

THE DEVELOPMENT OF PROCEDURES TO ANALYSE THE RELATIONSHIPS AMONG
SEARCH INTERVIEW TECHNIQUES, INFORMATION GAIN, AND
CLIENT SATISFACTION WITH ONLINE BIBLIOGRAPHIC RETRIEVAL SERVICES

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ABSTRACT

A series of controlled experiments were undertaken to determine the relationships among the interview techniques of the search analyst, the knowledge gain of the client, and the client's satisfaction. Techniques investigated included "open" vs. "closed" questions, and the use of pauses of different lengths. This paper details the analytical techniques developed to examine the relationships.

DEVELOPPEMENT DE PROCEDES POUR ANALYSER LES RELATIONS ENTRE
DES TECHNIQUES D'ENTREVUES, DE GAIN D'INFORMATION ET DE
SATISFACTION DE LA CLIENTELE EN CE QUI CONCERNE
LES SERVICES BIBLIOGRAPHIQUES DE RECOUVREMENT D'INFORMATION
DANS LE MODE CONVERSATIONNEL

RESUME

Etablir un rapport entre la satisfaction de l'utilisateur et le comportement de l'analyste en recherche a été un défi majeur pour

les chercheurs relativement au recouvrement d'informations bibliographiques dans le mode conversationnel. La présente communication décrit les méthodes développées durant une étude de deux ans subventionnée par le Conseil de recherche du Canada en Sciences sociales et humaines. Les méthodes utilisées pour analyser les entrevues enregistrées, les produits de la recherche et les données sur l'utilisateur seront décrites.

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Ethel Auster, Stephen B. Lawton and A. Blaine Currie

INTRODUCTION

The purpose of our research was to undertake a systematic investigation into the relationships among:

- the techniques used by search analysts during preliminary interviews with clients before engaging in the online retrieval of bibliographic citations;
- the amount of new information gained by the client as a result of the search; and
- the client's ultimate satisfaction with the quality of items retrieved.

In this paper we present a detailed discussion of our research methodologies, with major attention given to the clarification of research questions initially posed, and the research design implemented in order to provide answers to those questions. Research techniques, data collection instruments, and statistical analyses employed will all be examined in the following pages, in order to provide a comprehensive overview of the research that was undertaken. We begin with a discussion of the research questions initially posed for the study.

RESEARCH QUESTIONS

In order to gain insight into the relationships among the three factors discussed above -- the knowledge of the client, the

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interview techniques of the search analyst, and the client's satisfaction with the bibliography and materials -- we felt it was necessary to formulate specific questions that could be applied to a series of controlled experimental sessions involving the search analyst and the client. Two key research questions were finally posed for this purpose. They are as follows:

- What are the relationships between various interview techniques employed by the search analyst and the amount of information gained by the client?
- What is the relationship between the amount of information gained by the client, the value he/she places on this information, and his/her satisfaction with the bibliography and materials?

The first question required that we make four assumptions, which were to be validated during the study. These assumptions are as follows:

- that the client's responses to questions are related to the type of questions asked;
- that the search strategy developed by the analyst is closely related to these responses;
- that the citations retrieved are closely related to the particular search strategy used; and
- that the information gained by the client is related to the content of the citations retrieved.

We believed that these assumptions were reasonable based on the findings of Auster and Lawton (1979), and Richardson (1965), which provided considerable evidence that interview technique does affect the validity of the response.

The second question carries one implicit assumption; namely, that the client's gain in information is proportional to the reduction in his/her uncertainty. With this assumption, and the analysis of the value of information provided earlier, we inferred that if high value is placed on a small information gain, then the client must have been near the break-even point.

Believing this analysis to be correct, we hypothesized that satisfaction with bibliographic materials retrieved would be positively related to both the value and amount of information gained, with value being more important than amount. This suggested the rank-ordering of satisfaction scores as shown in Figure 1.

Figure 1 -- Hypothesized rank ordering of satisfaction scores in relation to the value and gain in information.

		Gain	
		High	Low
Value	High	1	2
	Low	3	4

PROCEDURES

In order to determine the relationship between the interview techniques utilized by a search analyst and the client's level of satisfaction with the quality of references retrieved, we decided to undertake a series of controlled experiments in which specific interview techniques would be used, and their effects analyzed. Because of the difficulty of trying to employ several techniques in the same interview, it was decided that the search analysts should only experiment with one technique at a time. Specific techniques to be investigated included "open" vs "closed" questions, and the use of pauses of different lengths to stimulate the client to talk. Open questions refer to those open-ended questions which require more than a few words for an adequate response, whereas closed questions can be adequately answered in a few words (identification of person, place, number, etc., or a yes-no response). Pauses refer to those periods during which the interviewer waits without speaking for the client to begin speaking or to continue speaking.

According to the literature, open questions were expected to stimulate responses which had greater breadth and depth than those for closed questions. It was believed that these extensive responses to the open questions would tend to provide a more valid map of the client's problem area than would responses to the closed (identification, selection, yes-no) questions. Also, in other research it was found that the use of pauses in the interview tended to have an important effect on the client's participation in the interview process, with moderate pauses (under 10 seconds) stimulating deeper participation by the client, and no pause (under 1 second) inhibiting greater participation (Richardson, 1965, p. 204). We expected the same results in the research being reported here.

As a control for each of the experiments, a series of 15 "naive" interviews were to be conducted by each analyst before they were trained in the four interview techniques (i.e., open question, closed question, short pause, and long pause). Fifteen interviews were then to be carried out for each of the two levels of the open/closed and short pause/long pause variables. Hence, a total of

75 interviews were planned for each of the two search analysts participating in the study making a total sample size of 150 interviews.

The order in which the interviews of each of the four types were done was chosen in a random fashion so as to ensure that any systematic trends that might develop were removed from the treatment effects. The naive control interviews were conducted prior to any training or exposure to the four experimental techniques, since it was believed that any such training would likely alter the search analyst's behaviour.

Clients were screened so that only those seeking retrospective subject-matter searches were included. Any given client was included only once in the study. It was expected that other client traits (experienced or inexperienced; student or professional, etc.) would be randomly distributed among the sample. We recognize that these traits may in fact not be randomly distributed, but there is no practical mechanism for controlling these variables experimentally.

All search interviews were recorded on audio tape for later analysis to validate assumptions and to ensure that the proper experimental technique had been administered. Additional information was provided by the search analyst on a one-page questionnaire designed to record technical aspects of the search process, such as the purpose of the search, interview time, strategy time, systems used, data bases accessed, number of citations printed, and so forth (see Appendix A).

Follow-up telephone questionnaires were also administered after the client had received his/her computer printout of the bibliographic citations. If the person could not be contacted by telephone, a copy of the questionnaire was mailed to the address given by the client at the time of the search. These questionnaires were designed to determine the extent to which the client was satisfied with the search process, the usefulness of the citations received, the amount of knowledge gained from the search and the expertise of the client in the area before the search was conducted (see Appendix B).

The search analyst was also requested to submit a copy of the search strategy entered into the computer system in order to generate the desired list of citations. These four pieces of information,

- the audio tape of the search interview,
- the questionnaire filled out by the search analyst regarding the technical aspects of the search,

- a follow-up questionnaire completed by the client concerning his/her expertise in the subject area and the value and outcome of the search, and
- a copy of the actual search strategy employed, constituted the main sources of data with which we tested our two research questions.

Information contained in the questionnaires completed by the search analyst and client were coded and entered directly into the data file used in the statistical analyses. The taped interview and search strategy, however, required additional analysis before the necessary information could be entered into the data file. In the case of the taped interviews, you will recall, we were interested in determining whether the desired open question, closed question, short pause, and long pause experimental techniques had been successfully administered. To check this, the entire search interview conducted by the search analyst was "mapped out" on special sheets, which enabled us to record the entire format of the interview, including when a question was asked, whether the question was open or closed, when the client responded, the length of the pauses involved, and so forth. For more information on this "mapping" process, see the example given in Figure 2. (A sample of the coding sheet is included in Appendix C.)

The actual content of the search strategy developed by the analyst for online use was also required for the validation of assumption one, associated with the first research question. The nature of the decoding that was involved in the analyses of these search strategies is also explained in Figure 2.

Figure 2: Sample of Interview Transcript,
Search Strategy and Coding Procedures

The following excerpt is taken from one of the tape-recorded interviews, conducted by a search analyst as a part of this study. Here, we use the excerpt to demonstrate how we analyzed the taped conversation in order to provide data for the various phases of the study. This example, we hope, will clarify some of the questions that might arise in this paper. Each question and response is numbered (1 through 12) to make it easier to follow the analyses involved. The complete search strategy, incidentally, involved eight major concepts and 32 steps.

Tape 67

1. Analyst: Have you ever had a computerised search done before?
(0 seconds) (closed question)

2. Client: Yes.
(0 seconds) (no pause)

3. Analyst: So you know what you're going to get out of it; what you're going to get at the end?
(0 seconds) (closed question)

4. Client: Well, what I got before was a series of titles with some brief descriptions of content.
(1 second) (short pause)

5. Analyst: OK -- Would you please tell me a little bit about your topic?
(0 seconds) (open question)

6. Client: 1 2 3 4 5 6 7
OK -- The topic is the negotiation process
 8 9 10 11 12 13
between boards of education and teachers --
 14 15 16 17 18 19 20 21
the bargaining process -- and how the goals of
 22 23 24 25 26 27 28
the various groups fit into the general
 29 30 31 32 33 34 35
framework of what's negotiated. Do the goals
 36 37 38 39 40 41
affect what's negotiated -- and those are
 42 43 44 45
formal goals; stated goals.
(14 seconds) (long pause)

7. Analyst: OK. I've never done one (a search) on this, so this should be interesting -- OK, so should I also put the bargaining ...?
(2 seconds) (closed question)

8. Client: Yes, there's also the bargaining component. I mean teachers negotiate under the bargaining act -- they qualify to bargain with the board of education.
(1 second) (short pause)

9. Analyst: OK. In here (thesaurus) they have negotiation agreements and they have negotiation influences. Have you been through ERIC already?
(0 seconds) (closed question)

10. Client: Yes.
(0 seconds) (no pause)
11. Analyst: Oh good -- OK. What one's (descriptors)
did you find that were most beneficial?
(0 seconds) (open question)
12. Client: I'm not sure ...

The following diagram shows how we "mapped" each taped interview to determine the number of open and closed questions, and the number of short and long pauses. A map for an entire interview shows every question asked and every response given, in addition to the time (in seconds) between questions and responses.

	Analyst	Pause Time	Client	
	1. C	0		
S	2.	0	R	C= closed
T	3. C	0		O= open
A	4.	1	R	R= response
T	5. O	0		S= statement
E	6.	14	R	
M	7. S/C	2		
E	8.	1	R	
N	9. S/C	0		
T	10.	0	R	
	11. O	0		
	12.		R	

In validating assumption one, we required the total number of words, seconds and major concepts that were contained in responses to open and closed questions. Using the first open question in the excerpt as an example (i.e., No. 5), we found that there were 45 words, 20 seconds, and 4 major concepts (major concepts are underlined) in the response.

In assumption two, we were interested in determining whether the major terms and concepts used by the client in the description of the topic were actually employed by the search analyst in the search strategy. A close match between the two would provide validation for our assumption. To check on the match, we first listed all major terms and concepts used by the client in the taped interview, such as the three concepts underlined in the excerpt above. We then examined the online search strategy and again listed all major terms and concepts. A comparison of the lists provided the necessary base for comparison.

SEARCH STRATEGY EXCERPT:

1. Arbitration, Collective Bargaining, Contracts, Labor Demands
2. Board of Education
3. Secondary School Teachers, Teachers
4. Goals, Objectives
5. 2 and 4
6. 3 and 4
7. 1 and 5
8. 1 and 6
9. 7 or 8
10. Print 9

Terms Used by the
Client During the Interview

negotiation process
*boards of education
*teachers
*bargaining process
*goals

Terms Used by the
Search Analyst in the Strategy

arbitration
*collective bargaining
contracts
labor demands
*boards of education
secondary school teachers
*teachers
*goals
objectives

* common terms, used by both client and analyst.

For this second assumption, we also constructed a five-part scale designed to measure the complexity of the search strategy employed by the analyst online. The five items in the scale are listed below, along with the resulting figures derived from analysis of the sample search strategy. By adding the five items together, a total measure of search strategy complexity was calculated.

SEARCH STRATEGY COMPLEXITY:

1. Number of terms used = 9
(all terms are underlined in strategy)
2. Number of operations ("and" "or" and "and not") = 5
(all operations are circled)
3. Number of major concepts = 4
(e.g., search statements 1 to 5)
4. Number of steps in the strategy = 10
5. Number of data bases accessed = 1

Total score: 29

ANALYSIS OF RESEARCH QUESTION ONE

1. What are the relationships between various interview techniques employed by the search analyst and the amount of information gained by the client?

In question one, we attempted to look at the effects of four interview techniques -- open question, closed question, short pause, and long pause -- on the amount of information gained by the client. Statistical analysis consisted primarily of two-way analyses of variance with blocking on search analyst. In that way, variation in the dependent variable (e.g., information gain) due to differences between the two search analysts could be controlled for.

Since there were 30 subjects per cell for each of the levels of the experimental variable, it was felt that any appreciable effects of the experimental variables would be statistically significant at the 0.10 level. Statistically, the null hypothesis to be tested in each case was:

$$H_0: \mu_C = \mu_A = \mu_B$$

where $\bar{X}_C$ is the control group mean on given dependent variable, $\bar{X}_A$ is the group mean on the dependent variable for the first experimental condition (e.g., open question), and $\bar{X}_B$ is the group mean on the second experimental condition (e.g., closed question).

Before we began the analysis of our data we first checked to see how reliable our information gain scale was. This was accomplished by calculating a Hoyt estimate of reliability, using the computerized LERTAP program (Nelson, 1974). The reliability of the index formed by summing items 12 to 16 (with scoring for item 12 reversed) was 0.50. Scores ranged from 7 to 23 (of a possible 4 to 24); the standard error of measurement was 2.42 (see Appendix B).

As was indicated earlier, four assumptions associated with the first research question were also to be validated in the course of the study. In the following paragraphs these four assumptions will be re-stated along with a description of how we attempted to provide the necessary validation.

Assumption one stated that the client's responses to questions asked by the search analyst would be related to the type of question asked. As was indicated earlier, we expected longer, more complex responses to follow open questions and moderate pauses, but it was uncertain as to how strong this relationship might be. To validate this assumption, we decided first to randomly choose 25 open and 25 closed questions in 50 tapes randomly selected from all of the taped interviews conducted by each search analyst. This would result in "double randomization" of our sample questions; first by tape and second by question within tape. For each of these 100 questions (50 per analyst), we then proceeded to determine the number of words in the response to the given open or closed question, the number of seconds in the response, and the number of major concepts included in the response. Obviously, if responses having more words and concepts, and being of longer duration followed open, as opposed to closed, questions, then our assumption would be validated for type of question asked.

To test the same assumption for short and long pauses, we chose ten cases of long pause and ten cases of short pause from all searches carried out by the two search analysts, and again determined the numbers of words, seconds, and concepts in the response following the given pause interval. Here, we took the ten most extreme cases for each analyst; that is, the five cases with the shortest pauses and the five cases with the longest pauses. No randomization in selection was undertaken for pause responses, since we wanted to see how clients responded when pauses were of moderate length, or absent. Our assumption would be validated if the more complex responses followed moderate pauses.

The second assumption stated that the search strategy developed by the analyst would be closely related to the responses given by the client. In other words, it was expected that the search analyst

would employ concepts and phrases used by the client in the interview process in the actual search strategy being created for the online bibliographic retrieval service. To validate this assumption, we proceeded to carry out ten case studies (5 per analyst) in which we carefully examined the relationship between the vocabulary used by the client and the discrete terms and concepts employed by the analyst in the final search strategy. Five tapes were randomly selected from each analyst and all key terms and concepts used by the client in his/her description of the topic being searched were recorded.

The final version of the search strategy drawn up by the search analyst and used in the online search process was then examined, and all key terms and concepts were again recorded. By comparing the two lists of terms and concepts, we attempted to discover how closely the search strategy corresponded to the description of the search topic that was given by the client (see Figure 2 for more information).

For this second assumption, we also decided to relate the length of the entire interview to the complexity of the search strategy employed, with the belief that more complex search strategies would result from search interviews that required more discussion time of the part of the analyst and client. Complexity of search strategy was based on a five-part index consisting of the following items:

- the number of key terms used in the search strategy,
- the number of operations (e.g., "and" "or" and "not" employed to join the key terms together into concepts),
- the total number of major concepts included in the strategy,
- the total number of steps in the online search strategy, and
- the total number of data bases finally searched.

The rationale behind this index was a belief that more complex bibliographic searches consist of a larger number of terms and concepts that are searched on several different data bases. By correlating the length of time in the total interview with this five-part index, we hoped to uncover another possible source of validation for our second assumption. (More information on the validation of this assumption is provided in Figure 2.)

Assumption three stated that the citations retrieved would be closely related to the particular search strategy used. As a rule, one might expect more complex search strategies to produce bibliographies with higher percentages of hits. Since we could not control for the subject matter searched, and since only one search was conducted for any given request, we concluded that it was impossible to satisfactorily validate this item within the design of the present study.

Assumption four stated that the information gained by the client would be related to the content of the citations retrieved. This assumption was previously validated in an earlier study (Lawton, Auster and To, 1979). Here, clients were asked, "How much did you learn about your topic as a result of the search?"

- Nothing or very little,
- Some,
- A great deal

and "How much of the relevant information retrieved was new to you?"

- 0%
- 1 - 10%
- 10 - 20%
- 21-50%
- more than 50%"

These questions measure perceived information gain directly. The fact the path coefficient connecting response to the first of these two items to the client's reported "satisfaction with the value of the bibliography itself" and "the materials located via the bibliography" [coded (1) low, (2) medium, (3) high] was .67, provided construct validation for that item. The second item was highly intercorrelated with the first. While we considered trying to measure information gain from the bibliography directly, we judged such an approach to be impracticable. It would require developing a series of subject matter tests on different topics for administration before and after a search.

ANALYSIS OF RESEARCH QUESTION TWO

2. What is the relationship between the amount of information gained by the client, the value he/she places on this information, and his/her satisfaction with the bibliography and materials?

In question two, you may recall, we hypothesized that satisfaction with bibliographic materials would be positively related to both the value and amount of information gained, with value being more important than amount.

The first step in the analysis of data was to determine the reliability of the various scales. In several cases, on the basis of item analysis, items included in the questionnaire were omitted

from the scale used to analyse the data in order to improve scale reliability.

The various scales and their characteristics are as follows:

Value of information sought: items 25-32
on User Response form (App. B).

Reliability	.69	Standard Error	2.06
Maximum possible	30	Observed	24
Minimum possible	6	Observed	6

Satisfaction with products of search: items 18, 20, 21, 22, 23 on User Response form.

Reliability	.86	Standard Error	1.30
Maximum possible	25	Observed	25
Minimum possible	5	Observed	8

Having validated the scales, the next step is to carry out the analysis of data. It is planned to answer question two by using multiple linear regression with either continuous or dichotomous measurement of key variables. Figure 1 suggests the use of dichotomous variables, one for each of the four cells, so that the hypothesized additive effects of the value and amount of information gain can be estimated. However, an analysis using the continuous variables in this form may also be carried out.

CONCLUSION

As the foregoing implies, analysis of the data continues with a completion data anticipated by the end of the summer. We are hopeful that our work will not only provide some answers to questions that have proved inordinately perplexing in the past but will contribute a set of validated items toward to development of a measuring procedure that has proved to be so elusive in the past.

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Search No.: _____
 Analyst: _____ A _____ B
 Treatment: _____ O _____ D
 _____ P _____ C

The Ontario Institute for Studies in Education
 Department of Educational Administration
 Search Analyst's Record of Online Search

1. Name _____
 2. Address _____
 Tel. () _____
 3. Topic _____
 4. Date (day/mo/yr) _____

5. Purpose of search: _____
 Keep abreast of field _____ Research/development report
 Assignment, term paper, _____ Browsing
 thesis _____
 Prep., update of bib- _____ Personnel recruitment,
 liography _____ evaluation
 Curriculum Development _____ Policy development
 Program Improvement _____ Other: _____
 Speech, article, report _____
 6. Contact: Walk-in _____ Letter _____ Phone _____ Other: _____

7. User supplied: _____ synonyms _____ logic _____ other refs. _____ none
 8. Interview time _____ min. 9. Strategy time _____ min.
 10. Connect time _____ min. 11. System: SDC _____ BRS
 Lockheed _____ N.Y. Times
 QL _____ Other _____
 Infoglobe _____
 12. Date base(s): ERIC _____ SSCI _____ Diss. Abs.
 Psych. Abs. _____ ECER _____ Other: _____
 Soc. Abs. _____ Child Abuse _____
 13. Citations printed online _____ 14. Citations printed offline _____
 15. Price charged: _____ 16. User present during search: Yes No
 Other: _____

17. Did user interaction take place during search: Yes _____ No _____
 18. Requestor's organization: School board _____ Ministry of
 CAAT _____ Education
 Faculty of _____ University
 Education _____ Other: _____

19. Sex: _____ Male _____ Female _____

APPENDIX B

Search No. _____
 Respondent: SA _____ User _____

The Ontario Institute for Studies in Education
 Department of Educational Administration
 User Responses to Online Search Request

The Social Sciences and Humanities Research Council of Canada
 has sponsored this inquiry into factors affecting user satisfaction
 with online retrieval services. The data collected from this user
 questionnaire will be used only for research purposes. Ultimately,
 it is hoped that the results will help to improve online services.
 Please read each question carefully and indicate your response with
 a check mark: _____

Personal Data

1. Age 25 or under _____
 26-35 _____
 36-45 _____
 46-55 _____
 56-65 _____
 over 65 _____
 2. Highest earned degree
 None _____
 Bachelor's _____
 Master's _____
 Doctorate _____
 Other: _____

3. Please indicate your primary professional role or function.
 (Check one only)
 Administration or supervision _____ Undergraduate student
 Teaching _____ B.Ed. or M.Ed. student
 Research _____ Other master's student
 Library services _____ Doctoral student
 Private consultant _____ Other _____

	Satisfaction		
	Very Low	Moderate	High
19. Time taken to deliver bibliography	—	—	—
20. Value of the bibliography	—	—	—
21. Value of materials located via bibliography	—	—	—
22. Currency (up-to-dateness) of the search results	—	—	—
23. Utility of search results for your intended purpose	—	—	—
24. Price of the search	—	—	—

19. Time taken to deliver bibliography

20. Value of the bibliography

21. Value of materials located via bibliography

22. Currency (up-to-dateness) of the search results

23. Utility of search results for your intended purpose

24. Price of the search

Consequences of Missed Information

25. If your search had missed 10% of the relevant citations available in the system, how would this affect the ultimate purpose for which you placed the search?

26. If your search had missed 50% of the relevant citations available in the system, how would this affect the ultimate purpose for which you placed the search?

27. If your search had missed 10% of the relevant citations available in the system, how would you be effected financially?

28. If your search had missed 50% of the relevant citations available in the system, how would you be effected financially?

29. If your search had missed 10% of the relevant citations, would the project or purpose for which you place the search be undertaken or completed anyway?
 ___ Yes ___ No

30. If your search had missed 50% of the relevant citations, would the project or purpose for which you placed the search be undertaken or completed anyway?
 ___ Yes ___ No

31. If 50% of the documents retrieved were irrelevant, who would be most affected?

- ___ You only
 ___ You and your work group
 ___ You and your entire organization
 ___ A larger number of people
 ___ Not applicable

32. If 90% of the documents retrieved were irrelevant, who would be most affected?

- ___ You only
 ___ You and your work group
 ___ You and your entire organization
 ___ A larger number of people
 ___ Not applicable

33. Comments:

THANK YOU FOR YOUR COOPERATION

Please return your completed questionnaire to:

Dr. E.W. Auster, Principal Investigator
 Department of Educational Administration
 The Ontario Institute for Studies in Education
 232 Bloor Street West, N752
 Toronto, Ontario
 M35 1V6
 (613) 923-6641, Ext. 420

4. How many years have you been in your present position?

- Less than one year 4 to 6 years
1 year 7 to 9 years
2 years 10 or more years
3 years

Extent of Knowledge About Topic Before Search

5. Have you written any professional papers for publication on the topic of your search in the last five years?

Yes No

6. Have you given any talks or presentations at conferences on this topic in the last five years?

Yes No

7. Have you taken any graduate-level courses on this topic in the last five years?

Yes No

8. Have you taught courses on this topic in the last five years?

Yes No

9. Have you participated in a research project on this topic in the last five years?

Yes No

10. How would you rate the amount of knowledge you had on this topic before the search?

No knowledge Advanced
Basic Expert
Moderate

11. Please indicate which of the following sources you had already consulted or searched before conducting the online search.

Human resources Prof. development days
Office files, reports Academic, prof. courses
Prof. organizations Curriculum guides, texts
Libraries and their holdings-- ERIC materials
Other
journals, books, indexes
Conferences

Extent of New Knowledge About Topic After Search

12. How much did you learn about your topic as a result of the search?

Nothing
Very little
Some
Quite a bit
Extremely large amount

	Percentage				
	0	1-10	10-20	21-50	More than 50%
13. Of the citations retrieved that were relevant to your topic, how many were familiar to you prior to this search?	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>

14. Of the citations retrieved that were relevant to your topic, how many were new to you?

15. How many of the citations retrieved do you plan to read?

16. How much additional information do you still desire concerning the topic that was searched?

Nothing
Very little
Some
Quite a bit
Extremely large amount

Value Placed on New Knowledge

Please indicate your satisfaction with the following aspects of your search.

17. Helpfulness of search analyst

18. Length of bibliography

	Satisfaction			
	Very Low	Low	Moderate	High
17. Helpfulness of search analyst	<u>Very</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>
18. Length of bibliography	<u>Very</u>	<u>Low</u>	<u>Moderate</u>	<u>High</u>

