed norms reported in the literature, but are not, we feel, out of line with the task (Wax, 1976, p. 13). Nevertheless, given EISO's norms, it may well be that it can cut corners without damaging the quality of service, whereas another service could not. Therefore, the conclusions and recommendations made here should not be considered as conclusions of general applicability.

## Conclusion

The systems framework for evaluating an online bibliographic search service described in this chapter was successfully applied using separate analyses to determine the effects of input and process variables. In the first analysis, a number of background variables measuring the social characteristics of EISO's users were related to output variables measuring

122

client satisfaction. The overall high level of satisfaction observed, combined with the lack of any significant relationships between the sociological input variables and client satisfaction, were interpreted as meaning that EISO was serving all categories of clients with equal effectiveness.

In the second analysis, a number of relationships among a number of process variables associated with the costs of operation and output variables measuring the clients' gain in knowledge and satisfaction. Strongest relationships were between process variables such as the number of citations printed and price, between price and satisfaction, and between the amount learned and satisfaction. The negative relationship between price and satisfaction, which did not apply to satisfaction with the bibliography and materials themselves, suggests that services which charge must be aware that clients are rating their service as well as their product. Future research is needed to discover variables that determine the amount a client learns from a search, since this information would give the search analyst a better understanding of when and how a search should be conducted.

## CHAPTER 6

### EISO TODAY: THE RESULT OF RESEARCH, DEVELOPMENT, DISSEMINATION, AND EVALUATION

When preliminary investigation into the creation of the Educational Information System for Ontario began in the early years of this decade the world of online bibliographic searching was in its infancy. Little documented evidence existed on the optimal methods of setting up a search service, numbers of users that might be expected to use it, or the costs incurred in providing it. The choice of data bases was limited and searching techniques relatively simple. Advances in the field have, however, taken place with sometimes startling rapidity and these changes combined with the findings of our own research have affected the development of EISO and how it is run today. The purposes of this chapter, therefore, are to present an overview of recent trends and developments in accessing data bases online and to document the changes that have occurred in the EISO service.

### Trends and Developments in Online Searching

To state that significant changes have taken place over the past decade with respect to the production and use of computer-readable data bases is almost a truism. The constant flow of changes can be traced in the *Annual Review of Information Science and Technology*, journals such as *Special Libraries, College and Research Libraires, Canadian Library Journal, Journal of Library Automation, Journal of the American Society for Information Science, Online Review*. To keep up with the changing scene, the commercial data base firms have begun to issue regular newsletters and user manuals. Directories of available data bases have

appeared and organizations associated with data base genera-
tion, processing, and use have sprung up. The developments
and trends in data bases from 1966 through 1975 were documented
in a recent paper by Martha Williams (1977). In that paper she
notes the following changes.

## Number and Size of Data Bases

In 1968, there were 20 data bases available to the
public for information retrieval purposes. Today there are
over 300. Ten years ago data bases consisted of a few thou-
sand records. Now some data bases *add* as many as 400,000
source references *annually*.

## Number of Searches and Users

In 1965, the people in the U.S. who used machine-readable
data-base services numbered about 10,000. In 1975, there were
1,000,000 online retrospective searches performed in the U.S.
and Canada excluding library automation applications such as
OCLC.

## Subject Coverage of Data Bases

Originally data bases were developed by government or-
ganizations (NASA, AEC, NLM), were mission-oriented, and con-
tained scientific and technical information. Then abstracting
and indexing services in science and technology began to
develop data bases. They were followed by the "soft sciences,"
psychology, education, and social science. Now coverage is
spreading to the area of human needs, consumerism, child care.

## Retrospective Files

Because some data base organizations go back to 1966,
retrospective search capabilities are expanding.

## Types and Characteristics of Source Documents

Early data bases covered government reports, journal
articles, and patent information, and tended to be largely
bibliographic. There is now a trend toward numerical data
bases, and ones that contain less permanent material, such as
news-information, information about current research projects.

## Funding Sources

There has developed a trend away from government-funding of mission-oriented data bases toward commercial organizations producing data bases specifically intended as searchable files.

## Charging for Data Base Services

Early government-funded data bases were available free to government employees and contractors. There followed a period of subsidization of search centres with little or no fee passed on to the end user. This was followed by efforts of these centres to become self-supporting by charging for services. Now organizations are finding they can make a profit (SDC, LIS) and there is a growing information industry. This trend toward commercialism is a direct result of technological developments which have dramatically reduced the costs of data base searching. In 1965, it would have cost $1,000 to search a data base of 1,000,000 records. Today, it costs between $10 and $50.

## Users and User Organizations

These have shifted from being primarily government and its contractors, to industry, then universities, and now public libraries. We now have third-party users or brokers of search services who sell the results of their online searching to their own customers. The end-user in such cases is the customer of an entrepreneurial intermediary.

## Professional Organizations

Ten years ago there were no organizations devoted to computer-readable data bases. In the last ten years, ASIS has developed special interest groups on selective dissemination of information (SIG/SDI), and on user online interaction (SIG/UOI). In 1970 ASIDIC (Association of Information Dissemination Centers) and EUSIDIC (European Society of Information Dissemination Centers) were chartered. CAIS (Canadian Association for Information Science) was formed in this country.

## Publications Devoted to Data Bases

Whereas ten years ago, little was published, today over 500 references a year dealing directly with data bases appear in the journal and report literature. In addition, the relevant organizations publish bulletins, newsletters, journals. These were followed by edited collections of papers, directories, and in the past five years monographs have begun to appear.

## Terminology Development

It is startling to remember that in 1967, the term "data base" was hardly, if ever, used and that "online" was not known.

## Standards

When data bases were used exclusively by the producing organizations, there was no need for standards. In the intervening years, as more organizations became involved in producing and processing tapes, the need for standardization became obvious. This area is still in its infancy.

## File Design

Early data bases were not designed for searching but were production aides that came about as a byproduct of computerized composition for hardcopy publishing. Sophisticated techniques now allow one master file to generate multiple products, having differing formats and contents.

## Online Search Software

It is hard to remember that ten years ago online retrieval was only a glint in the eye of a few information scientists. From rather limited versions of search systems, current software continues to incorporate features that can accomplish a variety of functions for the user.

## Vocabulary for Data Base Searching

The trend is away from the use of highly structured, highly controlled vocabularies for searching data bases and

153

towards free-text, natural language searching of titles, key works, key-word phrases, and abstracts.

Networking

Perhaps the most important trend in the data base area has been spurred by the development of huge, retrospective files which are too large to be supported by use within a limited geographical area; the vast increase in the numbers and kinds of data bases and the availability of online search services; the numbers of data base users; the cooperation made possible by the need for standardization; and technological developments in telecommunications. The development of such commercial communications networks as TYMNET, Telenet, etc., have in turn permitted the shared online use of search systems at SDC, Lockheed, NLM, Informatics, Mead, SUNY, OCLS, etc.

While much progress has taken place and many pitfalls have been avoided, several problem areas still remain largely unresolved or in the research phase. Copyrights, data rights, patents, export tariffs for data bases and software are largely unexplored. Document availability still poses some difficulties. The development of a common command language for accessing multiple online systems all with different command words and/or sequence of operations is still in an experimental stage. Problems of choosing between many data bases that vary considerably with respect to subject coverage, source types, file format, record format, indexing, vocabulary, etc., remain while investigation of problems concerned with the man/machine interface is just beginning.

## The EISO Experience

Experience with EISO confirms and emphasizes the points brought out in the literature regarding the rapidity of change. The following developments are some of those that have occurred only within the last year and that have affected the type of service provided.

128

154

## Availability of Data Bases

In the last year alone the following data bases have become available, *Language and Language Behavior Abstracts* (LLBA), *Library and Information Science Abstracts* (LISA), *Canadian Business Periodicals Index*, *Canadian Newspaper Index*, and *Sociological Abstracts*. On the drawing board and about to be launched by Lockheed are *NICEM*, and *National Council for Child Abuse and Neglect*, among seven others.

## Reloading of Data Bases

New searching capabilities are constantly being introduced. The most potentially important one is the ability to search for words or phrases in titles or abstracts rather than only by descriptors.

## Changing Search Rules

An example is the shift from being able to search the classification codes in *Psychological Abstracts* by using four digits to using only two.

## Changing Print Formats

Lockheed now offers six different format options, SDC even more.

## Coverage Decisions

The most obvious is the broader coverage in *RIE* that offers dissertations and ONTERIS that continues to expand into the areas of curriculum guidelines, and CODE materials.

## Communication Networks

Originally using one number with Tymshare, EISO now uses two networks (Tymshare and Telenet), and two systems (SDC and Lockheed), plus ONTERIS, involving a total of five different logons.

## Data Base Features

New features include cited reference capability of *Social Sciences Citation Index* (SSCI), and numerical subject codes in *Psychological Abstracts*.

129

## Changes in Costs and Charging

These include introductions of discounts by SDC and Lockheed that are prorated according to usage; the reduction of communication costs and data base charges; and the elimination of flat fees and the substitution of rates reflecting actual costs incurred.

## Increasing Refinements to the Search Process

One of the more concrete ways to grasp what this involves is to examine the tables of contents of Lockheed's *Brief Guide to Dialog Searching* and SDC's *Informart Search Service* (Appendices E and F), both from the user manuals that number hundreds of pages.

These changes have, of course, profoundly affected the type of service that EISO is able to offer its users. For example, when the service began in March 1975, only one data base (ERIC) was searched and only one system (SDC) used to access that file. Now several systems including SDC, Lockheed, ONTERIS, and The New York Times are used to provide access to a variety of data bases in education and the closely related social sciences.

The service has expanded its provision of original documents by supplying users with a choice of the following formats: microfiche copies of fiche documents, paper copies of journal articles, and paper copies of microfiche documents. The first two of these options are supplied directly by EISO staff, the last through an arrangement with MicroMedia, a local commercial company (see Appendix G).

Pricing policies have been substantially changed also. Initially, as a result of data collected during a short trial period, a flat fee of $30 was charged per search. Then, as it became possible to obtain exact computer costs incurred by each search on the printout and as it became clear that there was little link between time spent on a search by the search analyst (within the limits set by EISO) and the satisfaction of the user, the decision was taken to introduce a sliding price structure. Now the user is charged for direct computer

conncect-time costs, number of citations printed, and a flat
rate for the search analyst's time to the nearest quarter-hour.
These costs associated with connect-time and citations vary
with the system accessed and data base used.   This new pricing
structure has the advantage of imposing economic discipline
on the search analyst without reducing the quality of the
search.

Publicity efforts have also been somewhat modified as a
result of research and practice.   It was found that articles
and advertisements in professional journals went virtually
unheeded and did not serve as an effective stimulant for
users.   Far more effective were the brochures (Appendix H)
sent to school boards.   Direct mailing to all schools in the
province was tried but found to be excessively costly for the
number of users generated.   The current methods of publicizing
the service consist of twice yearly (Fall and Winter) mailings
of 12,000 brochures to school boards, faculties of education,
professional associations, etc.; fliers distributed at Summer
and Fall OISE student registrations (Appendix I); inclusion
of sessions about EISO in graduate courses 1010: Research
Methods in Educational Administration, 1021: Retrieval of
Knowledge in Education, and 2050: Dissemination and Utiliza-
tion of Knowledge in Education.   In addition, high visibility
is maintained by attendance at conferences, orientation tours
for visiting educators, and the packaging of bibliographies
and original documents in covers with the distinctive EISO
logo (Appendix J).

With the start of Phase IV of the EISO project in April
1978, the main thrust of the Ministry of Education contract
became the provision of the online bibliographic retrieval
service.   Collection of research data was sharply curtailed
and all data collection instruments were revised to reflect
the shift in emphasis from research project to service moni-
toring.   New Search Request Forms (Appendix K), EISO Service
Evaluation Data Sheets (Appendix L), and EISO User Evaluation
Questionnaires (Appendix M) are designed to provide informa-
tion on who uses the service, the purpose for which they use
it, their degree of satisfaction with it, and the cost of

131

providing it. Items referring to other types of information have been eliminated.

The role of the Education Information Consultant or EIC, the intermediary between geographically remote users and the centrally located information resources, that began in 1975 is continuing though in a modified format. Detailed case studies of the four part-time linkers (Auster, 1978) showed that these individuals were indeed performing a useful function as perceived by their users. Their greatest contributions tended to be in the early stages of the search process in making the potential user aware of the service and helping him to define and clarify his problem or information need. The roles that developed were found to differ significantly in their configurations with the functions performed, time spent, numbers of users varying markedly from EIC to EIC. One of the unexpected outcomes of the linkage program was the springing up of voluntary or self-selected EICs who had heard about the service and felt that it could be useful to their organization. These volunteers have become repeat users of the EISO service and have generated numerous searches over the past three years.

The roles of EISO's staff members have also undergone changes. The job of the library assistant who performs the clerical duties of the project has expanded with the introduction of alternative duplication formats, individually-tailoring billing systems, and regular publicity mailings. Record keeping, office management, and questionnaire coding round out a busy routine. The project manager"s functions have so far not been as severely curtailed as was anticipated at the beginning of EISO's Phase IV. While it was thought that the reduction of data collection and analysis would reduce the time needed to carry out this role, the fact that the role had been a shared one for the first three years of the project was largely overlooked. It appears that with the responsibilities for research, project monitoring, and publicity shifting to one individual, the time allotment for that role is closer to the 30-40% range than to the 10% actually allotted to it.

The greatest change, however, has been in the role of the search analyst. Her role has become far more complex

as a result of the technological trends and developments described earlier. With more systems and data bases at her disposal, she must constantly update her skills and the list of skills regarded as necessary has become increasingly lengthy. One expert (Martin, 1974) feels that the analyst must be knowledgeable about query formulation and result manipulation. The former includes familiarity with suffix removal, search field control, dictionary access, spelling variations, related term capability, word proximity operators, Boolean operators, request sets, phrase decomposition, search profiles, and sequential searching. The latter includes familiarity with search review, predefined formats, online formatting, rapid scan, expanding, sorting, ranking, microfiche, statistical interface, offline printing, and data access protection.

Another expert (Wanger, 1977) presents her view of the skills required in chart form[1]

TABLE 32

SKILLS REQUIRED TO ACCESS MULTIPLE DATA BASES

| | | Skills/Knowledge Base | | | |
| --- | --- | --- | --- | --- | --- |
| | | Reference & Information Education | Data Base Knowledge | System Skills | "That Special Skill" |
| OFFLINE | 1. ANALYZE THE INFORMATION PROBLEM | X | X | -- | x |
| | 2. SELECT DATABASE(S) | X | X | x | x |
| | 3. SELECT TERMS | x | X | x | x |
| | 4. CONCEPTUALIZE INPUT TO SYSTEM | x | x | X | x |
| ONLINE | 5. EVALUATE PRELIMINARY RESULTS | x | x | x | x |
| | 6. CYCLE THRU 1-5, AS NEEDED | x | x | x | x |
| OFFLINE | 7. MAKE FINAL PRINTING DECISIONS | x | x | x | x |
| | 8. EVALUATE FINAL RESULTS | x | x | x | x |

[1]Wanger, Judith. "Multiple Data Base Use." *OnLine*, 1977, 35-41.

133

150

She recognizes, however, that the search process is a dynamic one relying heavily on human factors which cannot easily or completely be captured on paper. To underline the importance of that extra dimension, she introduces "that special skill", which may encompass

> . . . the ability to relate to people, to listen, to read (and hear) between the lines, to make some fairly abstract connections, to feel confident about entering another person's world of interest and expertise, and to begin relating a search problem to the world of information (p. 35).

Needless to say, the errors that can be made by the unsuspecting novice in such a sophisticated professional area are almost limitless. Ironically, however, the major learning opportunity for currently practicing search analysts has until recently been primarily on-the-job trial and error augmented by professional development workshops held by the commercial data base brokers at conferences.

## Conclusion

When the EISO project started, the whole field of online bibliographic retrieval was relatively new and undeveloped. Few guidelines or criteria existed for the establishment and ongoing operation of such services, costs were as yet undetermined, and user acceptance was still problematic. Within a very short time, technological advances made possible the provision of a wide selection of data bases, costs became more readily determinable, and online access became the accepted way of searching a substantial portion of the social science literature. There can be little doubt that online services will continue to develop and expand to meet the information needs of growing numbers of users in the future.

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152

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APPENDIX A

EISO USER EVALUATION QUESTIONNAIRE 1

EISO

**Educational Information System for Ontario**

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
(416) 923-6641 Ext. 497

User
Evaluation
Questionnaire
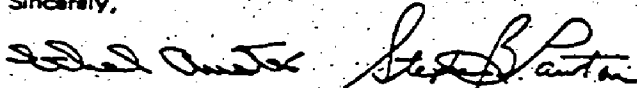
Dear EISO User:

According to our records, you conducted a search through the Educational Information System for Ontario (EISO) during the last two months or so. As you know, this is an experimental service, and is part of a research project aimed at learning more about the information needs of Ontario educators, and how these needs can be met.

Could we impose upon you to complete the evaluation questionnaire and return it to us in the enclosed self-addressed and stamped envelope. The questionnaire should take no more than a few minutes to complete. All data will be held in strict confidence and used only for research purposes.

Many thanks for your cooperation.

Sincerely,

Ethel Auster, Stephen B. Lawton
Principal Investigators


P.S.  If you requested the search on behalf of another user, please pass this questionnaire on to the individual concerned for completion.

2

166 141

The data collected from the user evaluation questionnaire will be used only for research purposes. To identify and attract potentially interested users to EISO we must know who is now using the service; we must also identify and improve weak areas in the search service.

Please read each question carefully and indicate your response with a check mark: ☒

Search No. ⊔⊔⊔⊔. ⊔⊔
(1)

Topic _____

If you have completed a previous evaluation questionnaire, please start at item 24 on page 7.

*Personal Data*

7,8

1. Age
   - (1) ☐ 25 or under
   - (2) ☐ 26 - 35
   - (3) ☐ 36 - 45
   - (4) ☐ 46 - 55
   - (5) ☐ 56 - 65
   - (6) ☐ over 65

2. Highest earned degree
   - (1) ☐ Bachelor's
   - (2) ☐ Master's
   - (3) ☐ Doctorate
   - (4) ☐ other certificate

9-10

3. Please indicate your primary professional role or function. (Check one only)
   - (01) ☐ Administration or Supervision
   - (02) ☐ Teaching
   - (03) ☐ Pupil Personnel Services
   - (04) ☐ Research
   - (05) ☐ Field Development
   - (06) ☐ Ministry Regional Office
   - (07) ☐ Library Services
   - (08) ☐ Private Consultant
   - (09) ☒ Undergraduate Student
   - (10) ☒ M.Ed. Student
   - (11) ☒ Ed.D. Student
   - (12) ☐ M.A. Student
   - (13) ☐ Ph.D. Student
   - (14) ☐ Other: _____

11

4. How many years have you been in your current position?
   - (1) ☐ less than one year
   - (2) ☐ 1 year
   - (3) ☐ 2 years
   - (4) ☐ 3 years
   - (5) ☐ 4 to 6 years
   - (6) ☐ 7 to 9 years
   - (7) ☐ 10 or more years

3

**12,13** | 5. Have you ever been an officer of a professional organization?

(1) ☐ Yes      (2) ☐ No

6. Are you a member of any professional organization *other* than those required by provincial legislation?

(1) ☐ Yes      (2) ☐ No

**14,15** | 7. Have you written any professional papers for publication or for presentation at conferences in the last five years?

(1) ☐ Yes      (2) ☐ No

8. Have you participated in an educational research project in the last five years?

(1) ☐ Yes      (2) ☐ No

**16** | 9. Are you now studying or planning to study toward an academic degree?

(1) ☐ Yes      (2) ☐ Not sure      (3) ☐ No

*Organizational Characteristics*

**17,18** | 10. If you are with a school board, please indicate the level of your primary professional position. Otherwise, check "Not applicable".

(1) ☐ Elementary grades only
(2) ☐ Secondary grades only
(3) ☐ Elementary and secondary
(4) ☐ Central board office
(5) ☐ Other: _____
(6) ☐ Not applicable

11. What is the mother tongue of the majority of individuals served by your organization?

(1) ☐ English
(2) ☐ French
(3) ☐ Other: _____

*Information Needs*

12. Please indicate (A) the amount of time per week you normally spend in obtaining information from each of the sources listed below, and (B) how valuable the information gained from each source is to you.

| | Source | (A) Approximate Time Spent (hrs. per week) | (B) Value | | | |
|---|---|---|---|---|---|---|
| | | | Low | Medium | High | NA |
| 19,20 | a. Human resources .......... | _____ | ☐ | ☐ | ☐ | ☐ |
| 21,22 | b. Office files, reports ......... | _____ | ☐ | ☐ | ☐ | ☐ |
| 23,24 | c. Prof. organizations......... | _____ | ☐ | ☐ | ☐ | ☐ |
| 25,26 | d. Libraries and their holdings— journals, books, indexes, etc. | _____ | ☐ | ☐ | ☐ | ☐ |
| 27,28 | e. Conferences............. | _____ | ☐ | ☐ | ☐ | ☐ |
| 29,30 | f. Prof. Dev. Days. .......... | _____ | ☐ | ☐ | ☐ | ☐ |
| 31,32 | g. Academic, prof. courses ..... | _____ | ☐ | ☐ | ☐ | ☐ |
| 33,34 | h. Curric. guides, texts ........ | _____ | ☐ | ☐ | ☐ | ☐ |
| 35,36 | i. ERIC materials ........... | _____ | ☐ | ☐ | ☐ | ☐ |
| 37,38 | j. Other: _____ | _____ | ☐ | ☐ | ☐ | ☐ |
| | | | (1) | (2) | (3) | (4) |

13. How often do you seek information for the following?

| | Purpose | Frequency | | | |
|---|---|---|---|---|---|
| | | Never | Sometimes | Often | Very often |
| 39 | a. To keep abreast in the field ............ | ☐ | ☐ | ☐ | ☐ |
| 40 | b. Assignments, term papers, or theses ........... | ☐ | ☐ | ☐ | ☐ |
| 41 | c. Preparing or updating bibliographies ....... | ☐ | ☐ | ☐ | ☐ |
| 42 | d. Curriculum development ............ | ☐ | ☐ | ☐ | ☐ |
| 43 | e. Program improvement ............. | ☐ | ☐ | ☐ | ☐ |
| 44 | f. Preparation of speeches, reports, articles ....... | ☐ | ☐ | ☐ | ☐ |
| 45 | g. Research and development projects ......... | ☐ | ☐ | ☐ | ☐ |
| 46 | h. Browsing ............. | ☐ | ☐ | ☐ | ☐ |
| 47 | i. Personnel recruitment or evaluation. ......... | ☐ | ☐ | ☐ | ☐ |
| 48 | j. Policy development............. | ☐ | ☐ | ☐ | ☐ |
| 49 | k. Other: _____ | ☐ | ☐ | ☐ | ☐ |
| | | (1) | (2) | (3) | (4) |

50-51   14. How did you first learn about the Educational
Information System for Ontario (EISO) and its
services? (Check one only)

(01) ☐  Brochure or flyer
(02) ☐  Advertisement
(03) ☐  Prof. Dev. Day
(04) ☐  Classroom instruction
(05) ☐  Colleagues

(06) ☐  Ed. Information Consultant
(07) ☐  Library or Librarian
(08) ☐  EISO staff member
(09) ☐  Cannot recall
(10) ☐  Other:

52,53   15. Is a microfiche reader available in your organization?

(1) ☐  Yes
(2) ☐  Don't know
(3) ☐  No

16. Portable fiche reader?

(1) ☐  Yes
(2) ☐  Don't know
(3) ☐  No

Please indicate your satisfaction with the following
elements of EISO. Feel free to comment in the space
provided.

| | Satisfaction | | |
|---|---|---|---|
| | Low | Medium | High |

54   17. Convenience of arrangements and adequacy of
directions to obtain EISO searches.
Comments: _____

☐      ☐      ☐

55   18. Accuracy and comprehensiveness of publicity
materials.
Comments: _____

☐      ☐      ☐

56   19. Adequacy of directions for ordering copies of
materials listed in bibliography.
Comments: _____

☐      ☐      ☐
(1)    (2)    (3)

6

17

87,58 | **20.** Before using EISO, how helpful did you expect it to be?

    (1) ☐   Not very helpful
    (2) ☐   Somewhat helpful
    (3) ☐   Very helpful

**21.** Would you recommend use of EISO to a colleague?

    (1) ☐   Yes
    (2) ☐   Perhaps
    (3) ☐   No

59,60 | **22.** Would you use EISO again?

    (1) ☐   Yes
    (2) ☐   Perhaps
    (3) ☐   No

**23.** Do you think EISO search services be offered on a permanent basis?

    (1) ☐   Yes
    (2) ☐   Perhaps
    (3) ☐   No

Those who have completed previous questionnaires, please start at this point.
Others, please continue.

61-62 | **24.** Please indicate the professional role for which you requested this EISO bibliography. For example, if the bibliography was used to complete a course paper for your M.ED. you would check "M.Ed. student" although your primary professional role or function is in administration. (Check one only)

    (01) ☐  Administration or Supervision
    (02) ☐  Teaching
    (03) ☐  Pupil Personnel Services
    (04) ☐  Research
    (05) ☐  Field Development
    (06) ☐  Ministry Regional Office
    (07) ☐  Library Services

    (08) ☐  Private Consultant
    (09) ☐  Undergraduate Student
    (10) ☐  M.Ed. Student
    (11) ☐  Ed.D. Student
    (12) ☐  M.A. Student
    (13) ☐  Ph.D. Student.
    (14) ☐  Other:

**63,64** | 25. How much did you learn about your topic as a result of the search?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

26. How much did you learn about the Educational Information System for Ontario as a result of your search?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

**65** | 27. How much additional information do you still desire concerning the topic that was searched?

(1) ☐ Nothing or very little
(2) ☐ Some
(3) ☐ A great deal

28. How helpful was the information provided as a result of your EISO search for each of the following activities?

| | Helpfulness | | | |
| | Low | Medium | High | NA |
|---|---|---|---|---|
| **66** a. Keeping abreast of the field | ☐ | ☐ | ☐ | ☐ |
| **67** b. Completing assignments, theses, etc. | ☐ | ☐ | ☐ | ☐ |
| **68** c. Preparing or updating a bibliography | ☐ | ☐ | ☐ | ☐ |
| **69** d. Curriculum development | ☐ | ☐ | ☐ | ☐ |
| **70** e. Improving programs | ☐ | ☐ | ☐ | ☐ |
| **71** f. Preparing a speech, article or report | ☐ | ☐ | ☐ | ☐ |
| **72** g. Undertaking or completing a research or development project | ☐ | ☐ | ☐ | ☐ |
| **73** h. Browsing | ☐ | ☐ | ☐ | ☐ |
| **74** i. Recruiting and/or evaluating personnel | ☐ | ☐ | ☐ | ☐ |
| **75** j. Developing policy | ☐ | ☐ | ☐ | ☐ |
| **76** k. Other: _____ | ☐ | ☐ | ☐ | ☐ |
| | (1) | (2) | (3) | (4) |

8

7 **29. For how many of the references on your printout did you read the original material?**
(1) ☐ 0-5
(2) ☐ 6-10
(3) ☐ 11-20
(4) ☐ 21 or more

Comments: _____

8,9 **30. How much of the relevant information retrieved was new to you?**
(1) ☐ 0%
(2) ☐ 10-20%
(3) ☐ 21-50%
(4) ☐ more than 50%

**31. How do you feel about the price of the search?**
(1) ☐ Very reasonable
(2) ☐ Acceptable
(3) ☐ Excessive

Please indicate your satisfaction with the following elements of your EISO search. Feel free to comment in the space provided below.

| | Satisfaction | | | |
|---|---|---|---|---|
| | Low | Medium | High | NA |

10 **32. Helpfulness of search analyst or Educational Information Consultant.**
Comments: _____
☐ ☐ ☐ ☐

11 **32. Length of bibliography**
Comments: _____
☐ ☐ ☐ ☐

12 **33. Readability of microfiche copies.**
Comments: _____
☐ ☐ ☐ ☐

(1) (2) (3) (4)

Please indicate your satisfaction with the following
elements of your EISO search. Feel free to comment
in the space provided below.

| | | Satisfaction | | |
|---|---|---|---|---|
| | | Low | Medium | High | NA |
| 13 | 34. Time taken to deliver the EISO bibliography. Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| 14 | 36. Time taken to deliver microfiche or paper copies ordered from EISO. Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| 15 | 37. Time taken to deliver microfiche or paper copies ordered from EDRS: Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| 16 | 38. Value of bibliography itself. Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| 17 | 39. Value of materials located via EISO bibliography. Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| 18 | 40. Availability of microfiche readers. Comments: _____ | ☐ | ☐ | ☐ | ☐ |
| | | (1) | (2) | (3) | (4) |

10

41. Please comment on both the good and bad elements
of your EISO search. Any suggestions you make
towards improving the service are welcome.

Thank you for your time and cooperation.

*Please return completed questionnaire to:*

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6

APPENDIX B

EISO SEARCH REQUEST FORM 1

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

The Ontario Institute for Studies in Education
Room S218, 252 Bloor Street W., Toronto, M5S 1V6
(416) 923-6641 Ext. 487

Search No. |___|___|___|___|___|___|___|

Topic: _____

## SEARCH REQUEST FORM

1. Name _____

   Address _____

   _____

   _____

   Phone (___)_____

2. Invoice: (   ) Same, or

   _____

   _____

   _____

   Phone (___)_____

3. Bibliography to: _____

   _____

   _____

4. Search Topic:   Year(s) to be searched — _____   Level or group — _____

   Detailed description of topic —

5. Reasons for requesting search (Please specify how you hope to use the information) —

6. Number of references desired: _____

7. Citations of relevant materials known to you, if any, or authors writing in the area.

   _____

   _____

8. Price:        Free ☐         $20 ☐          $30 ☐

9. Contact:      In person ☐        Telephone ☐       Mail ☐

10. Date request received |___|___|___|___|___|___|___|        Date of interview |___|___|___|___|___|___|___|
                                    D    M    Y                                          D    M    Y

    Length of interview _____ min.

11. Does the client have access to microfiche reader?      Yes ☐      No ☐      Don't know ☐

    EISO Reader?      Yes ☐      No ☐      Don't Know ☐

12. Search Strategy —

13. Comments:

APPENDIX C

EISO SERVICE EVALUATION DATA SHEET 1

EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

°C
3

EISO SERVICE EVALUATION DATA-SHEET

Search Request

42. Rc'd. _ _ _ _ _ _ _    43. Intvw. _ _ _ _ _ _ _ _    44. Run _ _ _ _ _ _ _
         7                              13                          19

25-26    45. Purpose (01)___Keep abreast of field          (07)___Re_ _  _velopment report
                    (02)___Assignment, term paper, thesis   (08)___Br_ _ _
                    (03)___Prep., update of bibliography    (09)___Pe. _ _ _ recruit, eval., sup.
                    (04)___Curriculum development           (10)___Policy development
                    (05)___Program improvement              (11)___Other:_____
                    (06)___Prep. speech, article, report    _____

27       46. Contact (1)___In person   (2)___Phone    (3)___Mail

         47. Earliest yr. rq'd. _ _ _ _   48. No. ref. rq'd. _ _ _ _ _   49. Ref. exp. _ _ _ _ _
                                 28                           30                        34

         50. Cit. known _ _ _         51. Price _ _ _
                        38                       40

42       52. Payment (1)___Cash or cheque    (2)___Invoice    (3)___Cost recovery

         Charge for search

43       53. Who pays (1)___EISO (free)    (2)___Requestor    (3)___Organ.

                     (4)___Other ___1_____

         54. OISE charge Unit _ _ _ _
                              44

         Search

49       55. Intvw., strat. time _ _ _ _ min.   56. System (1)___SDC   (2)___Lockheed
                                 46

50       57. Data base (1)___ERIC  (2)___Psych. Abs.  (3)___SSCI  (4)___ECEA

              (5)___Diss. Abs.  (6)___ERIC + PA_ _ _ ERIC + ECEA  (8)___ECEA + PA

              (9)___Other:_____

         58. Connect time _ _ _ min.  59. Cit. printed _ _ _ _ _  60. Cost/cit. _ _ _ _
                          51                            54                       58

154

61    61. Bib. sent (1)__Requestor    (2)__Search Analyst    (3)__EIC    (4)__Other:_____.

62. Date bib. rc'd. __,_,_,_,_,_,_.        63. Cost/hr system _,_,_,_,_
                   62                                       68

## Material Charge

71    64. Payment (1)__Cash or cheque        (2)__Invoice

72    65. Who pays (1)__EISO    (2)__Requestor    (3)__Org.    (4)__Other:_____

66. OISE Charge Unit _,_,_
                        73

C
4    ## Materials

67. N EISO fiche ordered _,_,_,_.        68. N EISO art'cl ordered _,_,_,_,_
                     7                                           10

69. N EISO fiche orders filled by OISE _,_,_,_,_
                                         13

70. N EISO fiche orders filled by other libraries _,_,_,_,_
                                                      16

71. N EISO fiche orders unfilled _,_,_,_,_
                                19

72. N EISO art'cl orders filled by OISE _,_,_,_,_
                                    22

73. N EISO art'cl orders filled by other libraries _,_,_,_,_
                                             25

74. N EISO art'cl orders unfilled _,_,_,_,_
                                28

31    75. EISO reader av'lbl (1)__Yes    (2)__Don't know    (3)__No

76. Price first search _,_,_
                    32

77. Please indicate the type of organization or institution with which user
     is primarily associated by placing a check (✓) in the appropriate space below.

34-35      (01)__preschool

(02)__public board

(03)__separate board

(04)__private school or board

(05)__CAAT

(06)__Faculty of Ed. or Teachers' College

(07)__University

180

(08)___Ministry of Education

(09)___Professional Organization

(10)___Government (Not Ministry of Education)

(11)___Business or Industry

(12)___OISE Director's Office/Assistant Director's Office

(13)___Finance

(14)___Computing Service

(15)___Publications

(16)___Library

(17)___R & D

(18)___Educational Administration

(19)___Applied Psychology

(20)___Adult Education

(21)___History & Philosophy

(22)___Computer Applications/Measurement & Evaluation

(23)___Curriculum/Modern Language Centre

(24)___Educational Planning

(25)___Special Education

(26)___Sociology in Education

(27)___Graduate Studies

(28)___Field Development

(29)___Other:_____

78. Is the organization located in

36-37

   (01)___District or District Municipality     (06)___Hamilton

   (02)___County or Regional Municipality     (07)___Windsor

   (03)___Metro Toronto     (08)___Sudbury

   (04)___Ottawa     (09)___Canada (outside Ontario)

   (05)___London     (10)___Outside Canada

38,39

79. Is the organization located in the Northeastern Region (Region 3) of the Province of Ontario?

   (1)___Yes    (2)___No

80. What is the community the organization serves?

   (1)___Mostly rural

   (2)___Equally rural and urban

   (3)___Mostly urban

81.  Who designed the search request?
     (1)___Search Analyst
     (2)___OISE Field Centre EIC
     (3)___Faculty of Education EIC
     (4)___Ministry of Education EIC
     (5)___CAAT EIC
     (6)___Not sure
     (7)___Other:_____

40

41   82.  Sex    (1)___Male    (2)___Female

APPENDIX-D

INTERVIEW SCHEDULE

Interview Schedule
(Revised 1977 09 19)

The interviews with EISO clients have two primary purposes:

1. to verify questionnaire data;

2. to probe more deeply than the questionnaires into:

   a) satisfaction of clients,

   b) utilization of information retrieved through EISO,

   c) effects of EISO use on:

      i) second users of the information

      ii) recommendations to others re use of service.

PART I: VERIFICATION OF QUESTIONNAIRE ITEMS

   Interviewer : Tape following information first.

1. Search number and topic. (For multiple searches, refer to last search).

   Name:_____ Number_____

   Topic:_____

2. Address and phone:

   Address:_____

   _____

   Postal Code:_____ Phone: Bus._____ Res._____

3. Type of Organization with which primarily associated:

   _____

4. Role in which search requested:_____

   _____

5. Could you tell me about the context for placing the search; e.g., the circumstances that prompted it.

1. Satisfaction (old items 45, 46; new items 38, 39, 29, 30).

   a) On the evaluation questionnaire you reported a (low/medium/
      high) level of satisfaction with the value of the bibliography
      itself.   Could you expand on this, explaining why you felt
      this way?

      Sample probes:   Was the format satisfactory?   Did you under-
      stand it?   Were the citations relevant?   Be specific--if not,
      why not?   Did the search analyst understand the question
      properly?   If not:   evidence?   Wrong terms used?   Did you
      contact her again to let her know?

   b) You reported a (high/medium/low) level of satisfaction with
      the materials located via the bibliography.   Could you explain
      how you came to this conclusion?

      Sample probes:   What did you do about getting the materials--
      order them from EISO or go to the library?   How much did you
      read?   What did you judge them against (e.g. books, previous
      knowledge)?

   c) What suggestions do you have that might improve the quality
      of EISO services and product?

      Sample probes:   More information on certain topics; books;
      curriculum guides; Canadian materials; etc.

2. Utilization of information retrieved (old item 32; new 28).

   a) Did you use the bibliography?   If so, how?   What was the final
      result (research report; new program; whatever)?   Is a copy
      available (that we can have)?   What contribution did the EISO
      search make to the overall project?   to the "background research"
      phase?

   b) Did you encounter any problems in using it?   If so, what kind
      were they?   Did they relate to the service or to local
      circumstances?   What would have helped you resolve this problem?

   c) What became of the bibliography?   Is it in your files?

   d) Have you used the bibliography again for another purpose (e.g.
      class materials)?   If so, is there a "product" available?
      Can we get a copy?

3. Secondary Uses.

   a) Did you pass on the bibliography, or a copy of it, to anyone
      else?   Who?   (Be specific--so we can contact them.)   Why?
      Did they give any feedback on it?

b) Did you recommend use of the EISO service to any colleagues?
(old item 50; new 21.) Who? Why? Did they give any feedback
on it later?

c) Can you think of any other "secondary" effects of your use
of EISO, or of the bibliography? For example, did you pass
on copies of articles, etc.?

PART III: QUESTIONS RAISED IN REVIEW OF QUESTIONNAIRE — ESPECIALLY
FOLLOW-UP OF COMMENTS (Type or write these in first.)

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

CLOSING:

Thank you very much for your time and interest. I can assure you that
all the information is confidential; your name and position will not
appear in any report. Finally, I'd like to leave with you a copy of
the guide to EISO, Search Analyst's card, and several copies of our
brochure.

161

APPENDIX E

A BRIEF GUIDE TO DIALOG SEARCHING: CONTENTS

# A BRIEF GUIDE TO DIALOG* SEARCHING

LOCKHEED INFORMATION SYSTEMS
Palo Alto, California

September 1976

*Trademark Reg. U.S. Pat. & Trademark Office

# Table of Contents

165

130

# LOCKHEED DIALOG® RETRIEVAL SERVICE
## PSYCHOLOGICAL ABSTRACTS

## FILE DESCRIPTION

PSYCHOLOGICAL ABSTRACTS covers the world's literature in psychology and related disciplines in the behavioral sciences. Over 900 periodicals and 1500 books, technical reports, and monographs are scanned each year to provide coverage of original research, reviews, discussions, theory, conference reports, panel discussions, case studies, and descriptions of apparatus.

## SUBJECT COVERAGE

The following general fields are covered:

- Applied Psychology
- Cognitive Processes
- Communication and Language
- Cultural and Social Influences and Behavior
- Developmental Psychology
- Educational Psychology
- Neurology and Physiology

- Perceptual and Motor Performance
- Personality
- Professionals in Psychology
- Psychometrics in Psychology
- Treatment and Prevention
- Physical and Psychological Disorders
- Animal Psychology

## SOURCES

Each year the APA staff examines approximately 2,400 primary sources, both domestic and foreign, including the following:

- Periodicals
- Technical Reports
- Monographs
- Books

## DIALOG FILE DATA

Inclusive Dates:                1967 to the present
Update Frequency:               Monthly (approximately 2,000 records each month)
File Size:                      240,000 citations, as of September 1976

## ORIGIN

PSYCHOLOGICAL ABSTRACTS is produced by:

American Psychological Association          Telephone:
1200 Seventeenth Street, N.W.
Washington, D.C. 20036                          202/833-7600

69

# PSYCHOLOGICAL ABSTRACTS
## DIALOG® FILE 11

## SAMPLE RECORD

JA=
YR=

DOC YEAR: 1976 VOL NO: 55 ABSTRACT NO: 10895
Modification of aggressive behavior in two kindergarten children. — /TI
AU= Busser, R.; Flosdorf, P.; Limbourg, Maria
U Tubingen, Psychologisches Inst, W Germany — /CS
JN= Psychologie in Erziehung und Unterricht   1974 Vol 21(4) 249-253
Selected 2 aggressive boys from 33 kindergartners and rated their
aggressiveness for 6 hrs on 11 days. For the next 11 days
aggressiveness was followed by a removal from the room, the length of
absence chosen by the child after the reasons for the isolation had
been explained. After 12 wks of no treatment, both boys were observed  /AB
for another 11 days. The less aggressive boy had abandoned his
strongly aggressive behaviors, the other one had resumed them, though
not at their previous high level.
CA= LANGUAGE- Germ   CLASSIFICATION- 35
CL= SUBJECT TERMS- AGGRESSIVE BEHAVIOR, CLASSROOM BEHAVIOR MODIFICATION, — /DE
KINDERGARTEN STUDENTS; 01390, 09410, 27370
SC= INDEX PHRASE- length of removal from classroom following — /ID
aggressiveness, aggressive behavior, kindergarten males

## RETRIEVAL METHODS

| SUBJECT OR TEXT SEARCHING | | |
|---|---|---|
| SUFFIX | FIELD NAME | EXAMPLES |
| None | Basic Index (Title, Descriptor, Identifier, Corporate Source, Abstract) | E AGGRESSIVE        S CHILD? <br> S AGGRESSIVE(C)BEHAVIOR(W)MODIFICATION <br> S TUBINGEN(F)GERMANY |
| /TI | Title | S KINDERGARTEN(W)CHILDREN/TI |
| /DE | Descriptor | S CLASSROOM(W)BEHAVIOR/DE |
| /ID | Identifier | S CLASSROOM(F)REMOVAL/ID |
| /CS | Corporate Source | S PSYCHOLOGISCHES(W)INST/CS |
| /AB | Abstract | S ISOLATION(F)TREATMENT/AB |

| CODE SEARCHING | | |
|---|---|---|
| PREFIX | FIELD NAME | EXAMPLES |
| AU= | Author | EXPAND AU=Flosdorf    SELECT AU=Busser, R. |
| CL= | Classification Code | EXPAND CL=30            SELECT CL=35 |
| CO= | CODEN[1] | EXPAND CO=PSY           SELECT CO=PSYC-A |
| JA= | Journal Announcement | EXPAND JA=5500          SELECT JA=5505 |
| JN= | Journal Name | EXPAND JN=PSYCHO-  SELECT JN=PSYCHOLOGIE <br> LOGIE ERZIEHUNG _      UND UNTERRICHT |
| LA= | Language | EXPAND LA=FRGN         SELECT LA=GERM |
| SC= | Subject Code | EXPAND SC=013            SELECT SC=01390 |
| YR= | Year of Publication in PSYCH ABS | EXPAND YR=70            SELECT YR=76 |
| UD= | Update | EXPAND UD=7600         SELECT UD=7605 |

[1]CODEN is expandable & selectable but is not displayed when citation is printed.

The LIMIT command is not applicable in File 11.

## FORMATS AVAILABLE

| | |
|---|---|
| Format 1 | DIALOG Accession Numbers |
| Format 2 | PA Record without Abstract |
| Format 4 | PA Citation and Abstract |
| Format 5 | Complete Record |
| Format 6 | PA Citation Number and Title |
| Format 7 | PA Citation Number, Author, Title, Source Document Citation, and Abstract |

## SORTABILITY

Search results can be rearranged for offline printing by using the sorting capability in conjunction
with the offline PRINT command. Sortable fields are Author and Title. Ascending order (A-Z)
will be used unless descending (Z-A) is specified.

EXAMPLES: PRINT 4/5/1-94/AU/TI
PRINT 7/2/1-20/AU,D/TI,D

APPENDIX F

ORBIT USER MANUAL: CONTENTS

# Infomart SEARCH SERVICE

# ORBIT® USER MANUAL

## APRIL 1975

## TABLE OF CONTENTS

170

196

197

# SDC SEARCH SERVICE

# ORBIT° USER MANUAL

## for

# INFOMART/CBPI

## (Canadian Business Periodicals Index)

## NOVEMBER 1977

# Infomart

# TABLE OF CONTENTS

ERIC

APPENDIX G
ORDER FORMS

**EISO**

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto  M5S 1V6
(416) 923-6641 ext. 487

# Order Form for
# Microfiche Copies
# of Documents

**SHIP TO:**

Name_____

Address_____

_____

_____

Phone (    )_____

Date_____

Search No._____

**Instructions**

1. Enter ED numbers in columns below

2. Complete address section at bottom left (search number is given at top right corner of pink copy of Search Request Form and also on first page of the printout of your bibliography)

3. Retain 3rd (pink) copy of Order Form for your records

4. Mail remaining copies to EISO

5. When we reply stating cost of order, send cheque or money order payable to EISO. The microfiche copies will then be sent to you.

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1) EISO

202

# Order Form for Paper Copy of ERIC Documents
## ED 000 001-
## ED 065 734
## from EDRS

ERIC Document Reproduction Service
P.O. Box 190, Arlington, VA 22210
Phone (703) 841-1212

SHIP TO:

Name

Address

Phone (   )

SEND VIA:

☐ Parcel Post    ☐ Air Mail

Date

Enclose payment in U.S. funds
payable through U.S. bank or
clearing house (e.g., bank draft)

| ED Number | No. of Pages | Cost (office use only) |
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1) EDRS

**EISO**

Educational Information
System for Ontario
OISE Library, S218
252 Bloor Street West
Toronto  M5S 1V6
(416) 923-6641 ext. 487

# Order Form for Paper Copy of ERIC Documents ED 065 735 and over from EISO

## 1

For each document desired, enter ED number and number of pages in first two columns on following page. Leave third column blank.

## 2

Complete address section of form (search number is given at top right corner of search request form and also on first page of printout).

## 3

Retain 5th (pink) copy of form for your records.

## 4

Mail remaining copies to EISO.

## 5

When you receive documents and invoice, send cheque or money order to EISO.

**Instructions**

**EISO**

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto M5S 1V6
(416) 923-6641 ext. 487

# Order Form for Paper Copy of ERIC Documents
## ED 065 735 and over from EISO

SHIP TO:

Name

Address

Phone (    )

SEND VIA:

☐ Parcel Post
☐ First Class Mail
☐ Delivery Service

| ED Number | No. of Pages | Cost (office use only) |
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EISO Search No.

Order No.

(office use only)

205

1) Requestor Invoice

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EISO

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto  M5S 1V6
(416) 923-6641 ext. 487

# Order Form for Photocopies of Journal Articles

# 1

For each article desired, enter journal information on the grid on the following page. Samples below show where information required is listed on the printout of your bibliography and how it should be listed on the order form.

## Sample Printout item:

EJ137100   TM502226
   Creativity and Body Image Boundaries
   Loshak, Lee J.; Reznikoff, Marvin      Journal of Personality
Assessment; 40; 1; 81-90     Feb 76
   Descriptors:     *Creativity/     *Body   Image/    *Individual
Characteristics/     *Creativity   Tests/   Higher Education/   Males/
College Students
   Studies creativity as it relates to body image, and examines
the communality of several creativity measures.  (RC)

## Sample Order Form line:

| Journal Name | Vol. No. | Issue No. | Page(s) | Date |
|---|---|---|---|---|
| Journal of Personality Assessment | 40 | 1 | 81-90 | Feb 76 |
|  |  |  |  |  |

SAMPLE

# 2

Complete address section of form on the following page (search number if given at top right corner of pink copy of Search Request Form and also on the first page of the printout of your bibliography).

# 3

Retain 3rd (pink) copy of Order Form for your records.

# 4

Mail remaining copies to EISO.

# 5

When we reply stating cost of order, send cheque or money order payable to EISO. The photocopies will then be sent to you.

# Instructions

EISO
EISO
EISO
EISO
EISO

Educational Information
System for Ontario
OISE Library, S 218
252 Bloor Street West
Toronto  M5S 1V6
(416) 923-6641 ext. 487

# Order Form for
# Photocopies of
# Journal Articles

SHIP TO:

Name_____

Address_____

_____

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_____

Phone (    )_____

Date_____

Search No._____

| Journal Name | Vol. No. | Issue No. | Page(s) | Date |
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1) EISO

APPENDIX H
EISO BROCHURE

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**New Services
New Prices**

EISO

**Educational
Information
System
for Ontario**

EISO

# Educational Information System for Ontario

**Have you heard about EISO?**

Chances are you face problems now where additional information would be of help. If so, the Educational Information System for Ontario (EISO) project is ready to assist by locating and duplicating materials contained in the collection of the Educational Resources Information Center (ERIC), and other data bases of interest to educators.

**What is ERIC?**

ERIC is an information gathering and disseminating network comprised of 16 subject-specialised clearing-houses operating under the auspices of the U.S. National Institute for Education. The clearinghouses collect, index and abstract research reports, conference papers, curriculum materials and handbooks, including many from Canadian sources, and announce them monthly in *Resources in Education (RIE)*. They also index more than 700 journals, including 26 from Canada, for the *Current Index to Journals in Education (CIJE)*. In all, the ERIC data base includes over 200,000 references, to which almost 2,500 new references are added each month.

**How can EISO help?**

By searching the ERIC data base for information on a particular problem or area of interest, you can learn how others have approached the issue. EISO provides direct access to ERIC, retrieving references quickly and inexpensively. Computerized searches of Dissertation Abstracts, Exceptional Child Education Abstracts, Psychological Abstracts, Social Sciences Citation Index and Sociological Abstracts are also available. The service will be of particular help to those working under the pressure of deadlines. For public addresses and research reports EISO will prove helpful; for planning and decision-making it may prove indispensable.

**How does EISO work?**

A search request is submitted to the search analyst, a specially trained reference librarian in the OISE Library, who rewords the content to conform to a list of subject headings designed for computer scanning of the data base. Via a computer terminal, the search analyst queries the data base. When combinations of subject headings are entered (e.g. remedial reading AND teacher aides), the number of relevant citations and sample citations are printed on-line. If the citations are appropriate, the complete set of references and abstracts are printed off-line and mailed to the requestor.

**How long does a search take?**

The computer search itself normally takes fifteen minutes, but follows a half-hour's discussion with the search analyst whenever possible. The bibliography usually arrives within ten working days of receipt of a search request.

**How much does a search cost?**

Depending on the complexity of the topic and length of bibliography, a search can cost as little as $10 or as much as $100. Clients are charged $12 per hour for the search analyst's time (to the nearest quarter hour), for computer connect time, and for citations printed. Costs for connect time and citations vary with the data base and computer system used. Contact the EISO search analyst for current rates, and an estimate of the cost for searching your topic.

**How do I obtain documents and articles?**

EISO provides microfiche copies of all ERIC documents at a charge of 50¢ per fiche, and paper copies of those with ED numbers greater than ED 065 734 at a charge of 6¢ per page. Paper copies of documents with numbers between ED 000 001 and ED 065 734 inclusive are available from ERIC Document Reproduction Service (EDRS) in the United States. Paper copies of journal articles are available from EISO at a charge of 20¢ per page. Order forms for both documents and articles will be sent to clients with the EISO bibliography.

**How do I request a search?**

Write a letter describing the information you need and mail it to the address below; phone the search analyst at (416) 923-6641 ext. 487; or make an appointment with the search analyst at the EISO Search Service Office located in the OISE Library on the second floor of the OISE building.

**Current awareness service**

If you need regular updates on your search topic, ask the search analyst about EISO's new current awareness service. Charges will vary with the complexity of your search profile.

**How can clients assist EISO?**

Besides providing a useful service, EISO is also a research project looking into the information needs of Ontario's educators. It will be greatly appreciated if clients complete evaluation questionnaires or agree to be interviewed, if asked to do so.

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6

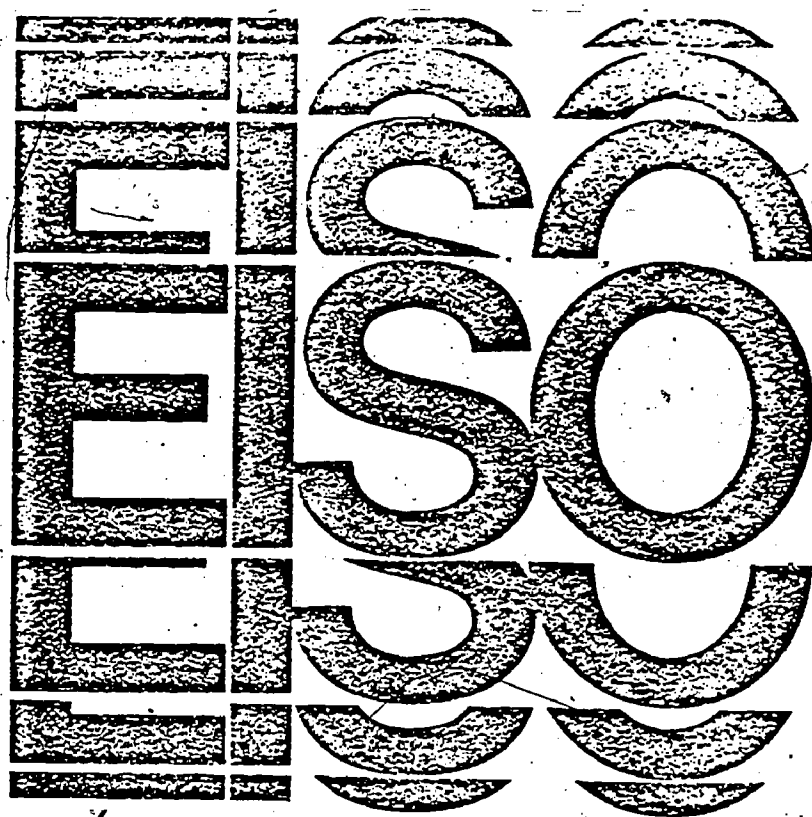APPENDIX I

EISO POSTER AND FLYER

# Time is money, the saying goes.

Consider, for instance, the time it takes to search through indexes like *Resources in Education* or *Psychological Abstracts* for all the references about the topic you are working on.

A computer can do that searching in less than one-tenth of the time it would take you to do it manually.

Is the 90% time saving worth $30 to you or to the organization sponsoring your work? If it is, contact:

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
Phone: (416) 923-6641 Ext. 487

*The Use of Teacher Aides in Remedial Reading Partial Printout*

| | Journal Reference |
| --- | --- |
| ERIC ACCESSION NUMBER | EJ90471 |
| CLEARINGHOUSE ACC. NO. | AA547272 |
| AUTHOR | TIMMONS, JUDITH |
| TITLE | USING PARAPROFESSIONALS IN THE ELEMENTARY SCHOOL READING PROGRAM |
| PUBLICATION DATE | DEC 73 |
| SOURCE | KAPPA DELTA PI RECORD 10 2 5F |
| DESCRIPTORS | *ELEMENTARY SCHOOLS |
| DESCRIPTORS | *PARAPROFESSIONAL SCHOOL PERSONNEL |
| DESCRIPTORS | *TEACHER AIDES |
| DESCRIPTORS | *READING PROGRAMS |
| DESCRIPTORS | *PERSONNEL SELECTION |
| DESCRIPTORS | INDIVIDUALIZED PROGRAMS |
| DESCRIPTORS | REMEDIAL READING PROGRAMS |

| | Document Reference |
| --- | --- |
| ERIC ACCESSION NUMBER | ED037579 |
| CLEARINGHOUSE ACC. NO. | EC005441 |
| TITLE | PROJECT FOR PREPARING TEACHER AIDES TO FACILITATE A TUTORIAL READING PROGRAM WITH EMPHASIS ON PERCEPTUAL TRAINING FOR PRIMARY SCHOOL AGE CHILDREN OF LOW SOCIOECONOMIC STATUS. FINAL REPORT |
| PUBLICATION DATE | FEB 73 |
| ISSUE | RIEFDAUG |
| INSTITUTIONAL NAME | VIGO COUNTY SCHOOL CORP., TERRE HAUTE, IND. |
| EDRS PRICE | EDRS PRICE MF $0.65 HC $3.29 |
| DESCRIPTIVE NOTE | 23P. |
| DESCRIPTORS | *DISADVANTAGED YOUTH |
| DESCRIPTORS | *EXCEPTIONAL CHILD EDUCATION |
| DESCRIPTORS | PERCEPTUAL MOTOR LEARNING |
| DESCRIPTORS | PRIMARY EDUCATION |
| DESCRIPTORS | PROGRAM GUIDES |
| DESCRIPTORS | *REMEDIAL READING PROGRAMS |
| DESCRIPTORS | *TEACHER AIDES |
| DESCRIPTORS | *TUTORIAL PROGRAMS |
| ABSTRACT | DESCRIBED IS A TRAINING PROGRAM TO PREPARE TEACHER AIDES TO TUTOR IN A REMEDIAL READING PROGRAM FOR CHILDREN OF LOW SOCIOECONOMIC STATUS. INSTRUCTION EMPHASIZED EARLY CHILDHOOD GROWTH AND DEVELOPMENT, VISUAL MOTOR PERCEPTION TRAINING, LANGUAGE AND AUDITORY DEVELOPMENT, AND EMOTIONAL AND SOCIAL DEVELOPMENT. TRAINEE SELECTION, THE TRAINING PROGRAM, ITS USE IN THE REGULAR SCHOOL PROGRAM, AN EVALUATION OF THE PROJECT, AND RECOMMENDATIONS ARE DISCUSSED. THE COURSE CURRICULUM, WITH SUGGESTED TEACHING TECHNIQUES, MATERIALS, AND APPROACHES TO CLASSROOM MANAGEMENT, IS INCLUDED. (JM) |

APPENDIX J

BIBLIOGRAPHY COVER
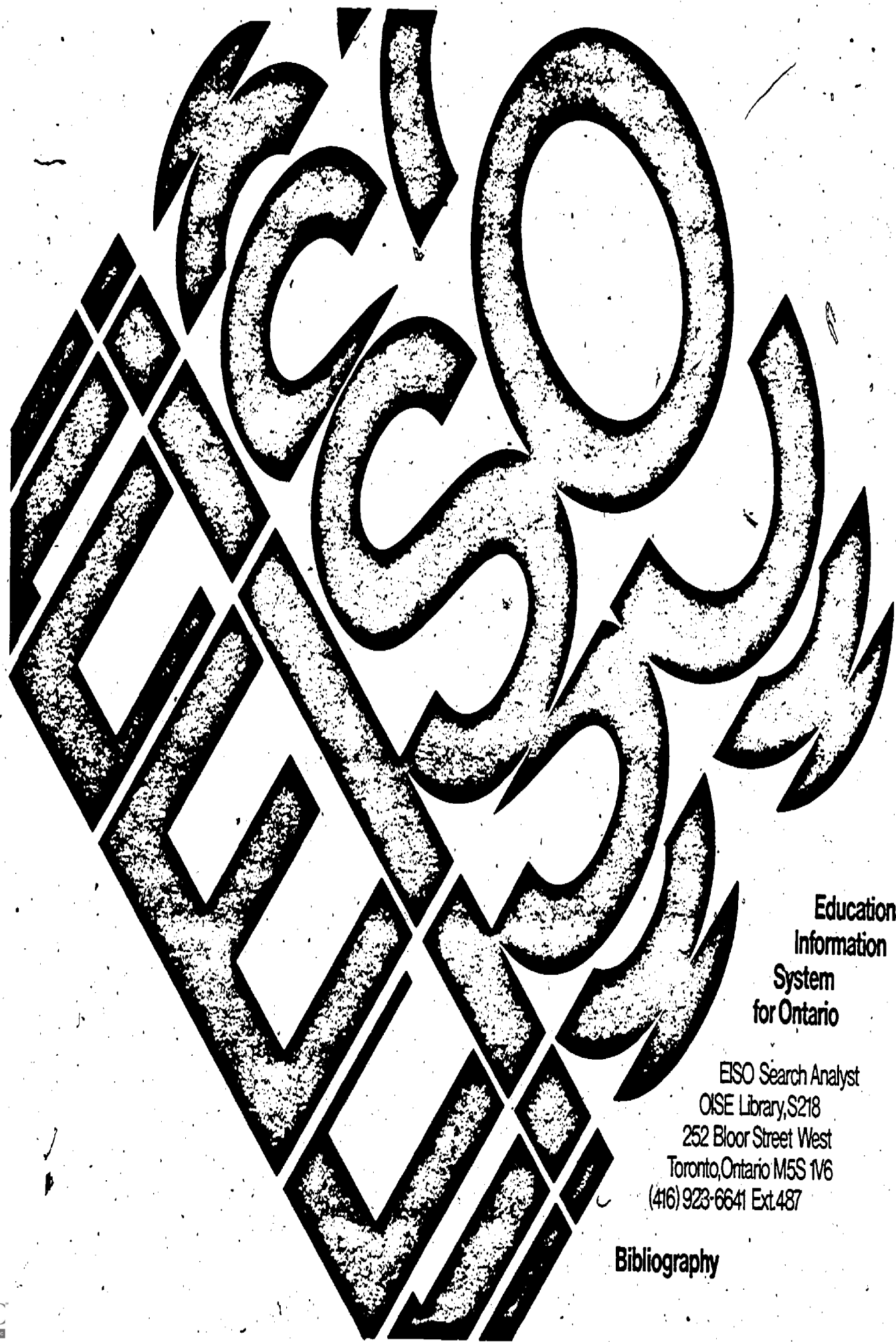
EISO

Educational
Information
System
for Ontario

EISO Search Analyst
OISE Library, S218
252 Bloor Street West
Toronto, Ontario M5S 1V6
(416) 923-6641 Ext. 487

Bibliography

216

217

APPENDIX K

EISO SEARCH REQUEST FORM 2

# EDUCATIONAL INFORMATION SYSTEM FOR ONTARIO

The Ontario Institute for Studies in Education
Room S218, 252 Bloor St. W., Toronto M5S 1V6
(416) 923-6641 Ext. 487

Search No. _____

Topic: _____

## SEARCH REQUEST FORM

1. Name _____

   Invoice: (   ) Same, or
   _____

2. Address _____
   _____
   _____
   _____

   Phone(s) ( _____ ) _____

   Phone ( _____ ) _____

   ( _____ ) _____

3. ☐ Phone when printout arrives

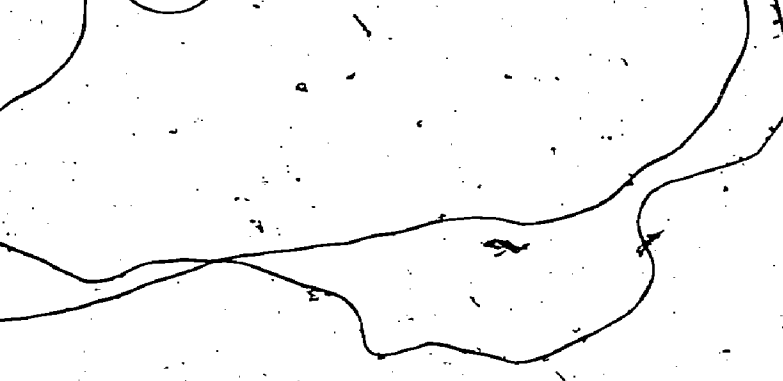   ☐ Mail printout without phoning

4. Detailed description of topic

5. Reasons for requesting search (Please specify how you hope to use the information)

6. Citations of relevant materials known to you, if any, or authors writing in the area

   _____
   _____

7. Data Base(s):  ☐ ERIC            ☐ Psych. Abs.        ☐ SSCI            ☐ ECEA

   ☐ Diss. Abs.        ☐ ERIC + PA        ☐ ERIC + ECEA        ☐ ECEA + PA

   ☐ Other: _____

8. Comments:

APPENDIX L

EISO SERVICE EVALUATION DATA SHEET 2

Search No. ⌞⌞⌞⌞⌞⌞⌞⌞

Topic: _____

1. Date (day, month, year): ⌞⌞⌞ ⌞⌞⌞ ⌞⌞⌞

2. Purpose:

   (01)___Keep abreast of field        (07)___Research/development report
   (02)___Assignment, term paper, thesis    (08)___Browsing
   (03)___Prep., update of biblio.       (09)___Personnel recruit, eval., sup.
   (04)___Curriculum development      (10)___Policy development
   (05)___Program improvement       (11)___Other:_____
   (06)___Prep. speech, article, report

3. Contact: (1)___Walk-in    (2)___Phone    (3)___Letter    (4)___Other:_____

4. Payment: (1)___Free    (2)___Cash, cheque, invoice    (3)___OISE chargeback

5. Interview, strategy time ⌞⌞⌞⌞ min.

6. Requester's organization:

   (1)___School board         (4)___OISE
   (2)___CAAT             (5)___Ministry of Education
   (3)___Faculty of Education     (6)___Other:_____

7. Please indicate your primary professional role or function.
   (Check one only)

   (01)___Administration or supervision    (08)___Private Consultant
   (02)___Teaching              (09)___Undergraduate Student
   (03)___Pupil Personnel Services     (10)___M.Ed. Student
   (04)___Research            (11)___Ed.D. Student
   (05)___Field Development       (12)___M.A. Student
   (06)___Ministry Regional Office     (13)___Ph.D. Student
   (07)___Library Services        (14)___Other:_____

8. Organization location:

   (1)___Metro Toronto
   (2)___Hamilton, London, Ottawa, Windsor, Sudbury
   (3)___District or District Municipality, County or Regional Municipality
   (4)___Canada (outside Ontario)
   (5)___Outside Canada

9. Sex: (1)___Male     (2)___Female

221

APPENDIX M

EISO USER EVALUATION QUESTIONNAIRE 2

**EISO**
Educational Information System for Ontario
OISE Library, S2J8
252 Bloor Street West
Toronto, Ontario M5S 1V6

# EISO User Evaluation Questionnaire

The data collected from the user evaluation questionnaire will be used to improve the search service, and will be treated in a confidential manner.

Please read each question carefully and indicate your response with a check mark: ✓. Leave blank if the item is not applicable.

|  | Satisfaction | | |
|---|---|---|---|
|  | Low | Medium | High |

1. Convenience of arrangements to obtain EISO searches.

2. Helpfulness of search analyst or Educational Information Consultant.

3. Time taken to deliver the EISO bibliography.

4. Time taken to deliver microfiche or paper copies ordered from EISO.

5. Value of bibliography itself.

6. Value of materials located via EISO bibliography.

7. Price of the search and bibliography.
(1)      (2)      (3)

8. How much of the relevant information retrieved was new to you?

(1) _____0%     (2) _____1-20%     (3) _____21-50%     (4) _____more than 50%

9. For how many of the references on your printout did you read the original material?

(1) _____None     (2) _____1-5     (3) _____6-10     (4) _____11-20     (5) _____21 or more

10. How did you first learn about the Educational Information System for Ontario (EISO) and its services? (Check one only.)

(1) _____Brochure or flyer          (6) _____Library or Librarian
(2) _____Advertisement              (7) _____EISO staff member
(3) _____Prof. Dev. Day             (8) _____Cannot recall
(4) _____Colleagues                 (9) _____Other: _____

11. On the reverse side, please comment on both the good and bad elements of your EISO search. Any suggestions you make towards improving the service are welcome.

THANK YOU FOR YOUR TIME AND COOPERATION