

ORGANIZING, DESCRIBING, ANALYZING, AND RETRIEVING THE
DISSERTATION LITERATURE IN SPECIAL EDUCATION: A CASE STUDY
USING MICROCOMPUTER TECHNOLOGY TO DEVELOP A PERSONAL
INFORMATION RETRIEVAL SYSTEM

by

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ABSTRACT

This study analyzed special education dissertations published in *Dissertation Abstracts International*, 1980 to 1985. Keywords, describing the substantive content of each abstract and title, were assigned according to principles used in controlled and natural language indexing. A bibliometric analysis was performed to identify a core vocabulary representing frequent concepts and ideas and the most productive institutions awarding doctorates in special education. Descriptive and bivariate (chi square) analyses were also conducted illustrating relationships between demographic variables: year of completion, sex of author, degree awarded, page length, institution; and content variables: category of special education, research type, and data analysis technique. Finally, a microcomputer information retrieval system was developed to provide better access to the dissertation literature.

Results indicated that a greater number of women choose to do doctoral work, graduate with Ph.D. degrees and write longer theses. The keyword index illustrated a wide diversity of topics being pursued. The microcomputer personal information retrieval system is multifaceted, is available for searching, may describe the vocabulary, and will accommodate the growing dissertation base in special education.

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I. INTRODUCTION

A. BACKGROUND

A "literature" can be defined as a body of thought expressed in published writings. Any professional area is represented by its literature, be it books, journals or fugitive publications such as reports, microfiche facsimilie and computer printouts. The literature in most professional fields has been growing markedly within the last fifty years. Anderla (1985) estimates that in general, the volume of scientific and technical information increases at the rate of 12% per year. Simpson (1985, p. 16) and Tague, Beheshti, and Rees-Potter (1981) suggest that we are involved in a continuing explosion of information, albeit the body of knowledge has grown exponentially since World War II. This means that published information has been "doubling" rather than increasing at an arithmetic rate. According to Simpson, the amount of information that has been accumulated, stored, and catalogued in the last three decades is greater than all the information compiled since the beginning of recorded history.

The field of information science has developed in response to the tremendous growth of the body of world knowledge within the last twenty-five years. "Information Science deals with the benefit/ sacrifice relationships associated with the collection, storage and retrieval of information" (Institute of Cost Analysis, 1983, p. 91). Thus, the primary objective of information science is to organize and provide better access to information, to manage information more effectively and efficiently, and to provide techniques for analyzing and synthesizing information so that it can be communicated more accurately and completely and

with maximum impact.

In response to the growth of information and the concomitant interest in analyzing the content of publications, the field of bibliometrics has developed. Bibliometrics defined by Pritchard (1969), as ". . . the application of mathematics and statistical methods to books and other media of communication" (p. 349), and by Fairthorne (1969), as the ". . . quantitative treatment of the properties of recorded discourse and behavior appertaining to it" (p. 319). Research in this area has developed out of the need for turning raw information into usable knowledge. The concepts and techniques of bibliometrics can be used to study the published literature in a professional area, such as special education, and to facilitate its description, organization, retrieval, and synthesis.

Special education is no stranger to the information explosion and publication has increased markedly in this area in recent years. For example, in analyzing a collection of 2,270 journal articles, published in 248 journals from 1968 to 1983 in the area of learning disabilities within the field of special education and announced in ERIC's *Current Index to Journals in Education*, Summers' (1986) indicated that the number of articles appearing increased geometrically over the fifteen year period of publication and a small core of frequently cited journals accounted for three-fourths of the articles published. In addition, Summers also developed a core list of the high frequency terms used in indexing the articles and organized the terms into a number of content categories using methodology from Lancaster (1972).

When the United States' Public Law 94-142 (the Education for All Handicapped Children Act) was passed in 1975, as a response to legislation and judicial decisions, changing definitions, concepts and philosophies, a renewed need and quest for information in the area of special education was created (French & Raykowitz, 1984). "In any field, professional debate is carried in the field's information sources, and such debate is to be expected as a field of inquiry sharpens its concepts, definitions, and procedures" (Summers, 1986, p. 50). The need for access to information in areas of exceptionality such as mental retardation, learning disabilities, emotionally disturbed, deaf or hearing impaired, blind or visually impaired, physically handicapped, or gifted and talented also created a strong concomitant demand for the analysis and synthesis of information as well as its mere collection and organization (Husen & Postlewaite, 1985). Such analysis can provide essential information on current practices and future trends in a professional area.

Since special education can be characterized by a growing information base, and an increasing complexity of the issues under investigation (Summers, 1986), it is important to keep abreast of the expanding current literature. To meet the need for access to the journal and report literature large commercial online information retrieval systems, often accessed through inhouse mainframe computers, are growing at a yearly rate of 30 to 40% (Lisanti, 1984). Over 3,000 computerized bibliographic databases are now available. As an example, the *Educational Resources Information Center* (ERIC) allows for the retrieval of current reports and journal literature. ERIC can be accessed through commercial online retrieval systems, like BRS and Dialog, or through inhouse searching in institutions which

subscribe to the ERIC computer tapes. The latter method is used to provide access to ERIC and PsycINFO at the University of British Columbia.

Another very valuable and important resource, which should be made more readily accessible to both the academic and student researcher, is the dissertation literature produced in education, being theoretically ". . . on the cutting edge of a given field" (Ysseldyke & Pickholtz, 1975, p. 264). However, techniques must be developed to improve access to this source since, unfortunately, very little dissertation research reaches publication (Gross, 1972; Hanson, 1975; Schlacter & Thomison, 1974; Spriestersbach & Lyell, 1978; Tindall, 1968; Ysseldyke & Pickholtz, 1975). Abstracts of most dissertations written and their bibliographic information are available in a large reference index, the *Dissertation Abstracts International (DAI)*, but the accessibility is still not optimal. Due to the sparse indexing in *DAI*, the inquirer must search through hundreds of abstracts to find dissertations of interest. Development of personal microcomputer based retrieval systems could make this process more efficient and provide better access to the information on special education contained in *DAI*.

The dissertation literature is of vital importance to any field of inquiry. The Doctor of Philosophy (Ph.D.) and the Doctor of Education (Ed.D.) are degrees where training is provided in research methods with one objective: the contribution to the body of knowledge in a specialized field (Council of Graduate Schools in the U.S., 1979). The dissertation is the principal component of a Ph.D. or Ed.D. program. White (1977) in a review of doctoral programs and dissertation research in art education, stated that "It is apparent that

researchers, both neophyte and accomplished, must depend upon and review unpublished doctoral studies if they are to achieve an indepth perspective on prior investigations concerning their topics" (p. 11). White concluded that the substantial publication gap between completed and reported dissertations in research journals adds credence to the need for a vigorous and conscientious review of doctoral dissertations in any serious research effort.

The body of dissertation literature in most areas is expanding rapidly. In general, the number of doctoral degrees awarded in the United States has approximately doubled in each decade since 1900 (Harmon, 1978). This staggering growth shows an average increase of seven per cent each year. 340,000 degrees were awarded between 1871 and 1970 and another 340,000 could have been expected in the decade of 1971 to 1980 (Wolfe & Kidd, 1971, p. 784). However, the difficulties involved in obtaining convenient access to this information undermine the possible valuable contributions of doctoral dissertations. As Glass (1976) stated in writing about the synthesis of research findings within a meta analysis framework,

Some have termed our predicament "the information explosion." I assess it differently: we face an abundance of information. Our problem is to find the knowledge in the information. We need methods for the orderly summarization of studies so that knowledge can be extracted from the myriad individual researches. (p. 4)

The first stage to improvement in the knowledge utilization process is the development of more efficient techniques to organize and retrieve relevant information. The development of personal information systems, based on

microcomputer technology, can aid in such development.

In special education, the growth of dissertations has seen increases similar to that experienced in other professional areas. In the period of 1976 to 1979 *DAI*, which reports most North American dissertations, published an average of 300 abstracts per year under the category "special education." However, there was a jump to 406 abstracts in 1980, and from there substantial growth occurred with *DAI* reporting 377 dissertation abstracts in 1981, and 436, 402, 357, and 329 in 1982, 1983, 1984 and 1985 respectively. Thus, since 1975, the initial year of U.S. Public Law 94-142, there has been a substantial growth of doctoral dissertations reported in the field of special education.

B. PURPOSE OF THE STUDY

The dissertation literature can provide valuable insights as to the quantity and nature of the recent research being conducted in the field of special education in North America. In addition, if microcomputer retrieval systems can be developed to access such literature, the user can have a convenient means of continuously updating and utilizing the emerging dissertation research in special education.

Computer and manual searches of the ERIC database have shown that few attempts have been made to organize and analyze reported dissertation research within the field of special education. The purpose of this study is to first, identify the body of dissertation research reported in *DAI* in special education from 1980 to 1985 and develop a content and descriptive analysis of the

literature using the thesis titles and abstracts appearing in *DAI*. Secondly, a set of keywords will be developed to aid in classifying and retrieving dissertations on specific topics. Thirdly, a microcomputer retrieval system will be created to facilitate searching and updating the literature collection through development of a personal information system utilizing a word processing program and a text database management program. The developed retrieval system will include a User's Guide.

By using techniques reported in the literature from the fields of library information science (such as content analysis), the bibliometric objectives of quantifying the processes of written communication (Pritchard, 1969) can be met. Descriptive and content analyses have been successfully employed in other reviews of doctoral dissertations in education. Brehaut (1969) surveyed the types of thesis research being conducted in education in Canada. Studying patterns of growth, White (1977) developed a keyword index for dissertations in art education. French and Raykowitz (1984) answered the questions of the choice of areas and methodology, and types of subjects being examined in school psychology, as well as the comparison of dissertation content areas and school psychology content areas. Gross (1972) analyzed the research categories and designs found in dissertations in social studies education, and in a study of library science doctorates, Schlacter and Thomison (1974) analyzed the types of research being conducted, trends in degrees pursued (Ph.D. or Ed.D.), and the role of women in doctoral programs. Finally, in a University of British Columbia Master of Arts thesis, Jeroski (1977) reviewed the body of dissertation literature in secondary reading and analyzed and compared specific demographic and content variables.

Thus, demographic and content analyses will extend such research and can provide valuable information in understanding the current nature of doctoral research in special education.

The second focus of this study is to develop a set of keywords for indexing the collection of dissertations and create a microcomputer retrieval system that will enhance the accessibility of dissertation literature in special education for the individual user. The concept of a "personal information environment" (Malone, 1983, p. 99) in which the microcomputer plays a central role in supporting personal systems and providing the capability to create or download citations from secondary sources to private files, is proliferating (Burton, 1985). According to Miller (1985), it is now possible to design one's own bibliographic information system using various communications and word processing packages. Brenner and Saracevic (1985) state that through improved microcomputer technology the potential end user has suddenly become an important force in decisions regarding the design and marketing of information services and products.

Summers, Bruce and Clark (1986) maintain that end users will increasingly develop personal information systems in the field of education in which "downloaded material can form the nucleus" of content particular to the user's individual purposes.

As information innovation increases, knowledgeable end users can take advantage of (1) burgeoning bibliographic database services (2) improved microcomputer systems, and (3) downloading capability vis-a-vis reuse of information from secondary sources to broaden their awareness of the advantages in developing an independent information

environment. (Summers, Bruce, & Clark, 1986, p. 5)

Microcomputer based personal information systems have the advantage of allowing the user to conveniently organize, use and reuse information and to conduct bibliometric analyses with data obtained from the information system (Summers et al, 1986). With the current level of microcomputer technology, word processing and text database management programs, a considerable nucleus of dissertation citations can be used in the development of personal information systems in the field of special education.

1. Statement of the Problem

This study has five major purposes:

1. Identify and organize the Ph.D. and Ed.D. special education dissertation literature reported in *DAI* from 1980 to 1985.
2. Describe the collection of dissertations using such demographic variables as year of completion, type of degree (Ph.D. or Ed.D.), sex of the author, institution awarding the degree and the country of origin (USA, Canada, South Africa); and to analyze the titles and abstracts of the dissertations using content variables such as the category of special education, research type, data analysis technique, and the length of the dissertation in pages.
3. Perform a bivariate analysis of the relationship between the demographic and content variables obtained from the demographic information and the titles and abstracts in *DAI*.
4. Using techniques from the field of library and information science, develop a keyword classification system based on the substantive material contained in the

titles and abstracts appearing in *DAI*. Utilize the results in developing a personal microcomputer retrieval system using word processing and text database management software programs and provide a User's Guide for the retrieval system.

5. Perform an analysis of the keywords created in indexing the dissertations to identify the most essential core vocabulary useful in indexing and searching the collection; organize the core vocabulary into meaningful sub-groups of terms; analyze the vocabulary produced using concepts from Bradfordian analysis.

6. Perform an analysis of the institutions reporting dissertation research in special education to identify the core groups of highly productive institutions generating doctoral work in special education; compare the institutions producing dissertations using concepts from Bradfordian analysis.

II. LITERATURE REVIEW

The conceptual and methodological base for this study has been developed from the reported literature related to the (1) background and development of the dissertation as a research requirement, an information source, and the current status of doctoral dissertation research in North America; (2) use of bibliometric techniques and content analyses to characterize collections of published information; (3) methodology from library and information science useful in developing indexing and classification systems; and (4) current writing related to the development of personal information retrieval systems using microcomputer and related software.

A. BACKGROUND OF THE DOCTORAL DEGREE IN EDUCATION

The degree of Doctor of Philosophy (Ph.D.) was first introduced to North America in the early 19th century by Americans who studied at institutions in Germany and returned to teach at major eastern universities (Spurr, 1970). In 1861 Yale University awarded the first Ph.D. degree in the United States (Harmon, 1978), whereupon programs leading to such a degree were established at Harvard University in 1872, at Johns Hopkins in 1876, at Clark and Catholic Universities in 1889, and at the University of Chicago in 1890 (Spurr, 1970). To receive a Ph.D., the requirements of two to three years postbaccalaureate study, the passing of a final exam, and the submission of a satisfactory dissertation had to be met (Walters, 1965).

During the period of 1876 to 1900, which Berelson (1961) characterizes as the

"university revolution," graduate schools became organized within universities. The nature of the highest degree, the place of research as the *raison d'être* of graduate study, and the role of the doctoral dissertation became defined as embodying results of original research.

In 1893, Columbia University Teachers College announced the United States' first formal Doctor of Philosophy program in the field of education. Cremin (1978) describes the requirements of the Ph.D. as including formal work in educational psychology, the history and philosophy of education, two practica which included any advanced course where students produced original work, graduate study in another department at Columbia University and the completion of a dissertation. The Teachers College had, criticizes Cremin, "an historical and statistical approach to the institutions and processes of education" (1978, p. 14).

The Doctor of Education degree (Ed.D.) was first established at Harvard University in 1920 as a professional degree to be administered by the School of Education. The requirements of this program included formal work in five fields of education, with studies in the social theory and history of education, and educational psychology being emphasized. Salient points of a definition of the dissertation included being an independent investigation, building upon knowledge already available, and producing constructive results of importance and value (Cremin, 1978).

Seen as basically parallel to the Ph.D., Spurr (1970) outlines the reasons for providing a second doctoral degree in education. The program would accept those

applicants seen as promising and competent, but whose academic qualifications would not allow them to be admitted to a Ph.D. program. It also provided a means of circumventing the foreign language requirement. Rather than the traditional Ph.D. requirement of original research, it allowed for a further range of independent projects, a reduction in the amount of time to earn the doctorate degree, and finally the opportunity for students who had successfully passed the comprehensive examinations, to submit an expository dissertation on the subject matter of particular interest.

Spurr (1970) concludes that the given reasons for developing an Ed.D. program could contribute to making it a second class Ph.D. based on similar but lower standards. In order to avoid such a situation, Spurr suggests that an Ed.D. program would need to be oriented towards the profession of education rather than to theoretical fields while being administered as rigorously as the Ph.D. The Ed.D. degree was introduced as a new approach in professional education (Russel, 1961), but the difference between the Harvard Ed.D. and Teachers College Ph.D. programs, during the 1920s, "derived much more from the differing size and character of the two institutions than from any fundamental differences . . . they embodied" (Cremin, 1978, p. 15).

In 1934 Columbia Teachers College also announced an Ed.D. program alongside the Ph.D. The Ed.D. program evolved quickly, for by 1941 the numbers of Ed.D.s granted at Columbia each year was nearly equal to the number of Ph.D.s (Cremin, 1978).

B. DISSERTATION AS A REQUIREMENT

The Council of Graduate Schools in the United States (1979) defines the doctoral dissertation as the final and most important component of the series of academic experiences which culminates in the awarding of the Ph.D. degree. There are three functions of the doctoral dissertation: 1) a work of original research or scholarship that will make a contribution to the existing knowledge, 2) an educational experience which will demonstrate the doctoral candidate's mastery of research methods and tools in a specialized field, and 3) a demonstration of a student's ability to address a major intellectual problem and arrive at a successful conclusion. "A successful dissertation is a demonstration of the candidate's ability to use the tools and methods of research in the field, to organize the findings, and to report them in a mature, literate and lucid fashion" (Council of Graduate Schools in the U.S., 1979, p. 8).

According to Berelson (1961) the two basic propositions of graduate education are to provide training in research and scholarship and this training should be specialized at the doctoral level. Both requirements are met by the doctoral dissertation. However, two points have repeatedly been placed under scrutiny: the dissertation as an original contribution to knowledge, and as training for a career of research. Carmichael (1961) suggests,

There is no consensus among graduate faculties as to [the dissertation's] purpose, its optimum length, the amount of supervision its writer should have, or the nature of the topic that should be chosen. Is the purpose to make an original contribution to knowledge, or a report on research performed, or a demonstration of the

student's ability to do research and report on it adequately? (p. 148)

Berelson (1960) continues,

If the dissertation is not to be judged by these traditional terms, then what is the alternative? It is to consider the dissertation an instrument of research training. In the words of the Trustees of the Carnegie Foundation, "It should be a trial run in scholarship and not a monumental achievement." The primary test would be, in other words, whether it contributed to the student's knowledge, not the world's. (p. 174)

Spriestersbach & Lyell (1978) stress that the dissertation should be redefined as an experience in writing a major research paper. Dear (1977) reiterates this idea by stating that the emphasis on scholarly research for the Ph.D. is not necessarily apt for teaching. Finally, Spriestersbach (1970) discusses the place of the dissertation in the training of graduate students,

First, let's once and for all bury the notion that the dissertation must represent a significant contribution to knowledge. We know that it has often not been so in the past. Let's have the honesty to admit it. Instead let's view the dissertation as one of the assignments by which the student comes face to face with the messy and very human business we call "research." Let's view the experience as preparation of the student for a life of critical review, aimed at regeneration, adaption and growth. (p. 142)

1. Doctoral Dissertation -- Important Source of Information

With the objectives of the dissertation being directed to the acquisition of broad research skills and the effective organization and communication of research results, the history of a problem, the literature bearing upon it and the latest methods of research will be applied (Dissertation Review Committee, Horace Rackham School of Graduate Studies, 1976). "Doctoral research remains one of the most important sources of research information" (Gross, 1972, p. 555). According to Dossick (1972),

[Dissertations] contribute much to knowledge because of the highly specialized character of the data, the results of minute research under expert guidance, and because of the wide use of primary sources, experimental investigations, statistical information, etc. . . . Over and above much of the pedestrian and at times mediocre, there remains a huge vast storehouse of valuable research which represents a "frozen asset" of data ready to be tapped like a rich vein in a mine. (p. 2)

If such a vast resource lies waiting to be tapped, the importance of disseminating the results cannot be overemphasized. Ysseldyke and Pickholtz (1975) stress, "Perhaps the best indicator of research interests and trends in a particular field is a review of theses and dissertations being completed for doctoral degrees" (p. 264), and Briggs (1984) outlines how dissertations have enriched the research literature in curriculum design.

Unfortunately, as a number of authors in various disciplines have pointed out, limited dissertation research appears to reach publication (Gross, 1972; Hanson,

1975; Schlacter & Thomison, 1974; Spriestersbach & Lyell, 1978; Tindall, 1968; Ysseldyke & Pickholtz, 1975). During an investigation of dissertations in social studies education, from 1934 to 1957, McPhie (1960) found disappointing publication data. Nearly two-thirds of the authors had not written a single article related to their dissertations, about one-third had produced one to three articles, and very few (less than three percent) had been actively publishing. McPhie, in discussing the professional responsibilities of students, suggests that an abstract at the national level (eg. *Dissertation Abstracts International*) and at least one good summary article should be published. "In order for dissertations to be of value to the fields of knowledge in which they have been completed, it is necessary to disseminate the findings which are recorded in them" (McPhie, 1960, p. 377).

C. CURRENT STATUS OF DOCTORAL DISSERTATIONS

The debate over doctoral study is one that emphasizes either the academic or professional. Certainly a Ph.D. degree is oriented towards a research career, however those hired as specialists at universities are often required by graduate schools to assume supervisory, evaluative and instructional responsibilities. The Doctor of Arts degree, designed in parallel with a Ph.D., would be oriented towards teacher preparation rather than specializing in a particular research field (Dear, 1977). However, the philosophical rationale for retention of the Ph.D. is in its scholarly degree whose preparation is oriented toward the conduct of research, whereas the Ed.D. is considered by most to be a professional degree oriented toward the practical (Anderson, 1983).

The Ph.D., Ed.D. distinction is clearly stated in Canada. The *OISE Bulletin* 1985/86 (Ontario Institute for Studies in Education, University of Toronto) describes the general requirements of the Ph.D. and Ed.D. programs.

The Doctor of Philosophy: This degree is designed to provide opportunities for advanced studies in the theoretical foundations of education, as well as in the application of such knowledge to educational practice. The Ph.D. represents a high level of scholarly achievement and research in a particular field of education, pursued in depth.

The Doctor of Education: This degree is designed to provide opportunities for more advanced study for those who are already engaged in a career related to education. The emphasis of the program is on the development of skills in the application of knowledge from theory and research findings to practical educational problems. The Ed.D. represents professional development at a high level in a particular field of education, pursued in depth. (p. 40-41)

In a study surveying the differences of Ph.D. and Ed.D. programs in education, Anderson (1983) gathered data from 167 American institutions in the areas of admission, residency, and program requirements. With a 100% response rate, it was found that 86 (51.5%) of the institutions offered both Ed.D. and Ph.D. degrees. The Ed.D. program was offered solely by 43 (25.7%) of the institutions, against 31 (18.6%) for Ph.D.s only. Seven institutions offered neither degree.

Surprisingly, differences between the two degrees were not marked for most reporting institutions. The results of the survey indicate that, in the area of admissions, 58.3% of the institutions had identical requirements for the Ed.D. and Ph.D. programs. 31% reported different requirements, although equally demanding,

whereas a small percentage cited more demanding entrance requirements for the Ph.D. A qualifying examination was required by 92.3% of Ph.D. and by 88.2% of Ed.D. programs (Anderson, 1983).

Similarities and differences between Ed.D. and Ph.D. programs were slight. Residency requirements were quite similar (three years required beyond the bachelor's level), although 91% of Ph.D. compared to 79% of Ed.D. programs, specified that the degree cannot be met by attendance in summer sessions only. The majority of Ph.D.s (56.6%) required course work outside of education, while this is imposed by Ed.D. programs less often (44.6%). Both programs (93%) do not allow correspondence work. Knowledge of a foreign language is required by 37.2% of Ph.D.s and 2.5% of Ed.D.s. Emphasis on acquiring research tools and competencies is high in both cases (Ph.D. - 96.4% and Ed.D. - 85.7%). A final substantial difference found between the two degrees was based on the acceptance of a "practical problem" or survey as a substitute for a basic research study. 50% of Ed.D. programs accepted such activities, while they were seldomly allowed for a Ph.D. (19%) (Anderson, 1983).

Thus, operational differences between the Ph.D. and Ed.D. tend "to be reflected by delicate nuances rather than clear dichotomies" (Anderson, 1983, p. 57). Cremin (1978), commenting on studies undertaken in 1958 and 1969 by the American Association of Colleges for Teacher Education, concludes that, except for the financial challenges and personal difficulties involved in earning the doctorate degree, the two programs could be "subsumed under the rubric 'diversity'" (p. 17). During the period of 1956 to 1958, Russel (1961) reports that of the

doctorates in education awarded in the US, 63% were Ed.D.s and 37% were Ph.D.s. Russel also states that there were greater common traits than differences between the programs surveyed. Finally, Schneider (1984) states that, "In the future, it may become nearly impossible on the basis of degree to distinguish between those who are trained and planning to pursue research activities and those who are literate consumers of research and interested in working in applied areas of education" (p. 62).

1. Dissertation Length

Berelson (1961), in a comprehensive study of doctoral degrees, reports that the median length of dissertations in education was 200 pages, with a range of 50 to 1000 pages. Dissertations prepared for the Ed.D. and Ph.D. degrees were of the same median length. Berelson discovered, precluding psychology, that education had the shortest dissertation lengths of any discipline in the humanities and social sciences (p. 130).

2. Sex of Author

Golladay (1983) reports the proportion of women in educational degree programs between 1971 and 1981. In the bachelor degree programs women make up a steady 72 to 75% of the student population. At the master's level women students have increased from 56 to 71% of the population, and at the doctoral level the proportion has increased from 21 to 47%.

Solmon (1976), comparing male and female graduate students states that affirmative action has provided for a general sense of equality in admission standards at universities. Areas of difficulty such as cost and financial aid, residency requirements and mobility problems for women are discussed. A number of facilitating mechanisms are recommended. Access to day care and proper medical care is emphasized, as are special class schedules to assist women with families, wider credit transferability, reduced residence requirements, and acceptance of part time students and associated financial aid. Solmon concludes, ". . . even though some differential treatment exists, for whatever reasons, women graduate students, at this time in history, are not a totally underprivileged minority" (p. 109).

3. Institutions

In a 1956 to 1958 survey of 81 American institutions granting doctoral degrees in education, 3054 doctorates were awarded, of which 63% were Ed.D.s and 37% Ph.D.s (Russel, 1961). Cartter (1977) surveyed education faculty in order to rank graduate departments in the United States. Faculty members of 81 doctoral granting institutions were asked their opinions on the faculty quality and educational attractiveness of each school. Using the combined scores, the institutions were ranked in descending order (see Table 1).

To overcome the shortcomings of the subjective technique of surveying faculty members' opinions, Sindelar & Schloss (1986) conducted what they considered to be a more objective analysis by sending questionnaires to program heads, junior

Table 1
Top Schools of Education (1977)

Rank	Institutions
1.	Stanford University
2.	Harvard University
3.	University of Chicago
4.	University of California, Los Angeles
5.	University of California, Berkeley
6.	University of Wisconsin
7.	Columbia University, Teachers College
8.	Ohio State University
9.	University of Michigan
10.	University of Illinois
11.	University of Minnesota
12.	Michigan State University
13.	University of Texas at Austin
14.	University of Indiana, Bloomington

Note. From "The Cartter report on leading schools in education, law, and business," 1977, Change, 9, p. 46-47.

and senior faculty members of 83 institutions which indicated they granted doctoral degrees in special education. Each questionnaire included demographic information and lists of the top five programs on two criteria, i.e., the prestige of the faculty and the preparation of students. The results of the survey are listed in Table 2. Sindelar and Schloss conclude that "no doctoral program can or should be judged in isolation" (p. 59). The rankings stem from evaluations in larger contexts, for both the faculties' reputations and students' preparation may be enhanced by the same institution's other programs in related disciplines. More objective data, including publication data and citation analyses are recommended.

Table 2

Highest-Ranked Programs in Special Education (1986)

Rank	Highest-Ranked Programs on Distinction of Faculties
1.	University of Minnesota
2.	University of Kansas
3.	Vanderbilt University, George Peabody College
4.	University of North Carolina at Chapel Hill
5.	University of Washington
6.	University of Illinois
7.	University of Virginia
8.	University of Texas at Austin
9.	Pennsylvania State University
10.	University of Oregon
11.	University of Wisconsin
Highest-Ranked Programs on Best-Prepared Students	
1.	University of Minnesota
2.	University of Kansas
3.	University of Washington
4.	Vanderbilt University, George Peabody College
5.	University of Oregon
6.	University of Wisconsin
7.	University of Illinois
8.	University of Texas at Austin
9.	Pennsylvania State University
10.	Syracuse University
11.	University of Virginia
12.	North Carolina University at Chapel Hill
13.	Columbia University, Teachers College

Note. Ranked by Program Heads, Senior and Junior Faculty Members

Note. From "The reputations of doctoral training programs in special education" by P. T. Sindelar and P. T. Schloss, 1986, Journal of Special Education, 20, p. 55.

D. BIBLIOMETRICS

When disciplines, such as special education, experience rapid expansion in their

published literature, problems in information retrieval may arise (Summers, 1983). As the interest in a topic becomes more widespread, the scatter of items across sources also increases. Questions, such as whether the literature is representative of the field and what its essential characteristics are, must be answered (Schrader, 1981). With the tremendous information explosion, bibliometrics has developed, to examine, by statistical means, the current structure of information generated as a consequence of activity related to research. "Such studies are founded on the premise that research publications are a good quantitative and unobtrusive indicator of research activity" (Summers, 1983, p. 103).

Bibliometrics describes and studies relationships within the literature (O'Connor & Voos, 1981), and may, in turn, be used to identify key events, advances and patterns of scholarly research (Schrader, 1981). Pritchard (1972) attempts to relate bibliometrics to an information transfer process, conceptualizing the flow of information through channels as analogous to a chemical, industrial process.

The bibliometric literature, comprehensively reviewed by Narin & Moll (1977), indicates a research tradition characterized by the observed frequency distributions of events (Schrader, 1981; Sichel, 1985). A statistical law of the logarithmic type is typically utilized. A bibliometric distribution, using a graph oriented approach (Asai, 1981) usually has strong positive skewness with a very long upper right hand tail (Sichel, 1985), based on frequency ranking of data (Schrader, 1981).

According to Narin and Moll (1977) and Broadus (1987), bibliometrics developed to keep pace with the growing interest in the evaluation of the structure of

science, the utilization of scientific knowledge and the assessment of scientific progress. Bibliometrics is applicable to the fields of information science, librarianship, science policy, history and sociology of science. Sichel (1985) reports that bibliometrics are useful in quantifying problems encountered in libraries. Rotation of books and journals, authors and readers, book circulation and journal usage, references and citations are but a few of the problems that may be addressed.

"Because bibliometric data mirrors the actual published results of work by research library users, by scientists and by the scientific establishment itself, bibliometric techniques can claim a reliability not always achieved by survey techniques . . . Bibliometric data provide precise and accurate observations" (Narin & Moll, 1977, p. 50). The data collected are, of course, limited to the quality and value of the published research; and no two researchers interpret the bibliometric distributions in the same way (Wilkinson, 1972), nor do the results indicate the underlying process that creates the scatter (Drott, 1981).

1. Bradford Distribution

Bradford (1934), in studying 395 articles on lubrication dispersed among 164 different sources, observed a high degree of concentration of articles in a relatively small number of journals. "Bradford's Law" which has become basic to the study of bibliometrics (Narin & Moll, 1977), describes how items generated by sources in a particular field may distribute themselves geometrically (Summers, 1983). Following in the tradition of mathematical models of dispersion,

e.g., Poisson (Drott, 1981), Bradford's Law, Lotka's Law which examines productivity among researchers (Coile, 1977; Vockell & Jacobsen, 1983), and Zipf's Law which studies frequency counts of words in a given corpus (Wyllys, 1981), are all based on ranking by frequency (Schrader, 1981).

The Bradford model of $1:a:a^2$ has been further developed by Brookes and a formula has been derived.

$$R(n) = k \log(n) + R_1$$

where,

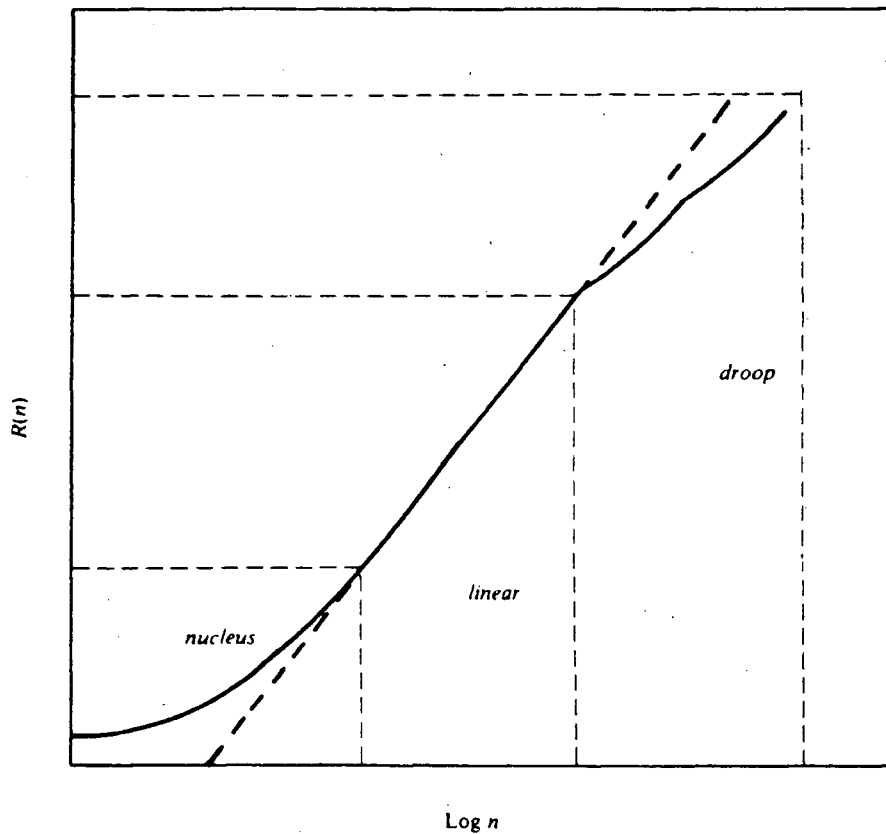
1. n is the rank
2. $R(n)$ is the cumulative frequency
3. k is a constant differing for each collection
4. R_1 is the frequency of the first rank

The curve of a Bradford distribution consists of a nucleus, in which a few highly ranked objects are concentrated, the linear zone containing more objects of lower ranking and finally the droop which accounts for many objects of low rank. In the case of index terms assigned to documents, if the distribution is Bradfordian a small percentage of the terms will have high frequencies of occurrence, a large percentage will have moderately occurring frequencies, and a very large number of terms will occur a small number of times.

Since a discipline can be defined by terms (and the relationship among the terms) used in the field, "An index of words in a discipline can be then, in a very real sense, a statement about the concepts in that discipline" (Smith & Evens, 1977). O'Connor and Voos (1981) suggest that the Bradford distribution can also be applied to compute index terms assigned to documents. Studying

Figure 1

Hypothetical logarithmic curve illustrating
Bradford's law



Note: from "Bradford's law and the retrieval of reading research journal literature" by E. G. Summers, 1983, Reading Research Quarterly, 19, p. 104.

descriptor usage in this manner will produce a concentration of terms representative of the discipline and provide a useful basis for content analysis (Lancaster, 1972).

E. CLASSIFICATION

The pace of change in the creation of information and its accessibility has accelerated over time (Anderla, 1985; Cooper, 1985; Simpson, 1985). According to Simpson, the amount of information that has been accumulated, stored and catalogued in the last three decades is greater than all the information compiled since the beginning of recorded history. However, the questions remain:

1. How can one better access, understand and enjoy information?
2. How can information be managed more effectively and efficiently?
3. How can information be communicated accurately and completely, and with maximum impact?
4. How can raw information be turned into knowledge?

An expanding body of literature necessitates the collecting, organizing, and synthesizing of the scholarship in order to provide for a coherence and clear perspective (Cooper, 1985). Doctoral dissertations in special education, ". . . on the cutting edge" (Ysseldyke & Pickholtz, 1975, p. 264), have experienced a rapid increase. However, according to Glass (1976), "a hundred dissertations are mute. Someone must read them and discover what they say" (p. 4). Someone must organize the information, integrate it and extract the knowledge.

"Content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication" (Berelson, 1952, p. 18). The categories into which material is grouped for the purpose of analysis should be tailored to the needs of the study, be exhaustive and mutually

exclusive (Budd & Thorp, 1963). Since a content analysis study is a direct measurement, its validity is considered strong (Budd & Thorp, 1983). However, Andren (1981) cautions "intersubjective reliability" is of importance, where only those properly equipped with knowledge of observation and experimentation will make measurements yielding similar results.

Jones (1974) defines classification as arranging or distributing in classes according to a method or system. "Classification can be thought of as the process of generating organization" (Summers, 1986, p. 54-55). Such organization is necessary to access, observe and analyze the body of literature in a particular field. Information which is ". . . an aggregate (collection, accumulation) of statements of facts and/or figures which are conceptually (by way of reasoning, logic, ideas, or any other mental mode of operation) interrelated (connected)" (Hoffman, 1982, p. 133).

Classification is the function of identifying the most important selection of terms which indicate the content of a document (Parker, 1983). A system of indexing is defined by the ANSI 1968 Standard, "the set of prescribed procedures (manual and/or machine) for organizing the contents of records of knowledge for purposes of retrieval dissemination" (Borko & Bernier, 1978, p. 8).

1. Abstracting

Dissertation Abstracts International announces the dissertations in special education in the form of abstracts or information "surrogates," which have been viewed as substitutes for original documents (Fidel, 1986) and are defined by Rowley (1982)

as ". . . a concise and accurate representation of the contents of a document, in a style similar to that of the original document" (p. 9). Rowley adds that the purpose of abstracts is to save a user's time in information gathering and selection.

In studying the abstracts of doctoral dissertations, one assumes that these document surrogates adequately represent the content of their sources. However, Skolnik (1979) reports,

At its best, an abstract is an abbreviated, accurate representation of a document, a repackaged surrogate of information in a condensed form. An abstract by necessity, however, involves a considerable loss of information. It is in no way the equal of the original document. From the historical perspective, abstracting is a process of selecting and ignoring information and of generalizing that which is selected primarily to enable the potential user to determine the relevancy of only pertinent documents in a large collection of documents.

Artandi (1970) discusses the difficulties of characterizing a document in a language that is both precise and rich enough to be recognized by the users as well as to permit formulation of requests. The need to study the effectiveness of various methods of document description is emphasized.

2. Indexing Languages

Indexing languages are used to summarize information and to permit and facilitate its efficient retrieval (Smith & Evens, 1977). The process of subject

analysis is one of identifying the attributes of information which have the greatest likelihood of leading to an accurate inference of the intention of the message source (Liston & Howder, 1977).

a. Controlled Indexing Language

The basis of controlled indexing is a thesaurus (Rowley, 1982). As a method of vocabulary control, the controlled indexing language uses subject heading lists containing terms derived from natural language, and controls synonyms and near-synonyms (Brenner & Saracevic, 1985). Controlled languages are expensive to maintain. Revised only at long intervals, they fail to respond to changes in natural language and interrelationships between words.

b. Natural Indexing Language

In using an author's own words, natural indexing language involves objective term selection pertaining to the author's responsibility, as opposed to the indexer's. Indexing is performed by extraction, rather than by assignment (Brenner & Saracevic, 1985). Lancaster (1972) defines this 'empirical approach' as generating terms on the basis of free indexing from raw material. The use of natural language appears ". . . to have developed as a social instrument for categorizing and naming the entities each particular linguistic group is concerned with" (Brookes, 1983, p. 148). Natural language is seen as a method that responds quickly to the constant, fast change in the coining of new specific terms within a field (Fugmann, 1985a).

c. Principle of Literary Warrant

According to Fugmann (1985a), controlled and natural indexing languages are complementary. Schmidt (1985) describes a symbiotic relationship between content and conceptual analysis. Natural language consists of two different concepts, i.e., individual, specific concepts representing names of individual items and general concepts representing classes.

If an information system is expected to deal with both individual and general concepts with more than only a moderate degree of accuracy, then both kinds of language can complement one another very effectively. Either of them must be employed just where it is most effective and must be dispensed with where its performance is typically inadequate. (Fugmann, 1985a, p. 400)

Brenner and Saracevic (1985) concur with Fugmann stating,

Today it seems that the ideal search is made on a database with the use of a controlled authority list of some type for entry points into the database, combined with ability to gain more specificity by searching natural language in the title, abstract, and/or added natural language keywords. (p. 3-4)

Finally, Foskett (1982), describes using natural language and indexing language based upon the "Principle of Literary Warrant,"

No matter what our system may be, the information in it must be a function of the input; that is to say, our systems must take account of the relationships between subjects shown in the items we are indexing. We may in addition build into it relationships between

subjects of which we are aware *a priori*, through a study of knowledge *per se*, but if we restrict ourselves to a study of knowledge alone without taking into account knowledge as it is presented in recorded form, ie. information, we shall find ourselves unable to specify subjects precisely. In other words we are concerned with the organization of information rather than the organization of knowledge on its own. The term *literary warrant* is used here to denote that our system must be based on the information we put into it rather than on purely theoretical considerations. (p. 31)

d. Information Retrieval

One of the most time-consuming tasks that a researcher must perform is the ongoing effort of keeping abreast of the literature in one's field (Rowell & Utterback, 1984). The efficient and effective dissemination of information is facilitated by an information retrieval system that takes into account both accuracy in document description and user friendliness. "The effectiveness of retrieval depends partly on the ability of users to formulate questions which truly express their information need" (Derr, 1982, p. 70).

Fugmann (1985b) outlines a number of axioms of indexing and information dissemination based on the objective an inquirer will pursue. An inquiry, based on the semantic triangle (Ogden & Richards, 1923), includes the object under consideration, the concept pertaining to the object, and the linguistic expressions. There will be many linguistic expressions of concepts provided by uncontrolled natural language. Fugmann first introduces the axiom of definability where the ability to retrieve relevant information is considered. This can only occur when

the user defines his inquiry in terms of concepts and their relations. Concepts (abstract entities) are, however, often prey to imprecision and to the inadequacies of the indexing language (Isaac, 1964).

Describing the transfer of information, Artandi (1970) emphasizes the importance of both document content and users' needs, in that they hold equivalent positions in terminology ranging from general usage to highly specific and technical jargon. Fugmann's (1985b) axiom of representational predictability states, "The accuracy of any directed search for relevant responses . . . depends on the predictability of the modes of expression for concepts and concept relations in the search file" (p. 121). The inquirer must be able to reconstruct or predict search parameters which coincide with the expressions encountered in the information retrieval system. Fugmann concludes that indexing always involves the selection of what appears essential, where uncontrolled natural language can effectively complement indexing language in information systems. "The better representational predictability is, the better recall will be" (Fugmann, 1985b, p. 123) leading to a more accurate and efficient information retrieval system. Thus, the development of the keyword classification in this study utilizes both natural language and terms from controlled indexing vocabulary.

F. PERSONAL INFORMATION SYSTEMS USING MICROCOMPUTERS

With the endless stream of material available from various sources, and the exponential growth of published information, a major problem is faced by scientists (Tague, Beheshti, & Rees-Potter, 1981). "How can we retrieve the

information when it is required" (Bate, Grierson, & Warren, 1982, p. 4)? According to Brenner and Saracevic (1985), information seeking and information retrieval are complex processes, for which no universally accepted models yet exist.

Pratt (1982) estimates that, utilizing only the Science and Social Science Citation Indexes, an approximate one million papers with an average of 5,000 words is produced each year. Presently, the pattern of scientific and scholarly articles is one in which most are published in a wide variety of small specialized circulation journals. "Publishing has a peculiar position in the scholarly world: it is a broker for innovation. It cannot stimulate innovation; it can only respond" (Horowitz & Curtis, 1982, p. 90). New information technology is being produced to increase the mechanisms for scientific communication and alleviate the economic pressures facing conventional journal publication patterns (Pratt, 1982). The use of satellite distribution systems (Pratt) with electronic mail and teleconferencing (Burton, 1985), optical videodisks, and user interface for full text databases (Rowley, 1986) are considered areas from which new changes may originate.

Brenner and Saracevic (1985) discuss the 1980s trend of using microcomputers and associated technologies. A sharp reduction in the cost of personal computers has allowed greater ease of accessibility and user control of information (Li, 1985). A "personal information environment" (Malone, 1983, p. 99) in which the microcomputer plays the central role, provides the knowledgeable end user with the ability to download material from the burgeoning bibliographic database systems (Lisanti, 1984) and to use these data as the nucleus of a personal

information system reflecting a researcher's idiosyncratic purposes (Summers, Bruce, & Clark, 1986).

A personal information system, defined as one where an individual collects, annotates and stores bibliographic information according to his/her needs and preferences (Burton, 1981), can have many elaborations and variations. In response to the potential end user, a great variety of information services and products have been developed. Database management systems, a category of software package supporting the management of, and retrieval from, collections of shared data (Rowley, 1986), are used to augment online searching and organize information.

Rowell & Utterback (1984) suggest using the microcomputer to maintain literature currency and organize a literature filing system. By substituting the traditional bibliographic file cards, personal document collections can be maintained with a literature retrieval system (Connolly, Reilly, & Hegarty, 1982). Word processing, ". . . the best thing for writers since the pencil" (Brownell, 1985, p. 73), is used to type the text, which can then be retrieved using database management systems.

Bickers, Berman, Wogenrich, Agatista, and Brown (1985) developed a microcomputer database system based on abstracts and associated keywords. This data was created for use of individual investigators at a scientific research meeting. MARCON II (Kibbey, 1986) is a system of document control combining information retrieval, database and text editing. The system also allows for

creation and maintenance of text databases. In answer to the need for compiling bibliographies, Rosenberg (1983) developed the Personal Bibliographic System, a microcomputer program which automates the compilation of accurate, attractive and well-formatted printed bibliographies. This is advertised as a tool for scholars to use as an interface to larger systems. Industry, too, has benefited from database management systems. Beccera (1987) has developed a microcomputer program for managing banana bibliographic information, which can be maintained, retrieved and processed. The system presently contains 1200 documents and is growing steadily.

FYI 3000 Plus User's Manual (1986) describes the FYI 3000 Plus text database management program as an "electronic filing cabinet" (p. 1-1). By using personal material typed on a word processing program, or by downloading files, FYI 3000 Plus has the power to cross-index key words in the text, search the filing system and output retrieved information.

G. SUMMARY OF LITERATURE REVIEW

Dissertations can serve as valuable vehicles for dissemination of research results and better use should be made of dissertations in special education. The conceptual base for the study derives from the literature discussing the doctoral dissertations' background, development and status as an important source of information. Information science techniques of bibliometrics, classification, and content analysis have been reviewed in order to develop the methodological base of the study.

In 1893, Columbia University Teachers College announced the first Ph.D. program in education, whereas the Ed.D. was first established at Harvard, in 1920. The Ph.D. was initially designed as a professional degree oriented to research and the Ed.D. was considered to be oriented toward the practical, but both degrees require a dissertation which demonstrates a student's ability to use the tools and methods of research, organize the results, and report them clearly. The dissertation has the function of contributing to the existing base of knowledge, and although the importance of the doctoral thesis cannot be overemphasized, many authors have lamented the limited number of dissertations that reach publication. Thus, the need to disseminate the dissertation literature is stressed.

The dissertation literature in special education has grown substantially since the U.S. Public Law 94-142 (1975) was enacted. Techniques from information science, which has as its objective the organizing and provision of better access, effective management, and analysis of information, may enable more accurate and complete communication of the dissertation research. Bibliometrics, quantitatively describing relationships within the literature, provides concepts; for example Bradfordian analysis, which can be applied to compute a core list of highly used vocabulary in special education and identify the most influential core institutions awarding doctoral degrees. Techniques such as content analysis and classification are important in organizing the content of information for the purpose of retrieval and dissemination. Using a combination of controlled and natural indexing languages, and the Principle of Literary Warrant (Foskett, 1982), the keyword classification may facilitate an indexing system that takes into account both accuracy in document description and user friendliness. Such a keyword

system also indicates the major substantive content of the dissertation collection.

Finally, literature documenting the use of microcomputer information retrieval systems is reviewed. Maintaining literature currency, within a "personal information environment," is now possible due to advances in software and hardware technologies. Text database management systems, software packages which support the management of, retrieval from and organization of collections of information have developed in answer to the need for individuals to have direct control and access to a large variety and quantity of information. FYI 3000 Plus, a text database management program, can be utilized in accessing doctoral dissertations, through retrieval of information based on the developed keyword indexing system.

III. METHODOLOGY

This study involves a content analysis, the development of a classification system, a bibliometric analysis, and the development of a microcomputer information retrieval system. It focuses on the dissertation literature in the field of special education from 1980 to 1985. Based upon the the previous chapter, the doctoral dissertation is regarded as a valuable source of information for special education and the content of dissertations should be analyzed and disseminated more broadly to have maximum impact on the field.

A. IDENTIFICATION AND ORGANIZATION OF DISSERTATIONS

The dissertation literature under consideration includes those abstracts identified under the key term "Special Education" in *Dissertation Abstracts International (DAI)* and reported between 1980 and the end of 1985 (Volumes 40 to 46).

Most dissertations included in this collection are from American universities, although three Canadian and two South African institutions are also represented. One may question the term "international" in the title of *Dissertation Abstracts International*. However, as stated by McPhie (1960), part of a doctoral student's responsibility should be to publish an abstract in a national (or international) reference. A number of dissertations awarded from Canadian institutions (1980 to 1985), but not listed in *DAI*, are reported in Dossick's (1986) *Doctoral Research on Canada and Canadians*.

Upon identification, the abstracts for each consecutive year were alphabetically ordered. Beginning with 1980, each abstract was given an identification number, running from 00001 to 02308, the total number of special education dissertations identified.

B. CONTENT ANALYSIS

The content analysis is based on the demographic variables: year of completion, type of degree, sex of author, institution awarding degree, and length of dissertation. The content variables include special education category, research type, and data analysis technique. Similar parameters were utilized by Jeroski (1977) in a content analysis of dissertations in secondary reading. A coding sheet was developed to collect the relevant information for the demographic and content analysis (see Appendix G) and to assign appropriate keywords to describe the content of the dissertations.

1. Demographic Variables

a. Year of Completion

Special education research has rapidly expanded since U.S. Public Law 94-142 (1975) was passed. Allowing for a few years for dissertations in this area to develop, it was decided to analyze the years 1980 to 1985 to determine the characteristics of dissertations produced after the initial introduction and influence of Public Law 94-142.

b. Degree

As indicated by the literature review, there is a great deal of discussion as to the distinction between the Ph.D. (Doctor of Philosophy) and the Ed.D. (Doctor of Education) degree. This variable was tabulated to determine the relative production of the two degrees in special education.

c. Sex of Author

Because the proportion of male and female students in pursuit of doctoral degrees in education is changing, the sex of author was also tabulated. This could only be done where the gender of the author was readily identifiable. The total number is not expected to be equal to the number of dissertation abstracts.

d. Institution awarding degree

To illustrate the relative importance of some institutions in terms of producing doctoral dissertations in special education, and describe the "core" of high producing institutions, the variable institution awarding degrees was tabulated. Institutions from either Canada or South Africa are indicated. Institutions not mentioning a country of origin are from the United States.

e. Length of Dissertation

Most abstracts in *DAI* include information on page length. It is of interest to investigate the average length of a dissertation in special education, the range of pages represented, and compare the median of current dissertations to Berelson's 1961 median length of 200 pages.

2. Content Variables

a. Category of Special Education

A fundamental content analysis question revolves around determining the relative importance of dissertations produced in the various categories of special education as generally defined in the field. Definitions by Chismore and Hill (1978) were used and further delineations made to create and modify categories. In conducting the content analysis, it became necessary to set additional categories based on the Principle of Literary Warrant (Foskett, 1982).

1. Gifted/Talented:

The study of the theory, methods, and technologies for designing, implementing and evaluating organized learning activities for students capable of high performance, including those with demonstrated achievement or ability in any one or more of these areas -- general intellectual ability, specific academic aptitude, creative or productive thinking, leadership ability, visual and performing arts, or psychomotor ability. (Chismore & Hill, 1978, p. 70)

2. Mentally Handicapped: This category was further subdivided into 3.) mild mentally handicapped, 4.) moderate mentally handicapped and 5.) severe mentally handicapped. When an abstract did not clearly indicate one of these three levels of handicap, the general term 'mentally handicapped' was utilized.

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students whose impaired mental development adversely affects their educational performance. (Chismore & Hill, 1978, p. 70)

6. Learning Disability

The study of the theory, methods, and techniques of designing, implementing, and evaluating organized learning activities for students who have disorders in one or more of the basic psychological processes involved in understanding or in the use of language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, spell, or to do mathematical calculations. This category includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. This category does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or of environmental, cultural or economic disadvantage. (Chismore & Hill, 1978, p. 70)

7. Emotionally Disturbed

The study of the theory, methods, and techniques of designing, implementing, and evaluating organized learning activities for students exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance: (a) an inability to learn which cannot be explained by intellectual, sensory or health factors; (b) an inability to build or maintain satisfactory interpersonal relationships with peers and teachers; (c) inappropriate types of behavior or feelings under normal circumstances; (d) a general pervasive mood of unhappiness or depression; (e) a tendency to develop physical symptoms or fears associated with personal or school problems. This category includes children who are schizophrenic [or autistic]. This category does not include children who are socially maladjusted, unless it is determined that they are emotionally disturbed. (Chismore & Hill, 1978, p. 69)

Note: A separate category for autism was created.

8. Orthopedically Impaired

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students who have severe physical impairments which adversely affect their educational performance. (Chismore & Hill, 1978, p. 70)

9. Hearing Handicapped

The study of the theory, methods, and techniques of designing, implementing, and evaluating organized learning activities for students who have an impairment in hearing, as follows: (a) "deaf" means a hearing impairment which is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, which adversely affects educational performance; (b) "hard of hearing" means a hearing impairment, which affects a child's educational performance but which is not included under the definition of "deaf" in this section. (Chismore & Hill, 1978, p. 70)

10. Visually Handicapped

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students who have a visual impairment which adversely affects their educational performance. (Chismore & Hill, 1978, p. 70)

11. Speech Handicapped

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students who have a speech impairment or a language impairment which adversely affects their educational performance. (Chismore & Hill, 1978, p. 70)

12. Socially Handicapped

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students whose behavior may be in conflict with norms of home, school, or community but is not in conflict with subgroup norms and is not related to personal distress. (Chismore & Hill, 1978, p. 70)

13. Multiple Handicapped

The study of the theory, methods, and techniques for designing, implementing, and evaluating organized learning activities for students who have a combination of handicaps that adversely affects their educational performance. (Chismore & Hill, 1978, p. 70)

This category would include, for example, students who are deaf-blind.

14. Early Education

The study of the theory, methods, and techniques of designing, implementing, and evaluating organized learning activities for handicapped students whose physical, emotional, mental, or social needs require a special curriculum and educational setting. (Chismore & Hall, 1978, p. 69)

This category describes studies, in particular, that discuss the needs and methods of early education for young handicapped children.

15. Autism Those studies that use the natural language term "autism."

16. Medically Handicapped Those studies emphasizing medical problems, such as sickle cell anemia or kidney disease.

17. Noncategorical When an abstract did not clearly identify one of the above areas or dealt with special education in a general manner, it was labelled

noncategorical.

b. Research Type

Few studies have been reported, using a large set of data, which indicate the relative importance of the type of research conducted in the field of special education. Because of their direct relationship to research, dissertations provide a good body of content for such an analysis. In consultation with specialists in research methodology, in reference to the Jeroski (1977) study and in referring to research methodology texts (Borg & Gall, 1983; Isaac & Michaels, 1981; Murray, Anderson, Bersani, & Mesaros, 1986), the following research type and data analysis classifications were developed.

1. Quasi-Experimental - Attempts to determine cause and effect in a situation in which random sampling, control and/or manipulation of all relevant variables is not possible.
2. Correlational - Attempts to determine the extent to which one variable covaries with another, without assumption of causation.
3. Survey - Attempts to describe systematically a situation or area of interest factually or accurately. Often described as information collection.
4. Causal-Comparative - Retrospectively attempts to assess cause and effect through examination of extant data.
5. Philosophic - Attempts, without necessarily considering empirical data, to put forward a reasoned view of a situation or process
6. Content Analysis - Attempts to make inferences through a systematic and objective identification and analysis of specified characteristics
7. Material and Test Development - Has as the major focus, the development

of new material or instruments. May include field testing.

8. Case and Field Study - Attempts to study intensively the background, current status, and environmental interactions of a given social unit: an individual, group, institution or community.
9. Ethnography - Attempts to combine participation and observation to describe a culture of subgroups within society from a native perspective
10. Historical - Attempts to reconstruct the past systematically and objectively.

c. Data Analysis Technique

1. Descriptive Statistics - including frequencies, percentages, means, modes, and medians
2. Correlational Analysis - including correlation statistics, regression and Z-statistics
3. Nonparametrics - including chi square analysis, Mann-Whitney U test, Wilcoxon signed rank test, Kruskal-Wallis test
4. Analysis of Variance - including t-tests and analysis of covariance
5. Multivariate Analysis - including multiple regression analysis, discriminant analysis, and canonical analysis
6. Multiple Baseline - including the process of baseline observation, initial introduction of treatment, withdrawal or reversal of treatment (second baseline), and reintroduction of treatment
7. Qualitative - using existing knowledge and theories, theory generation, analytic categories of data collection, grounded theorizing

C. STATISTICAL ANALYSIS

Descriptive statistics were determined as appropriate devices to study the demographic and content variables and illustrate their interaction. Examination of the Jeroski (1977) study revealed use of similar patterns of analysis. Frequency data was used to describe the content and demographic variables. Bivariate contingency tables based on chi square analysis, used to test for independence between the variables, were generated. The decision level for chi square analysis was set at the standard .05 level of significance. The computation of the statistics was performed using the *Statistical Package for Social Sciences*, Extended Version Release 2.1 (Under MTS) program on the University of British Columbia mainframe computer.

D. DEVELOPMENT OF A CLASSIFICATION SYSTEM

Keywords for the classification scheme were developed using principles derived from discussions of complementary controlled and natural indexing languages (Fugmann, 1985a) and the Principle of Literary Warrant (Foskett, 1982) taken from literature in library and information science. The classification system was developed by assigning key words based on the substantive content contained in the titles and abstracts reported in *DAI*. Essentially, a telegraphic abstract was written for each dissertation abstract. The controlled education vocabulary authority list, *Thesaurus of ERIC Descriptors* (1984), was employed to supplement the natural language indexing when general concepts were being addressed or when the ERIC descriptor was deemed to be most representative of the content.

However, natural language was utilized freely in developing keywords when identifying specific concepts or when it was felt no ERIC descriptors were appropriate.

E. BIBLIOMETRIC ANALYSIS

It is of considerable interest to identify the terms that represent the important ideas and concepts in special education and develop a core list of the most highly used vocabulary in the field. Concepts from the Bradfordian analysis type of research were used here. It is also of interest to illustrate the dispersion of institutions awarding dissertations in the field and identify the most influential core institutions using, again, concepts from Bradfordian analysis.

Using Bradford's Law of $R(n)=k\log(n)+R_1$, the key words were ranked in order of frequency, cumulative frequency and log rank. By plotting the cumulative frequency versus the log rank, a Bradford-type curve appears, from which it is then possible to compare the nucleus, linear region and droop zone of the observed distribution of terms or institutions with the theoretical distribution based on the Bradford curve. The number of keywords or institutions in each zone was calculated by taking the inverse of the logarithm.

In order to illustrate the nature of the keyword and institution distributions ($1:a:a^2$), the cumulative frequency data was examined by dividing the data into three equal zones for the Bradford analysis. Once the keyword and institution data were ranked in terms of frequency of occurrence, it became possible to do

a further analysis to identify the essential "core" keywords and group them into useful categories, using rules from Lancaster's (1972) work on vocabulary development in information retrieval. Lancaster reports that approximately 75% of the cumulative frequency keywords would provide a good distribution of terms to describe essential core word usage distribution in a field. Thus, 75% was used as a cutting point to identify those keyterms. The core words were arranged into groups for easier use and a descriptive heading was developed to identify each cluster of words following the Principle of Literary Warrant (Foskett, 1982).

F. MICROCOMPUTER INFORMATION RETRIEVAL SYSTEM

1. Text Entry

The bibliographic citation and the key terms of each abstract taken from the Coding Sheet (see Appendix G) were entered as text on the IBM PC microcomputer using the word processing program *Microsoft Word* (1986). The text entered was unformatted, and was saved in standard ASCII (American Standard Code for Information Interchange) format. The text was typed using the Entry Format #3 of *FYI 3000 Plus*, (the text database management program used in the study). Each text entry (representing one abstract) was marked with a *C at the beginning of the entry, a *K at the beginning of the keywords, and an *E at the end. The keywords were separated by / (see Appendix E). In order to analyze the content and demographic variables, the "content" keys were numerically subordinated. The other descriptive keywords were alphabetically ordered (see Appendix F).

2. Text Database Management System

Once the text in unformatted (ASCII), Entry Format #3 (FYI 3000 Plus) was saved on disk using the word processor, the FYI 3000 Plus program was used to create two new floppy disk management files: the index and vocabulary files. The index file contains the disk locations of all the entries and the vocabulary file contains all the keywords and their frequency of occurrence in the filing system (See Appendix I).

The FYI 3000 Plus program allows for cross-indexing of any type of information using the assigned keywords and provides the searching and retrieving capability of the exact information. Boolean operators, "and," "or," and "not" link keywords in the search request. FYI 3000 Plus will retrieve the information requested and will display it on the screen with the options to print, or to save the information on disk.

3. Personal Information Retrieval System

Agosti and Spilotro (1987) attempt an operational definition of personal information retrieval systems. The combination of the word processing program and database management system was analyzed according to the salient points of the definition. The following variables were considered in the analysis:

1. Application Environment
2. User Categories
3. Document Base
4. Functional Characteristics
5. Database Administration / Redefinition
6. Facilities for Altering an Instance of Database
7. Query Language

8. Presentation of Results

4. User's Guide

A User's Guide to assist in using the personal information retrieval system has been written. It describes the purpose of the system, and attempts to provide the user with clear instructions on searching, displaying vocabulary and output options (see Appendix D). The FYI 3000 Plus automatic search mode was utilized and the user is recommended to refer to the *FYI 3000 Plus User's Manual* for full control, grammatically based queries.

G. SUMMARY OF METHODOLOGY

The methodology of the study is based on several research techniques discussed in the information science literature. The content analysis provides a description of demographic information and determines the categories, research types, and data analysis techniques currently used in dissertation research in special education. Descriptive statistics and chi square analysis are used to analyze the demographic and content variables and illustrate their interactions. A classification system is developed, based on controlled and natural indexing languages and the Principle of Literary Warrant (Foskett, 1982), where keywords are assigned to describe the substantive content of the demographic information, titles and abstracts of the doctoral dissertations in special education announced in *DAI*, 1980 to 1985. In order to identify a core group of terms that represents the ideas and concepts of special education, bibliometric concepts from Bradfordian analysis are used. A core of institutions awarding doctoral degrees is also

identified using these concepts. Finally, a microcomputer information retrieval system is developed using word processing and text database management system software programs to allow greater ease of access to the valuable research information that dissertations in special education have to offer to the field's researchers.

IV. RESULTS

The results are presented following the pattern of the methodology and design of the study as described in Chapter III. Dissertation abstracts written in special education, and announced from 1980 to 1985, were identified from *Dissertation Abstracts International*. A total of 2307 abstracts were organized alphabetically by year. In the following sections, the results of the statistical analysis of the demographic and content variables, the bibliometric analysis, and the characteristics of the microcomputer personal information retrieval system are discussed.

A. STATISTICAL ANALYSIS

Based on the demographic variables of year of completion, type of degree, sex of author, institution awarding degree, and page length, as well as content variables of category of special education, research type, and data analysis technique, the statistical analysis is presented in the form of frequency data and bivariate contingency tables. The computations were performed with the *Statistical Package for Social Sciences*, Extended Version Release 2.1 (Under MTS) (SPSS-X).

1. Univariate Analysis - Demographic Variables

a. Dissertations completed by year

In the years approaching 1980 (1975-1979), the average yearly production of dissertations as reported in *DAI* was approximately 300. In the period which was investigated, 1980 produced 406 dissertations, 1981 indicated 377 and 1982 *DAI* reported a record high of 436. There was a slow decrease in 1983, 1984, and 1985, with 1985 recording 329 dissertations (see Table 3).

b. Type of Degree

With the exception of one Doctor of Social Work (D.S.W.), two Doctor of Psychology (Psy.D.) and two Doctor of Science (Sc.D.) degrees, all the degrees awarded were either the Ph.D. or Ed.D.; 1309 (56.7%) Ph.D.s were completed, versus 991 (43.0%) Ed.D.s (see Table 4).

c. Sex of Author

The 2307 dissertation abstracts were analyzed for the sex of author. Of 2292 identifiable author names, 1446 (62.7%) were female and 846 (36.7%) were male (see Table 5). It may be concluded that Golloday's (1983) estimates of the proportion of women in doctoral education programs has been surpassed (21-47%). This may be due to affirmative action (Solmon, 1976), or the fact that a higher proportion of women enter special education rather than other areas of education, and other variables.

Table 3
Dissertations completed by Year

Year	Frequency	Percent	Cumulative Percent
1980	406	17.6	17.6
1981	377	16.3	33.9
1982	436	18.9	52.8
1983	402	17.4	70.3
1984	357	15.5	85.7
1985	329	14.3	100.00
Total	<u>2307</u>	<u>100.0</u>	

Note. Valid Cases 2307, Missing Cases 0

Table 4
Type of Degree

Degree Type	Frequency	Percent
Ed.D.	991	43.0
Ph.D.	1309	56.7
Sc.D.	2	.1
D.S.W.	1	.0
Psy.D.	2	.1
	2	.1
Total	<u>2307</u>	<u>100.00</u>

Note. Valid Cases 2305, Missing Cases 2

d. Institution awarding degree

A total of 168 institutions announced at least one dissertation in the area of special education in *DAI*. Interestingly enough, Columbia University Teachers College, which was the first institution to announce a Ph.D. program in education in 1893, was also found to announce the most degrees in the six year period. Appendix A lists the institutions, ranked from highest to lowest, and the number of dissertations announced in *DAI*.

e. Length of the dissertation

With a range of 43 to 1263 pages, the distribution of the number of pages is positively skewed with a mean of 163, and a standard deviation of 73. 84 abstracts did not indicate the mean. The median of 149 is considerably lower than Berelson's (1961) result of 200 pages (see Table 6).

f. Summary of Univariate Analysis - Demo. Variables

Since the impact of Public Law 94-142 the dissertations announced in special education, in *DAI*, have been increasing from an average of 300 before 1980 to a peak of 436 in 1982. A slow decrease has been observed since then. A higher proportion of Ph.D. degrees have been completed by a higher proportion of women than men. 168 institutions awarded doctoral degrees in special education, as reported in *DAI*, of which Columbia University Teachers College announced the most dissertations. Finally, the observed median of 149 pages in length is considerably lower than Berelson's (1961) result of 200 pages.

Table 5
Sex of Author

Sex of Author	Frequency	Percent
Female	1446	62.7
Male	846	36.7
	15	.7
Total	2307	100.0
<u>Note.</u> Valid Cases 2292, Missing Cases 15		

Table 6
Length of Dissertation

Page Length	Frequency
0-49pp	3
50-99pp	330
100-149pp	790
150-199pp	608
200-249pp	260
250-299pp	126
300-349pp	61
350-399pp	21
400-449pp	11
450-499pp	3
500-599pp	8
600-799pp	1
over 1000pp	1
	84
Total	2307
<u>Note.</u> Valid Cases 2223, Missing Cases 84	

2. Univariate Analysis - Content Variables

The content variables of category of special education, research type, and data analysis techniques were tabulated as multiple response items. Many dissertations addressed a number of categories and used various types of research or data analysis techniques. Therefore, the total responses recorded will be higher than the actual number of cases.

a. Category of Special Education

In determination of the most researched categories in special education, the category of noncategorical (33.9% of the total responses) is inflated. Noncategorical was used as a catch-all category in classifying the dissertations and includes such diverse content as the effect of Public Law 94-142, attitudes toward mainstreaming, language disability, teacher training and general administration problems. Although not considered as major special education categories, these content areas were assigned appropriate keywords to acknowledge their presence (see Appendix C). Learning disabilities, accounting for 17.4% of the responses, was found to be the most researched substantive category with other categories following the somewhat predictable pattern related to high incidence and low incidence classifications of special needs students (see Table 7).

b. Research Type

Amongst the research types, generally defined in chapter three, survey (29.1%), quasi-experimental (22.4%) and causal-comparative studies (18.3%) were the most commonly reported. Correlational studies and case and field studies, with 9.3%

Table 7
Category of Special Education

Special Education Category	Frequency	Percent
Noncategorical	858	33.9
Learning Disability	440	17.4
Mentally Handicapped	155	6.1
Mild Mentally Handicapped	150	5.9
Emotionally Disturbed	135	5.3
Hearing Handicapped	131	5.2
Gifted and Talented	113	4.5
Multiple Handicapped	95	3.8
Socially Handicapped	85	3.4
Severe Mentally Handicapped	83	3.3
Moderate Mentally Handicapped	66	2.6
Orthopedically Impaired	59	2.3
Early Education	58	2.3
Visually Handicapped	48	1.9
Autism	42	1.7
Speech Handicapped	8	0.3
Medically Handicapped	2	0.1
Total Responses	2528	100.0

Note. Valid Cases 2305, Missing Cases 2

and 9.4% respectively, were also the basis of many dissertations. The research area of ethnography seems to be gaining strength, found mainly in dissertations from 1985 (see Table 8).

c. Data analysis techniques

Analysis of variance (40.5%) was the most commonly reported technique of data analysis. A total of 17.5% of the dissertations relied on multivariate analysis. Unfortunately a high proportion of abstracts did not indicate the use of a particular data analysis technique (see Table 9).

Table 8
Research Type

Type of Research	Frequency	Percent
Survey	680	29.1
Quasi-Experimental	523	22.4
Causal-Comparative	426	18.3
Correlational	220	9.4
Case and Field Study	217	9.3
Material and Test Development	119	5.1
Ethnography	77	3.3
Historical	36	1.5
Content Analysis	30	1.3
Philosophic	6	0.3
Total Responses	2334	100.0

Note. Valid Cases 2294, Missing Cases 13

Table 9
Data Analysis Technique

Data Analysis Technique	Frequency	Percent
Analysis of Variance	620	40.5
Multivariate Analysis	268	17.5
Nonparametrics	186	12.1
Correlational Analysis	167	10.9
Multiple Baseline	121	7.9
Descriptive Statistics	85	5.5
Qualitative	85	5.5
Total Responses	1532	100.0

Note. Valid Cases 1301, Missing Cases 1006

d. Summary of Univariate Analysis - Content Variables

The most commonly reported category of special education (in *DAI*) was "noncategorical," which included studies addressing administration of special education, mainstreaming issues, teacher training, and where the author chose not to categorize subjects according to a particular handicap. Learning disabilities and the four areas of mentally handicapped were the most researched substantive categories. Survey, quasi-experimental, and causal-comparative studies were the three research types utilized most often. Although 44% of the abstracts did not identify data analysis techniques, analysis of variance and multivariate analysis were the most frequently used techniques. It is of interest to consider areas that may be increasing in the future, such as the ethnographic research type.⁹

3. Bivariate Analysis

Chi square analysis was used to generate bivariate contingency tables, in order to test for the independence of two variables. According to Spatz & Johnson (1984, p. 276), chi square requires random (or at least representative) samples of a population and is appropriate when the data used are frequency counts. In cases of multiple response items, only the first response was analyzed since it was found that the results of alternate response items were similar to those shown here. Each chi square analysis has used the standard .05 level of significance. Due to a large amount of data, any significant discrepancy in the proportions will tend to bring the probability below this level.

a. Sex of Author vs. Degree Awarded

The probability of the sex of authors and the degrees awarded being independent variables is .0001. The data indicate that more females have a tendency to do the Ph.D. than males (see Appendix B1).

b. Degree Awarded vs. Page Length

When the Psy.D., Sc.D. and D.S.W. degrees are removed from the contingency table, the probability is .1085. This indicates that the degree awarded (either Ph.D. or Ed.D.) and the page length are not associated. They may be considered to be independent variables (see Appendix B2).

c. Sex of Author vs. Page Length

With a probability of .0441, the variables of sex of author and page length can be considered associated. In the longer page length categories, the relative proportion of females consistently outnumbered that of the males. The reverse is true for the the shorter theses of up to 150 pages or less (see Appendix B3).

d. Degree Awarded vs. Special Education Category

The data indicate a strong association between the variables of degree awarded and special education category. The Ph.D. and Ed.D. dissertations tended to cluster in different special education categories; further analyses would perhaps illustrate this relationship more fully. However, the use of the noncategorical category clouded the issue reporting 41.8% of the Ed.D. vs. 33.6% of the Ph.D. degrees (see Appendix B4).

e. Sex of Author vs. Special Education Category

Another strong association (probability close to 0) exists between sex of author and special education category. The important discrepancy in the relative proportions here seems to rest with the learning disabilities category: 19.4% of the female population versus 12.9% for males (see Appendix B5). The remaining categories indicate relatively equal or random male/female proportions.

f. Degree Awarded vs. Research Type

The association between degree awarded and research type is also strong, with the probability of independence being near 0. Some discrepancies in the cell counts are noted with surveys (Ph.D. - 25.3% vs. Ed.D. - 33.6%), quasi-experimental studies (Ph.D. - 24.0% vs. Ed.D. - 20.9%), correlational studies (Ph.D. - 10.3% vs. Ed.D. - 8.6%) and material and test development (Ph.D. - 4.3% vs Ed.D. - 6.0%). These results provide some support that the distinguishing factors between the Ph.D. and Ed.D., the one being theoretical and the other practical, may still be somewhat true (see Appendix B6).

g. Sex of Author vs. Research Type

The sex of author and the research type have a chi square probability of .0157. This indicates some association, in particular with respect to the sex of the author and causal-comparative studies where 19.9% of women used causal-comparative versus 15.8% for men. A higher proportion of males (32%) conducted survey studies compared to 27.1% for women (see Appendix B7).

h. Degree Awarded vs. Data Analysis Technique

A strong association (probability of .0012) was found for the variables of degree awarded and data analysis technique. The discrepancies are noted for analysis of variance with 45.2% of Ed.D.s and 38.5% of Ph.D.s using this technique, and for multiple baseline with a higher proportion of Ph.D.s (12%) compared to Ed.D.s (5.0%) (see Appendix B8).

i. Sex of Author vs. Data Analysis Technique

The chi square probability of .5411 indicates an independent, random relationship between the variables of sex of author and data analysis techniques. This is an interesting result indicating that an approximately equal number of women and men are attempting to use the different methods (see Appendix B9).

j. Summary of Bivariate Analysis

Chi square analysis, a test of independence, was used to illustrate the interactions of the demographic and content variables, for which nine bivariate contingency tables were generated (see Appendix B). A strong association was indicated between: sex of author and degree awarded, sex of author and page length, degree awarded and page length, degree awarded and special education category, sex of author and special education category, degree awarded and research type, and degree awarded and data analysis technique. Some association was indicated between sex of author and research type, and an independent relationship was reported between degree awarded and page length, and sex of author and data analysis technique.

B. BIBLIOMETRIC ANALYSIS

1. Bradford Analysis of Keywords

The keywords assigned as descriptors for the dissertations in the database provide a general indication of important vocabulary used in the field of special education. A total of 6140 single descriptors were used 39,102 times in indexing the 2307 dissertation abstracts. However, in this analysis the keywords of author and institution were removed to bring the total descriptors to 3331.

Descriptor frequency ranged from a high of 890 postings for the first ranked keyword (adults) to a large number of keywords used three times or less. Appendix E presents the cumulative statistics for the rank order listing of keywords used to index dissertations.

Considerable difference in the frequency of use for each of the 3,331 descriptors can be observed, the analysis of the use frequency was done in an attempt to identify the core of highly used descriptors used in classifying the dissertation abstracts.

Lancaster (1972) states that using a Bradford analysis will produce a concentration of terms that will be representative of the discipline. In order to calculate the Bradford distribution the logarithmic rank of the keywords was plotted along the horizontal axis and the cumulative frequency of the keywords along the ordinate. The slope of the distribution was drawn where the linear

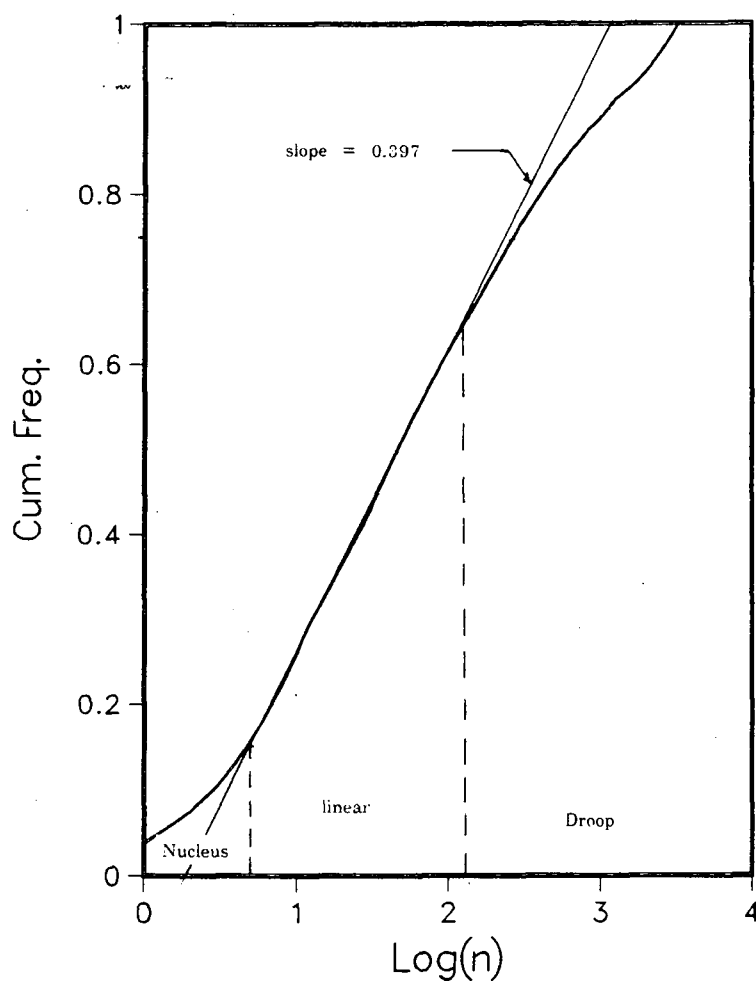
section formed a logarithmic straight line. In this manner the zones indicating concentration of keywords were marked.

By taking the inverse of the logarithm, one may predict the ranks of the keywords in each zone. The nucleus section includes only five keywords, the linear zone accounts for 131 keywords and the droop, extremely long in this study, indicates a very large number of low frequency descriptors. Thus, the characteristics of the keyword distribution follow the logarithmic law of the straight line with the addition of the "Bradfordian" nucleus and droop (see Figure 2).

However, the nature of the distribution does not match the Bradford distribution very closely. The cumulative frequency data were examined and unlike the relationship of $1:a:a^2$, the keywords divided into zones as 16:144:3331 or $1:9:14^2$. This would indicate that the keyword cumulative frequency does not increase geometrically due to the very long tail or droop section. Thus, rather than producing a core of highly used words, a second group of moderately used words, and a large group of words used with low frequency - as expected in a Bradfordian distribution - a small core, moderate second grouping and a large group of infrequently used words emerged. However, it should be noted that the descriptors were generated from a relatively small base of documents (abstracts) and, given further use of the set of descriptors in classifying more abstracts, the overall characteristics may become more Bradfordian.

Figure 2

Keyword's cumulative frequency plotted against rank
(logarithmic scale)



2. Classification of Keywords

The 270 (75% of total number) most frequently used keywords generated from the natural language of the abstracts or the *Thesaurus of ERIC descriptors* were grouped into categories, for convenience of use. Based on the Principle of Literary Warrant (Foskett, 1982), each category was given a descriptive title.

Through this process, 19 clusters emerged and appear in Appendix C with the terms within the categories ranked by the frequency of occurrence. These categories may be considered to constitute a mini-thesaurus of the most highly used keywords generated in the study which can be utilized by the user of the personal information retrieval system to frame searches. These keywords also provide a source of terms for the User's Guide (Appendix D) of the personal information retrieval system. Finally, the descriptors could prove useful in indexing future additions of abstracts to the dissertation collection.

3. Bradford Analysis of Institutions

This analysis was done to identify the important core group of institutions which announced dissertations in special education in *DAI*. Appendix E presents the cumulative statistics for the rank order listing of institutions reporting doctoral dissertations in special education in *DAI* for the period 1980 to 1985.

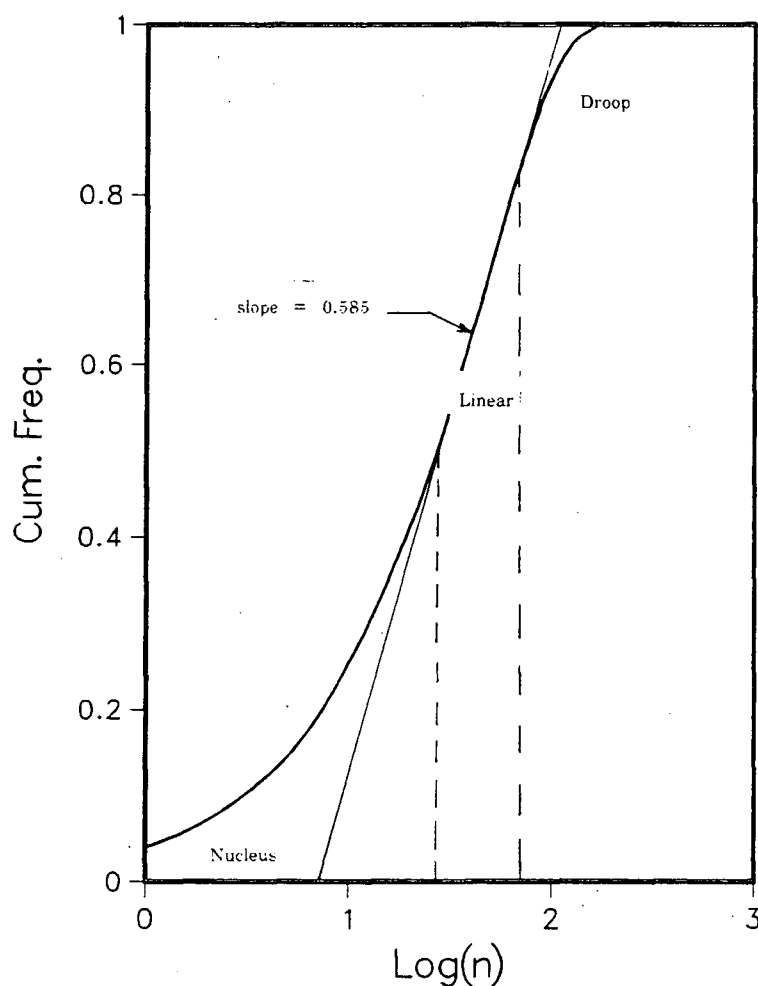
The cumulative frequency of the 168 institutions awarding degrees increases geometrically with the relationship being approximately $1:3:3^2$. The institutions also follow the Bradford distribution, although the nucleus may be considered slightly larger, and the straight logarithmic linear section and droop proportionally small. Twenty-seven institutions comprise the nucleus, the linear zone accounts for 71 universities and the droop holds the remaining 90.

Interestingly, out of the 27 institutions which comprise the nucleus, nine universities are also included in Sindelar and Schloss' (1986) eleven highest

ranked programs. These include Vanderbilt University, University of Kansas, University of Oregon, University of Wisconsin, University of North Carolina, University of Illinois, University of Virginia, University of Minnesota and the University of Washington. The University of Texas at Austin, ranked 31st, is not far behind (see Figure 3).

Figure 3

Institution's cumulative frequency plotted against rank
(logarithmic scale)



4. Summary of Bibliometric Analysis

A Bradford analysis of the keywords and institutions awarding doctoral degrees was performed. The keywords, when plotting the cumulative frequency vs. the logarithm of the rank did not closely approximate the theoretical Bradford distribution due to the very long droop zone of the curve. The core group of institutions awarding doctoral degrees was related to Sindelar and Schloss' (1986) rankings of the top programs in special education. A mini-thesaurus of the concepts and ideas in special education, based on 75% of the cumulative frequency keywords assigned to the dissertation abstracts was developed. These keywords were organized into 19 categories and given descriptive titles (see Appendix C).

C. PERSONAL INFORMATION RETRIEVAL SYSTEM ANALYSIS

The micro or personal computer, with a wide range of software and hardware components, has been made available to end users as a relatively inexpensive tool for creating data files and information systems. Agosti and Spilotro (1987) have attempted an operational definition of software packages which can constitute a personal information retrieval system (PIRS). Using their definition as a conceptual base, the following is an analytic description of the personal information retrieval system (PIRS) developed in this study.

1. PIRS Application Environment

In discussing the application environment, Agosti and Spilotro consider some of the hardware and software capabilities required for a PIRS. Bassiouni (1986) emphasizes a trend toward simplicity and ease of use. The developed PIRS has a friendly user interface, providing easy user / hardware interaction. The user should be able to start working with the FYI 3000 Plus database management system and the word processing software package in a short time using the developed User's Guide (Appendix D). If the user needs to learn the more advanced capabilities of the FYI 3000 Plus system, the *FYI 3000 Plus User's Manual* (1986) and tutorial are available for use. The personal microcomputer required by the FYI 3000 Plus system is the IBM personal computer, XT, AT or a compatible computer. The text used with FYI 3000 Plus must come from a word processing program or a program that saves ASCII files. *Microsoft Word* (1986) was used as the word processing program.

2. User Categories

Agosti and Spilotro suggest that the number or category of users is not a parameter that is necessary in defining an application for "personal." This retrieval system has been designed with any number of users, undergraduate and graduate students, individuals interested in educational research, teachers and / or professors, in mind. The purpose has been to organize and disseminate the dissertation research in special education.

3. Document Base managed by PIRS

The document base used by this PIRS is the dissertation literature in special education. It is of importance to update this information base and although the indexing and entering of text is labor intensive, Agosti and Spilotro state that there should be the capability of reproducing the PIR classification system. Through the use of the Principle of Literary Warrant (Foskett, 1982), using natural language and the ERIC thesaurus, the present classification system should enable the updating of the indexing language, so as to develop with the particular vocabulary of special education.

4. Functional Characteristics

a. Definition of Information Structures

Agosti and Spilotro state that in order to define a PIRS, the structure of documents that are to be managed must include a title, author, date, abstract, descriptor or keyword, identification number and document status. For each of these attributes it is also necessary to know the characteristics of the domain and whether the system is able to manage more than one attribute at a time.

The structure of the documents used in the developed PIRS meet the above criteria. For each abstract from DAI the identification number, author, title and date were recorded using the text processing package (*Microsoft Word*, 1986). The domains of the degree awarded, sex of the author, page length, institution awarding the degree, category of special education, research type, data analysis

technique, type of subjects used and the educational level were all defined as primary keys. Descriptors, were assigned to each abstract, forming what could be called a "telegraphic abstract." In addition to these attributes the exact position in *DAI* (volume and page number) and the purchase order numbers are also listed.

b. Database Administration / Redefinition

Facilities for the management of updated files (or instances) of the database are available. FYI 3000 Plus has the capability of adding new text, where the classification system is integrated with the existing system or to change text already in the filing system and to reindex. Details on the regeneration or reorganization of information are given in the *FYI 3000 Plus User's Manual*.

c. Query Language

"It is the tool which implements the interface with the user" (Agosti & Spilotro, 1987, p. 139). FYI 3000 Plus provides two search modes, the automatic mode as described in the User's Guide (Appendix D) and the full control mode outlined in the *FYI 3000 Plus User's Manual*. The automatic mode is designed to use Boolean operators, "and," "or" and "not." By using these search tools a user can easily structure a specific or general request. Because the FYI 3000 Plus system will only accept the exact keyword vocabulary in the filing system, a search word may be truncated or a few letters typed to identify vocabulary that "sounds like" what was entered.

d. Presentation of Results

There are several types of results presentation supported by FYI 3000 Plus. Retrieved text can be sent to the screen, printer or a disk file. The entire vocabulary file created by FYI 3000 Plus, or parts thereof, can also be retrieved.

The personal information retrieval system (FYI 3000 Plus and word processing package) has a user friendly interface, a large storage capacity and allows the user to access and retrieve the invaluable dissertation research in special education (1980 to 1985).

D. SUMMARY OF RESULTS

The univariate and bivariate analyses were utilized to describe the demographic and content variables and illustrate their relationships in the dissertation research being published in special education. Strong associations were found in most chi square (test of independence) analyses. A Bradford analysis was performed on the keywords assigned to the substantive content of the dissertation abstracts as reported in *DAI* and the institutions awarding degrees in special education. Through these analyses a core group of frequently used keywords and institutions announcing dissertations were identified. The core group of keywords (75% of cumulative frequency) were further organized into categories and given descriptive titles. These clusters may constitute a representative mini-thesaurus of ideas and concepts in special education. Finally, using a definition by Agosti and Spilotro (1987) as the conceptual base, the developed microcomputer personal information retrieval system was analyzed.

V. SUMMARY, CONCLUSIONS, RECOMMENDATIONS

A. SUMMARY

Doctoral dissertations comprise a body of literature which is a vast valuable source of research information, yet remaining largely untapped. The purpose of this study was to provide greater ease of access and to perform a content and descriptive analysis of the dissertation research produced in special education, focussing on the period 1980 to 1985. *Dissertation Abstracts International* was the source of the data collection from which specific content and demographic variables were gathered. Keywords, describing the substantive content of each abstract and title, were assigned based on natural and controlled indexing languages. To identify the most frequent concepts and ideas, and institutions awarding doctoral degrees in special education, a bibliometric analysis was performed. A descriptive and bivariate analysis of the relationships between content and demographic variables was also conducted. Finally an information retrieval system using the personal computer was developed to provide access to the dissertation literature and to accomodate for further increases in the information base. A User's Guide for the personal information retrieval system was also created.

2307 Ph.D. and Ed.D. dissertation abstracts were identified in *Dissertation Abstracts International* from 1980 to 1985. Frequency data were reported for the demographic and content variables. Leading up to 1980, an average of 300 dissertations had been produced per year with this number peaking at 436 in

1982. A slow decrease in numbers has been observed since then. Of the two degrees awarded, 56.7% were the Doctor of Philosophy (Ph.D.) and only 43.0% were the Doctor of Education (Ed.D.). The other .3% degrees awarded were one Doctor of Social Work, two Doctors of Psychology, and two Doctors of Science. A considerably higher proportion of women (62.7%) than men (36.7%) completed doctoral dissertations. A total of 168 institutions produced at least one dissertation in special education. With a range of 43 to 1263 pages and a median of 149, the page length of the dissertation reviewed is less than the median length of 200 pages reported in Berelson's 1961 study.

In assigning each abstract to one of 17 categories of special education, the most common category (33.9%) was "noncategorical," which includes studies addressing general administration problems, attitudes toward mainstreaming and teacher training. Although not reported as categories of special education, these areas were assigned keywords which may be found in the classification of keywords (see Appendix C). Learning disabilities was the most researched substantive category accounting for 17.4% of the reported dissertations. Survey (29.1%), quasi-experimental (22.4%) and causal-comparative studies (18.3%) were the three research types utilized most often. A description of data analysis indicated that 44% of the abstracts did not identify a specific technique, whereas of those cases reported, analysis of variance comprised 40.5% of the responses and multivariate analysis was used 17.5% of the time.

The bivariate study of the relationships between demographic and content variables was performed using chi square analysis. This data analysis technique

was used to test for the independence of two variables at the standard .05 level of significance. Nine bivariate contingency tables were generated producing the following general trends:

1. The sex of author and degree awarded were found to have a strong association. Females have a greater tendency to do Ph.D.s.
2. The degree awarded and page length may be considered to be independent variables.
3. The relative proportion of females consistently outnumbered the males in writing longer theses (longer than 150 pages).
4. A strong association between degree and special education category was found. Although Ph.D. and Ed.D. dissertations tended to cluster randomly in other categories, 41.8% of Ed.D. versus 33.6% of Ph.D. degrees conducted "noncategorical" studies.
5. Another strong association exists between the sex of author and special education category. For example, 19.4% of the female population versus 12.9% for males produced theses in the area of learning disabilities.
6. The probability of independence, for the variables of degree awarded and research type, is near zero. Thus, the debate between Ph.D. and Ed.D. degrees as being theoretical versus practical is somewhat reflected in these results. More survey, materials analysis and test development research were reported in Ed.D. dissertations, while more correlational type and quasi-experimental studies were reported in Ph.D. dissertations.
7. Some association was indicated between sex of author and research type. A total of 19.9% of all women conducted causal-comparative studies compared to 15.8% for men, yet a higher proportion of males compared to females

(27.1%) conducted survey studies.

8. Degree awarded and data analysis technique showed a strong association where a higher proportion of Ed.D. dissertations used analysis of variance and where the reverse was true for multiple baseline studies.
9. An independent relationship was indicated between the variables of sex of author and data analysis. It may be assumed that men and women are both attempting various types of data analysis techniques.

In addition to the analysis of the trends, as indicated by the dissertation literature, a bibliometric analysis of keywords describing special education research was performed. Using the Principle of Literary Warrant (Foskett, 1982) and the concept of natural and controlled indexing languages, the substantive content of each abstract and title was reviewed and appropriate descriptors were assigned. A total of 6140 keywords were used a total of 39102 times in indexing the 2307 dissertation abstracts.

Plotting the cumulative frequency of keywords against the logarithm of the keyword rank produced a Bradford-like distribution with 5 keywords forming the nucleus, 131 comprising the linear section and the remaining keywords making up the very long droop zone of the curve. However, the overall distribution did not closely approximate the expected Bradford curve.

The keywords, in order to better describe the dissertation literature, were also analyzed and classified, ranked by frequency of occurrence. The core group of 75% of the cumulative frequency of keywords (270) were organized into

categories and given titles. A total of 19 clusters emerged, which may constitute a representative mini-thesaurus of concepts and ideas in special education.

An additional bibliometric analysis was performed on the cumulative frequency and logarithmic rank of institutions awarding doctoral degrees. The 168 institutions indicated a geometric increase over zones, however this time, although the distribution more closely approximated the expected Bradford curve, the nucleus, as compared to the linear and droop sections of the Bradford distribution is top heavy. A high proportion of institutions produced a large number of dissertations. The top five institutions awarding doctoral degrees in special education are Columbia University, Vanderbilt University, University of Kansas, University of Alabama and the University of Oregon.

Finally, a personal information retrieval system was developed using the dissertation literature as the information base. A word processing package (*Microsoft Word*) was used to write the text, including the title, demographic and content variables and assigned keywords, and the FYI 3000 Plus text database management program was used to create index and vocabulary files. With the assistance of the personal information retrieval system, individual investigators are given access to this collection of doctoral dissertation abstracts in special education and can study the vocabulary, search the filing system, output information and maintain and organize the growing database.

B. CONCLUSIONS

This study has made a number of contributions to the field of special education:

1. Doctoral dissertations in special education have been organized and described. The literature about the function of dissertations and the nature of Ph.D. and Ed.D. degrees has been reviewed and in general the results of this study are consistent with earlier investigations. A few trends have emerged, including the fact that a greater number of women choose to do doctoral work and graduate with Ph.D. degrees. Women also tend to write longer theses.
2. In classifying the dissertation literature, an index of keywords describing the present concepts and ideas in special education and several descriptive categories organized to group the keywords have been developed. This vocabulary and the content analysis illustrate the wide diversity of interests and topics being pursued in the field. Although no major category or research type dominates, several areas may be expanding (e.g., ethnography).
3. The validity of applying a bibliometric analysis to a ranked frequency list of keywords and institutions reporting dissertations in special education has been assessed. The technique proved useful for general comparisons, but some discrepancies between the Bradford model and the results of this study exist.
4. A microcomputer personal information retrieval system has been developed to provide the potential user with access to the dissertation research in special education. This system is multifaceted; it will describe the vocabulary

used in the literature, will allow a user to search for particular fields of interest and may accomodate the increasing dissertation base. The end user will benefit from this system of information retrieval.

C. LIMITATIONS

1. "Inherent in the concept of document surrogation (description) is a degree of imprecision, the extent of which will largely depend on the effectiveness with which document description and representation is accomplished" (Artandi, 1970, p. 143). There is also a difficulty in working with abstracts of uneven quality (Gross, 1972), and in providing the full information for all the demographic and content variables. However, precluding an examination of the complete dissertations, it is assumed that the abstracts appearing in *Dissertation Abstracts International* (DAI) fairly represent the documents themselves.
2. The reliance upon *DAI*, as the only source of the dissertations, restricts the examination to those dissertations submitted to the abstract publication. While there may be exceptions, most Canadian and American universities require this submission. The resultant body of abstracts, while perhaps not inclusive of every dissertation completed in the field of special education, could nevertheless, be considered as representative for the time period covered in this study.
3. Limiting the examination of dissertations to those reported in *DAI* from 1980 to 1985, will not give the reader a full picture of the research trends in special education which have occurred over a greater period of time. However, the collection of dissertations studied does represent the

recent growth spurt in the production of dissertations in special education since the inception of Public Law 94-142 and useful generalizations can be made using this collection.

4. The "noncategorical" special education category was reported in an overriding 33.9% of the dissertations. Although this result is admittedly inflated, many studies did not indicate a particular type of special education or handicap. The authors addressed the field of special education in diverse areas such as administration, teacher training, mainstreaming, attitudes, parent education and noncategorical placement of children.
5. The future use of the developed microcomputer information retrieval system will require that users have access to the FYI 3000 Plus program, in order to maintain or re-index and to continue to augment the text database.
6. Although the large database produced a representative sample of the literature, and both natural and indexing languages were used, interrater reliability was not studied. However, in order to increase validity of the content analysis professors and graduate students in special education responded to individual problems and assisted in setting up the "keyword classification" categories.

D. RECOMMENDATIONS

1. The text database for the personal information retrieval system should be updated annually and made available (1986 has already been classified!).
2. It would be of interest to study the publication patterns of doctoral students in special education. A citation analysis of major journals and of

the ERIC system may be an approach to this problem.

3. Interrater reliability should be studied, in order to validate the content analysis and classification techniques used. It would also be useful to gauge whether information retrieval remains or increases in effectiveness.
4. A survey should be conducted as to the retrieval effectiveness of the personal information retrieval system. This could include the search parameters used, the process used in formulating the query, and the user's satisfaction with the information retrieved.

REFERENCES

- Agosti, M., & Spilotro, F. (1987). Design of personal information retrieval systems. In K. D. Lehmann, & H. Strohl-Goebel (Eds.), *Proceedings from the second international conference on the application of micro-computers in information, documentation and libraries* (pp. 134-141). New York: North-Holland.
- Anderla, G. J. (1985). Information technology 1970-2000. In D. Raitt (Ed.), *9th International Online Information Meeting*, (pp. 1-6). Oxford, England: Learned Information.
- Anderson, D. G. (1983). Differentiation of the Ed.D. and Ph.D. in education. *Journal of Teacher Education*, 34 (3), 55-58.
- Andren, G. (1981). Reliability and content analysis. In K. E. Rosengren (Ed.), *Sage Annual Reviews of Communication Research*, 9 (pp. 43-67). Beverly Hills, CA: Sage Publications.
- Artandi, S. (1970). Document description and representation. In C. A. Cuadra (Ed.), *Annual Review of Information and Technology*, 5 (pp. 143-167). White Plains, NY: Knowledge Industry Publications.
- Asai, I. (1981). A general formulation of Bradford's distribution: The graph-oriented approach. *Journal of the American Society for Information Science*, 32(2), 113-119.
- Bassiouni, M. A. (1986). Multiple - interface information systems. In J. M. Hurd (Ed.), *Proceedings of ASIS Annual Meeting*, 23 (pp. 6-11). Medford, NJ: Learned Information.
- Bate, G. C., Grierson, D. S., & Warren, P. R. (1982). Personalized information retrieval systems. *South African Journal of Science*, 78(1), 4-5.
- Beccera, R. (1987). Micro-computer for managing of banana bibliographical information. In K. D. Lehmann, & H. Strohl-Goebel (Eds.), *Proceedings from the second international conference on the application of micro-computers in information, documentation and libraries* (pp. 185-189). New York: North-Holland.

- Berelson, B. (1952). *Content analysis in communication research*. Glencoe, IL: Free Press.
- Berelson, B. (1960). *Graduate education in the United States*. New York: McGraw-Hill Book Company.
- Berelson, B. (1961). Graduate education today. *The Doctorate in Education: Vol. 3. Conference Report* (pp. 113-133). Washington, DC: American Association of Colleges for Teacher Education.
- Bickers, R. G., Berman, W., Jr., Wogenrich, D., Agatista, P., & Brown, A. K. (1985). Creating a searchable database from a scientific research meeting program. In D. Raitt (Ed.), *9th International Online Information Meeting* (pp. 77-84). Oxford, England: Learned Information.
- Borg, W. R., & Gall, M. D. (1983). *Educational research, an introduction* (2nd ed.). New York: Longman.
- Borko, H., & Bernier, C. L. (1978). *Indexing concepts and methods*. New York: Academic Press.
- Bradford, S. C. (1934). Sources of information on specific subjects. *Engineering*, 137, 85-86.
- Brehaut, W. (1969). Trends in education theses in Canada: 1962-67. *Education Canada*, 9(2), 33-36.
- Brenner, E. H., & Saracevic, T. (1985). *Indexing and searching in perspective*. Philadelphia, PA: National Federation of Abstracting and Information Services.
- Briggs, L. J. (1984). How dissertations in instructional design have enriched research literature. *Educational Technology*, 24 (7), 43-46.
- Broadus, R. N. (1987). Early approaches to bibliometrics. *Journal of the American Society for Information Science*, 38 (2), 127-129.
- Brookes, B. C. (1983). The empirical law of natural categorization. *Journal of Information Science*, 6 (5), 147-157.

- Brownell, B. A. (1985). *Using computers*. Beverly Hills, CA: Sage Publications.
- Burton, H. D. (1981). FAMULUS revisited: Ten years of personal information systems. *Journal of the American Society for Information Science*, 32 (6), 440-443.
- Burton, H. D. (1985). The changing environment of personal information systems. *Journal of the American Society for Information Science*, 36 (1), 48-52.
- Budd, R. W., & Thorp, R. K. (1963). *An introduction to content analysis*. Iowa City, IA: School of Journalism, State University of Iowa.
- Carmichael, O. C. (1961). *Graduate education: A critique and a program*. New York: Harper & Brothers.
- The Cartter report on the leading schools of education, law, and business. (1977). *Change*, 9 (2), 44-48.
- Chismore, W. D., & Hall, Q. M. (1978). *A classification of educational subject matter*. Washington, DC: National Center for Education Statistics.
- Coile, R. C. (1977). Lotka's frequency distribution of scientific productivity. *Journal of the American Society for Information Science*, 28, 366-370.
- Connolly, J., Reilly, V., & Hegarty, T. (1982). A personal, computerized retrieval system. *Journal of Information Science*, 4 (2/3), 97-104.
- Cooper, H. M. (1985, March). *A taxonomy of literature reviews*. Paper presented at Annual Meeting of the American Educational Research Association, Chicago, IL. (ERIC Document Reproduction Service No. ED 254 541)
- Council of Graduate Schools in the United States. (1979). *Requirements for the Ph.D., A policy statement*. Washington, DC: CGS Publications Committee.
- Cremin, L. A. (1978). *The education of the educating professions*. Washington, DC: American Association of Colleges for Teacher Education.
- Dear, E. C. (1977). First physical education Doctor of Arts. *Improving College and University Teaching*, 25, 156.

Derr, R. L. (1982). A classification of questions in information retrieval by conceptual presupposition. In A. E. Petrarca, C. I. Taylor, & R. S. Kohn (Eds.), *Proceedings of the ASIS Annual Meeting, 19* (pp. 69-71). White Plains, NY: Knowledge Industry Publications.

Dissertation Review Committee, Horace Rackham School of Graduate Studies. (1976). *The role of the dissertation in doctoral education at the University of Michigan*. Ann Arbor, MI: University of Michigan. (ERIC Document Reproduction Service No. ED 138 206)

Dissertation Abstracts International. (1980-1985). Section A: Humanities and Social Sciences (Vol. 40-46). Ann Arbor, MI: University Microfilms International.

Dossick, J. J. (1972). *Doctoral research at the School of Education, New York University, 1890-1970*. New York: New York University Press.

Dossick, J. J. (1986). *Doctoral research on Canada and Canadians*. Ottawa, Ont.: National Library of Canada, Minister of Supply and Services Canada.

Drott, M. C. (1981). Bradford's law: Theory, empiricism and the gaps between. *Library Trends*, 30 (1), 41-52.

Fairthorne, R. (1969). Quantitative treatment of information. *Journal of Documentation*, 25 (4), 319-343.

Fidel, R. (1986). The possible effect of abstracting guidelines on retrieval performance of free text searching. *Information Processing and Management*, 22 (4), 309-316.

Foskett, A. C. (1982). *The subject approach to information* (4th ed.). Hamden, CT: Linnet Books, The Shoe String Press.

French, J. L., & Raykovitz, J. (1984). Dissertation research in school psychology, 1978-1980. *Journal of School Psychology*, 22 (1), 73-82.

Fugmann, R. (1985a). The complementarity of natural and indexing languages. In L. M. Chan, P. A. Richmond, & E. Svenonius (Eds.), *Theory of Subject Analysis* (pp. 390-402). Littleton, CO: Libraries Unlimited, Inc.

Fugmann, R. (1985b). The five-axiom theory of indexing and information supply. *Journal of the American Society for Information Science*, 36 (2), 116-129.

FYI 3000 Plus, User's Manual. (1986). Austin, TX: FYI, Incorporated.

Glass, G. V. (1976). Primary, secondary and meta-analysis of research. *Educational Researcher*, 5 (10), 3-8.

Golladay, M. A. (1983). Graduate study in education: An analysis of institutions and degree awards, 1971-1981. Washington, DC: National Center for Educational Statistics. (ERIC Document Reproduction Service No. ED 240 064)

Gross, R. E. (1972). A decade of doctoral research in social studies education. *Social Education*, 36 (5), 555-565.

Hanson, D. J. (1975). The dissemination of Ph.D. results: Further findings. *The American Sociologist*, 10 (4), 237-238.

Harmon, L. R. (1978). *A century of doctorates: Data analyses of growth and change*. Washington, DC: National Academy of Sciences.

Hoffman, E. (1982). A quantitative evaluation of the information content of documents. *Information Processing and Management*, 18 (3), 133-139.

Horowitz, I. L., & Curtis, M. E. (1982). The impact of new information technology on scientific and scholarly publishing. *Journal of Information Science*, 4, 87-96.

Husen, T., & Postlewaite, T. N. (Eds.). (1985). *The international encyclopedia of education*, Vol. 8, (S), 4739. New York: Pergamon Press.

Institute of Cost Analysis. (1983). ICA: A new professional organization of interest to members of ASIS. *Journal of the American Society for Information Science*, 34 (1), 91.

Isaac, A. M. (1964). *Structure, validity and prospects of classification schemes*. Bombay India: Information Division, Atomic Energy Establishment Trombay.

- Isaac, S., & Michael, W. B. (1981). *Handbook in research and evaluation* (2nd ed.). San Diego, CA: Edits Publishers.
- Jeroski, S. F. (1977). *The doctoral dissertation requirement for secondary reading*. Unpublished master's thesis, University of British Columbia, Vancouver, B.C.
- Jones, K. (1974). The environment of classification. Part II: How we classify. *Journal of the American Society for Information Science*, 25 (1), 44-51.
- Kibbey, M. H. (1986). MARCON II: Information control on a microcomputer. *Online*, 8 (1), 18-21.
- Lancaster, F. W. (1972). *Vocabulary control for information retrieval*. Washington, DC: Information Resources Press.
- Li, T-C. (1985). *An introduction to online searching*. London, England: Greenwood Press.
- Lisanti, S. (1984). The online search. *Byte*, 9, 215-230.
- Liston, D. M., Jr., & Howder, M. L. (1977). Subject analysis. In M. E. Williams (Ed.), *Annual Review of Information Science and Technology*, 12 (pp. 81-118). White Plains, NY: Knowledge Industry Publications.
- Malone, T. W. (1983). How do people organize their desks? Implications for the design of office information systems. *ACM Transactions on Office Information Systems*, 1 (1), 99-112.
- McPhie, W. E. (1960). Factors affecting the value of dissertations. *Social Education*, 24 (8), 375-377, 385.
- Microsoft Word*. (1986). Redmond, WA: Microsoft Corporation.
- Miller, R. (1985). Designing your own low cost front end software. *Online*, 9, 94-98.
- Murray, C., Anderson, J., Bersani, H., & Mesaros, R. (1986). Qualitative research methods in special education: Ethnography, microethnography, and ethology. *Journal of Special Education Technology*, 7 (3), 15-31.

- Narin, F., & Moll, J. K. (1977). Bibliometrics. In M. E. Williams (Ed.), *Annual Review of Information Science and Technology*, 12 (pp. 35-58). White Plains, NY: Knowledge Industry Publications.
- O'Connor, D. O., & Voos, H. J. (1981). Empirical laws, theory construction and bibliometrics. *Library Trends*, 30 (1), 9-20.
- Ogden, C. K., & Richards, I. A. (1923). *The meaning of meaning*. New York: A Harvest Book; Harcourt, Brace & World, Inc.
- OISE Bulletin. (1985/86). *Graduate Degrees in Education, University of Toronto / The Ontario Institute for Studies in Education*. Toronto, Ont.: Office of Graduate Studies, University of Toronto.
- Parker, L. M. P. (1983). Towards a theory of document learning. *Journal of the American Society for Information Science*, 34 (1), 16-21.
- Pratt, A. D. (1980). Microcomputers as information dissemination tools. In A. R. Benenfeld, & E. J. Kazlauskas (Eds.), *Proceedings of the ASIS Annual Meeting*, 17 (pp. 314-316). White Plains, NY: Knowledge Industry Publications.
- Pratt, A. D. (1982). Dissemination of scientific information by satellite. *Information Technology and Libraries*, 1 (2), 140-142.
- Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of Documentation*, 25 (4), 348-349.
- Pritchard, A. (1972). Bibliometrics and information transfer. *Research in Librarianship*, 4, 37-46.
- Rosenberg, V. (1983). The personal bibliographic system: A system for creating and maintaining bibliographies. *Information Technology and Libraries*, 2 (2), 184-187.
- Rowell, P. P., & Utterback, N. (1984). Scientific literature currency and organization using a microcomputer. *Online*, 8 (1), 18-21.
- Rowley, J. E. (1982). *Abstracting and indexing*. London, England: Clive Bingley Ltd.

- Rowley, J. E. (1986). Text retrieval systems -- an outline. *Oxford Surveys in Information Technology*, 3, 211-245.
- Russel, J. H. (1961). The doctorate in education -- the institutions. *The Doctorate in Education: Vol. 3. Conference Report*. Washington, DC: American Association of Colleges for Teacher Education.
- Schlacter, G., & Thominson, D. (1974). The library science doctorate: A quantitative analysis of dissertations and recipients. *Journal of Education for Librarianship*, 15, 95-111.
- Schmidt, K. M. (1985). Can there be a symbiosis between natural language meaning and concept? Conceptual analysis in the humanities. In C. A. Parkhurst (Ed.), *Proceedings of the ASIS Annual Meeting*, 23 (pp. 358). White Plains, NY: Knowledge Industry Publications.
- Schneider, B. L. (1984). Graduate programs in schools of education: Facing tomorrow, today. In M. J. Pelczar, Jr., & L. C. Solman (Eds.), *Keeping Graduate Programs responsive to national needs* (pp. 57-63). San Francisco, CA: Jossey-Bass, Inc.
- Schrader, A. M. (1981). Teaching bibliometrics. *Library Trends*, 30 (1), 151-172.
- Sichel, H. S. (1985). A bibliometric distribution that really works. *Journal of the American Society for Information Science*, 36 (5), 314-321.
- Simpson, J. W. (1985). Information megatrends. In D. I. Raitt (Ed.), *9th International Online Information Meeting* (pp. 15-21). Oxford, England: Learned Information Ltd.
- Sindelar, P. T., & Schloss, P. J. (1986). The reputations of doctoral training programs in special education. *Journal of Special Education*, 20 (1), 49-59.
- Skolnik, H. (1979). Historical development of abstracting. *Journal of Chemical Information and Computer Science*, 19 (4), 215-218.
- Smith, R. N., & Evens, M. (1977). Generating a conceptual network from an index. In B. M. Fry (Ed.), *Proceedings of the ASIS Annual Meeting*, 14 (pp. 86). White Plains, NY: Knowledge Industry Publications. Meeting, 14, 86.

- Solmon, L. C. (1976). *Male and female graduate students, The question of equal opportunity*. New York: Praeger Publishers.
- Spriestersbach, D. C. (1970). The place of the dissertation in the training of graduate students. In J. N. Eshelman (Ed.), *Proceedings of the Annual Meeting of the Council of Graduate Schools in the U.S.* (pp. 139-143). Washington, DC: Council of Graduate Schools in the U.S.
- Spriestersbach, D. C., & Lyell, D. H. (1978). The Ph.D. dissertation: Servant or master? *Improving College and University Teaching*, 26 (1), 52-55.
- Spurr, S. H. (1970). *Academic degree structures: Innovative Approaches*. Toronto, Ont.: McGraw-Hill Book Company.
- Statistical Package for Social Sciences* (Ed. 2.1). Chicago, IL: SPSS-X Inc.
- Summers, E. G. (1983). Bradford's law and the retrieval of reading research journal literature. *Reading Research Quarterly*, 19 (1), 102-109.
- Summers, E. G. (1986). The information flood in learning disabilities: A bibliometric analysis of the journal literature. *Remedial and Special Education*, 7 (1), 49-60.
- Summers, E. G., Bruce, R. E., & Clarke, B. R. (1986). Using microcomputers to augment a mainframe bibliographic search service: A case study in developing end user personal information systems. *Educational Technology*, 26 (2), 25-30.
- Tague, J., Beheshti, J., & Rees-Potter, L. (1981). The law of exponential growth: Evidence, implications and forecasts. *Library Trends*, 30 (1), 125-149.
- Thesaurus of ERIC descriptors* (10th Ed.). (1984). Phoenix, AZ: Oryx Press.
- Tindall, R. H. (1968). Research in the training programs of school psychologists. *Journal of School Psychology*, 1, 58-73.
- Vockell, E. L., & Jacobson, V. (1983). Sources of information in the learning disabilities and special education literature. *Learning Disability Quarterly*, 6 (2), 83-89.

- Walters, E. (1965). *Graduate education today*. Washington, DC: American Council on Education.
- White, D. W. (1977). An historical review of doctoral program growth and dissertation research in art education 1893-1974. *Studies in Art Education*, 19 (1), 6-20.
- Wilkinson, E. A. (1972). The ambiguity of Bradford's law. *Journal of Documentation*, 28, 122-130, 232.
- Wolfe, D., & Kidd, C. V. (1971). The future market for Ph.D.'s. *Science*, 173, 784-793.
- Wyllys, R. E. (1981). Empirical and theoretical bases of Zipf's law. *Library Trends*, 30 (1), 53-64.
- Ysseldyke, J. E., & Pickholtz, H. (1975). Doctoral research in school psychology: 1967-73. *Journal of School Psychology*, 13 (3), 264-271.

APPENDIX A
INSTITUTIONS AWARDING DOCTORAL DEGREES IN SPECIAL EDUC.

Institutions Awarding Doctoral Degrees in Special Education
and announced in Dissertation Abstracts International
(1980-1985)

Freq. Institutions (in rank order)

93 COLUMBIA UNIVERSITY TEACHERS COLLEGE
74 VANDERBILT UNIVERSITY, GEORGE PEABODY COLLEGE
65 UNIVERSITY OF KANSAS
55 UNIVERSITY OF ALABAMA
53 UNIVERSITY OF OREGON
52 UNIVERSITY OF PITTSBURGH
51 UNIVERSITY OF FLORIDA
51 UNIVERSITY OF SOUTHERN CALIFORNIA
47 UNIVERSITY OF WISCONSIN-MADISON
46 UNIVERSITY OF NORTHERN COLORADO
42 UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
40 BOSTON UNIVERSITY SCHOOL OF EDUCATION
40 UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
39 UNIVERSITY OF CONNECTICUT
37 TEMPLE UNIVERSITY
36 SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE
34 RUTGERS U., STATE U. OF NEW JERSEY (NEW BRUNSWICK)
32 UNIVERSITY OF MICHIGAN
31 UNIVERSITY OF MARYLAND
31 UNIVERSITY OF VIRGINIA
29 KENT STATE UNIVERSITY
29 OHIO STATE UNIVERSITY
29 UNIVERSITY OF MINNESOTA
29 UNIVERSITY OF WASHINGTON
28 UNIVERSITY OF CALIFORNIA, LOS ANGELES
28 UNIVERSITY OF MISSOURI-COLUMBIA
27 GEORGIA STATE UNIVERSITY - COLLEGE OF EDUCATION
27 MICHIGAN STATE UNIVERSITY
27 UNIVERSITY OF CINCINNATI
27 UNIVERSITY OF GEORGIA
27 UNIVERSITY OF TEXAS AT AUSTIN
26 AMERICAN UNIVERSITY
25 BOSTON COLLEGE
24 UNIVERSITY OF SOUTH CAROLINA
23 SAINT LOUIS UNIVERSITY
23 VIRGINIA POLYTECHNIC INST. AND STATE UNIVERSITY
22 GEORGE WASHINGTON UNIVERSITY
22 INDIANA UNIVERSITY
22 UNIVERSITY OF MASSACHUSETTS
20 TEXAS WOMAN'S UNIVERSITY

Appendix A (continued)

Freq.	Institutions (in rank order)
<hr/>	
20	UNIVERSITY OF SOUTHERN MISSISSIPPI
19	NORTH TEXAS STATE UNIVERSITY
19	PENNSYLVANIA STATE UNIVERSITY
19	WEST VIRGINIA UNIVERSITY
19	YESHIVA UNIVERSITY
18	EAST TEXAS STATE UNIVERSITY
18	MEMPHIS STATE UNIVERSITY
18	NORTHWESTERN UNIVERSITY
17	BRIGHAM YOUNG UNIVERSITY
17	NEW YORK UNIVERSITY
17	SYRACUSE UNIVERSITY
17	UNIVERSITY OF DENVER
17	WAYNE STATE UNIVERSITY
16	UNIVERSITY OF IOWA
16	UNIVERSITY OF NEBRASKA-LINCOLN
16	UNIVERSITY OF SAN FRANCISCO
15	TEXAS TECH UNIVERSITY
15	UNIVERSITY OF ARIZONA
15	UNIVERSITY OF SOUTH FLORIDA
13	COLUMBIA UNIVERSITY
13	KANSAS STATE UNIVERSITY
13	UNIVERSITY OF TORONTO (CANADA)
13	UTAH STATE UNIVERSITY
12	LOYOLA UNIVERSITY OF CHICAGO
12	NORTHERN ARIZONA UNIVERSITY
12	UNIVERSITY OF NORTH DAKOTA
11	ARIZONA STATE UNIVERSITY
11	FLORIDA STATE UNIVERSITY
11	GALLAUDET COLLEGE
11	PURDUE UNIVERSITY
11	UNIVERSITY OF KENTUCKY
10	HARVARD UNIVERSITY
10	UNITED STATES INTERNATIONAL UNIVERSITY
10	UNIVERSITY OF CALIFORNIA, BERKELEY
10	UNIVERSITY OF COLORADO AT BOULDER
10	UNIVERSITY OF IDAHO
10	WESTERN MICHIGAN UNIVERSITY
9	AUBURN UNIVERSITY
9	ILLINOIS STATE UNIVERSITY
9	NORTHERN ILLINOIS UNIVERSITY
9	UNIVERSITY OF NEW ORLEANS
9	UNIVERSITY OF TENNESSEE
8	BOSTON UNIVERSITY
8	CLAREMONT GRADUATE SCHOOL

Appendix A (continued)

Freq.	Institutions (in rank order)
<hr/>	
8	LEHIGH UNIVERSITY
8	UNIVERSITY OF CALIFORNIA, BERKELEY, SAN FRAN. ST. U.
8	UNIVERSITY OF NORTH CAROLINA AT GREENSBORO
8	UNIVERSITY OF OKLAHOMA
7	CASE WESTERN RESERVE UNIVERSITY
7	FORDHAM UNIVERSITY
7	UNIVERSITY OF UTAH
6	BALL STATE UNIVERSITY
6	CATHOLIC UNIVERSITY OF AMERICA
6	STATE UNIVERSITY OF NEW YORK AT BUFFALO
6	UNIVERSITY OF HOUSTON
6	UNIVERSITY OF MISSISSIPPI
6	UNIVERSITY OF PENNSYLVANIA
5	FLORIDA ATLANTIC UNIVERSITY
5	LOUISIANA STATE UNIVERSITY
5	OKLAHOMA STATE UNIVERSITY
5	PEPPERDINE UNIVERSITY
5	UNIVERSITY OF CALIFORNIA, RIVERSIDE
5	UNIVERSITY OF CALIFORNIA, SANTA BARBARA
5	UNIVERSITY OF NEVADA, RENO
5	UNIVERSITY OF PRETORIA (SOUTH AFRICA)
5	UNIVERSITY OF THE PACIFIC
5	UNIVERSITY OF TOLEDO
4	BOWLING GREEN STATE UNIVERSITY
4	DUKE UNIVERSITY
4	FAIRLEIGH DICKINSON UNIVERSITY
4	NEW MEXICO STATE UNIVERSITY
4	SEATTLE UNIVERSITY
4	SOUTHERN ILLINOIS UNIVERSITY AT EDWARDSVILLE
4	UNIVERSITY OF SOUTH DAKOTA
3	CLARK UNIVERSITY
3	COLLEGE OF WILLIAM AND MARY IN VIRGINIA
3	HOFSTRA UNIVERSITY
3	JOHNS HOPKINS UNIVERSITY
3	MARQUETTE UNIVERSITY
3	TEXAS A&M UNIVERSITY
3	UNION FOR EXPERIMENTING COLLEGES AND UNIVERSITIES
3	UNIVERSITY OF LOUISVILLE
3	UNIVERSITY OF MIAMI
3	UNIVERSITY OF NEVADA, LAS VEGAS
3	UNIVERSITY OF ROCHESTER
2	BOSTON UNIVERSITY, SARGENT COLLEGE
2	DRAKE UNIVERSITY
2	MIAMI UNIVERSITY

Appendix A (continued)

Freq.	Institutions (in rank order)
<hr/>	
2	NORTHWESTERN STATE UNIVERSITY OF LOUISIANA
2	OREGON STATE UNIVERSITY
2	UNIVERSITY OF BRITISH COLUMBIA (CANADA)
2	UNIVERSITY OF CALIFORNIA, CALIFORNIA ST. U., LOS ANGELES
2	UNIVERSITY OF LA VERNE
2	UNIVERSITY OF MISSOURI-KANSAS CITY
2	UNIVERSITY OF SOUTH AFRICA (SOUTH AFRICA)
1	BAYLOR UNIVERSITY
1	BRYN MAWR COLLEGE
1	CITY UNIVERSITY OF NEW YORK
1	CLAREMONT GRADUATE SCHOOL AND SAN DIEGO STATE UNIVERSITY
1	EAST TENNESSEE STATE UNIVERSITY
1	FIELDING INSTITUTE
1	INDIANA STATE UNIVERSITY
1	INDIANA UNIVERSITY OF PENNSYLVANIA
1	MCNEESE STATE UNIVERSITY
1	MISSISSIPPI STATE UNIVERSITY
1	NORTH CAROLINA STATE UNIVERSITY AT RALEIGH
1	NORTHEAST LOUISIANA UNIVERSITY
1	NORTHEASTERN UNIVERSITY
1	OHIO UNIVERSITY
1	RUTGERS U., STATE U. OF NEW JERSEY G.S.A.P.P.
1	RUTGERS UNIVERSITY
1	STANFORD UNIVERSITY
1	STATE UNIVERSITY OF NEW YORK AT STONY BROOK
1	TEXAS SOUTHERN UNIVERSITY
1	UNION GRADUATE SCHOOL (OHIO)
1	UNIVERSITY OF ARKANSAS
1	UNIVERSITY OF ILLINOIS AT CHICAGO
1	UNIVERSITY OF ILLINOIS AT CHICAGO CIRCLE
1	UNIVERSITY OF MAINE
1	UNIVERSITY OF MISSOURI-SAINT LOUIS
1	UNIVERSITY OF MONTANA
1	UNIVERSITY OF NEW MEXICO
1	UNIVERSITY OF SAN DIEGO
1	UNIVERSITY OF SASKATCHEWAN (CANADA)
1	UNIVERSITY OF TULSA
1	UNIVERSITY OF WISCONSIN-MILWAUKEE
1	WASHINGTON STATE UNIVERSITY
1	WASHINGTON UNIVERSITY

APPENDIX B
BIVARIATE ANALYSES

Appendix B1

Sex of Author vs. Degree Awarded

Degree Awarded	Sex of Author		Row Total
	Male	Female	
Ph.D.			
Total	435	866	1301
Row Percent	33.4	66.6	56.9
Column Percent	51.5	60.1	
Total Percent	19.0	37.9	
Ed.D.			
Total	410	576	986
Row Percent	41.6	58.4	43.1
Column Percent	48.5	39.9	
Total Percent	17.9	25.2	
Column Total	845	1442	2287
	36.9	63.1	100.0

Chi Square (1, N = 2287) = 15.630, $p < .05$
 sig = 0.0001

Appendix B2

Degree Awarded vs. Page Length

Page Length	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
0-49pp			
Total	2	1	3
Row Percent	.2	.1	.1
Column Percent	66.7	33.3	
Total Percent	.1	.0	
50-99pp			
Total	172	158	330
Row Percent	13.6	16.7	14.9
Column Percent	52.1	47.9	
Total Percent	7.8	7.1	
100-149pp			
Total	450	340	790
Row Percent	35.5	35.9	35.6
Column Percent	57.0	43.0	
Total Percent	20.3	15.3	
150-199pp			
Total	350	256	606
Row Percent	27.6	27.0	27.3
Column Percent	57.8	42.2	
Total Percent	15.8	11.5	
200-249pp			
Total	153	106	259
Row Percent	12.1	11.2	11.7
Column Percent	59.1	40.9	
Total Percent	6.9	4.8	
250-299pp			
Total	77	48	125
Row Percent	6.1	5.1	5.6
Column Percent	61.6	38.4	
Total Percent	3.5	2.2	
300-349pp			
Total	40	20	60
Row Percent	3.2	2.1	2.7
Column Percent	66.7	33.3	
Total Percent	1.8	.9	
350-399pp			
Total	16	5	21
Row Percent	1.3	.5	.9
Column Percent	76.2	23.8	
Total Percent	.7	.2	

Appendix B2 (continued)

Page Length	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
400-449pp			
Total	6	5	11
Row Percent	.5	.5	.5
Column Percent	54.5	45.5	
Total Percent	.3	.2	
450-499pp			
Total		3	3
Row Percent		.3	.1
Column Percent		100.0	
Total Percent		.1	
500-599pp			
Total	3	5	8
Row Percent	.2	.5	.4
Column Percent	37.5	62.5	
Total Percent	.1	.2	
over 1000pp			
Total		1	1
Row Percent		.1	.0
Column Percent		100.0	
Total Percent		.0	
Column Total	1269	948	2217
	57.2	42.8	100.0

Note. Cell containing page length 600-799pp missing from raw data.

Chi Square (11, N = 2217) = 16.979, $p < .05$
 sig. = 0.1085

Appendix B3

Sex of Author vs. Page Length

Page Length	Sex of Author		
	Male	Female	Row Total
0-49pp			
Total	1	2	3
Row Percent	.1	.1	.1
Column Percent	33.3	66.7	
Total Percent	.0	.1	
50-99pp			
Total	141	189	330
Row Percent	17.3	13.5	14.9
Column Percent	42.7	57.3	
Total Percent	6.4	8.5	
100-149pp			
Total	303	482	785
Row Percent	37.2	34.5	35.5
Column Percent	38.6	61.4	
Total Percent	13.7	21.8	
150-199pp			
Total	225	380	605
Row Percent	27.6	27.2	27.4
Column Percent	37.2	62.8	
Total Percent	10.2	17.2	
200-249pp			
Total	74	83	257
Row Percent	9.1	13.1	11.6
Column Percent	28.8	71.2	
Total Percent	3.3	8.3	
250-299pp			
Total	41	85	126
Row Percent	5.0	6.1	5.7
Column Percent	32.5	67.5	
Total Percent	1.9	3.8	
300-349pp			
Total	18	42	60
Row Percent	2.2	3.0	2.7
Column Percent	30.0	70.0	
Total Percent	.8	1.9	
350-399pp			
Total	4	17	21
Row Percent	.5	1.2	.9
Column Percent	19.0	81.0	
Total Percent	.2	.8	

Appendix B3 (continued)

Page Length	Sex of Author		
	Male	Female	Row Total
400-449pp			
Total	3	8	11
Row Percent	.4	.6	.5
Column Percent	27.3	72.7	
Total Percent	.1	.4	
450-499pp			
Total	1	2	3
Row Percent	.1	.1	.1
Column Percent	33.3	66.7	
Total Percent	.0	.1	
500-599pp			
Total	2	6	8
Row Percent	.2	.4	.4
Column Percent	25.0	75.0	
Total Percent	.1	.3	
600-799pp			
Total		1	1
Row Percent		.1	.0
Column Percent		100.0	
Total Percent		.0	
over 1000pp			
Total	1		1
Row Percent	.1		.0
Column Percent	100.0		
Total Percent	.0		
Column Total	814	1397	2211
	36.8	63.2	100.0

Chi Square (12, N = 2211) = 21.456, $p < .05$
 sig. = 0.0441

Appendix B4

Degree Awarded vs Special Education Category

Special Education Category	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
Noncategorical			
Total	440	414	854
Row Percent	33.6	41.8	37.1
Column Percent	51.5	48.5	
Total Percent	19.1	18.0	
Mentally Handicapped			
Total	83	57	140
Row Percent	6.3	5.8	6.1
Column Percent	59.3	40.7	
Total Percent	3.6	2.5	
Mild Mentally Handicapped			
Total	68	56	124
Row Percent	5.2	5.7	5.4
Column Percent	54.8	45.2	
Total Percent	3.0	2.4	
Moderate Mentally Handicapped			
Total	32	21	53
Row Percent	2.4	2.1	2.3
Column Percent	60.4	39.6	
Total Percent	1.4	.9	
Severe Mentally Handicapped			
Total	42	20	62
Row Percent	3.2	2.0	2.7
Column Percent	67.7	32.3	
Total Percent	1.8	.9	
Learning Disability			
Total	217	175	392
Row Percent	16.6	17.7	17.1
Column Percent	55.4	44.6	
Total Percent	9.4	7.6	
Emotionally Disturbed			
Total	61	42	103
Row Percent	4.7	4.2	4.5
Column Percent	59.2	40.8	
Total Percent	2.7	1.8	
Hearing Handicapped			
Total	77	47	124
Row Percent	5.9	4.7	5.4
Column Percent	62.1	37.9	
Total Percent	3.3	2.0	

Appendix B4 (continued)

Special Education Category	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
Visually Handicapped			
Total	26	22	48
Row Percent	2.0	2.2	2.1
Column Percent	54.2	45.8	
Total Percent	1.1	1.0	
Socially Handicapped			
Total	44	18	62
Row Percent	3.4	1.8	2.7
Column Percent	71.0	29.0	
Total Percent	1.9	.8	
Speech Handicapped			
Total	7	1	8
Row Percent	.5	.1	.3
Column Percent	87.5	12.5	
Total Percent	.3	.0	
Multiple Handicapped			
Total	57	22	79
Row Percent	4.4	2.2	3.4
Column Percent	72.2	27.8	
Total Percent	2.5	1.0	
Orthopedically Impaired			
Total	27	22	49
Row Percent	2.1	2.2	2.1
Column Percent	55.1	44.9	
Total Percent	1.2	1.0	
Medically Handicapped			
Total		2	2
Row Percent		.2	.1
Column Percent		100.0	
Total Percent		.1	
Gifted and Talented			
Total	68	39	107
Row Percent	5.2	3.9	4.7
Column Percent	63.6	36.4	
Total Percent	3.0	1.7	
Early Education			
Total	34	23	57
Row Percent	2.6	2.3	2.5
Column Percent	59.6	40.4	
Total Percent	1.5	1.0	

Appendix B4 (continued)

Special Education Category	Degree Awarded		Row Total
	Ph.D.	Ed.D.	
Autism			
Total	26	9	35
Row Percent	2.0	.9	1.5
Column Percent	74.3	25.7	
Total Percent	1.1	.4	
Column Total	1309	990	2299
	56.9	43.1	100.0

Chi Square (16, N = 2299) = 40.646, $p < .05$
 sig. = 0.0006

Appendix B5

Sex of Author vs. Special Education Category

Special Education Category	Sex of Author		
	Male	Female	Row Total
Noncategorical			
Total	320	582	852
Row Percent	37.8	36.8	37.2
Column Percent	37.6	62.4	
Total Percent	14.0	23.2	
Mentally Handicapped			
Total	71	67	138
Row Percent	8.4	4.6	6.0
Column Percent	54.4	48.6	
Total Percent	3.1	2.9	
Mild Mentally Handicapped			
Total	65	59	124
Row Percent	7.7	4.1	5.4
Column Percent	52.4	47.6	
Total Percent	2.8	2.6	
Moderate Mentally Handicapped			
Total	23	30	53
Row Percent	2.7	2.1	2.3
Column Percent	43.4	56.6	
Total Percent	1.0	1.3	
Severe Mentally Handicapped			
Total	26	36	62
Row Percent	3.1	2.5	2.7
Column Percent	41.9	58.1	
Total Percent	1.1	1.6	
Learning Disability			
Total	109	280	389
Row Percent	12.9	19.4	17.0
Column Percent	28.0	72.0	
Total Percent	4.8	12.2	
Emotionally Disturbed			
Total	46	56	102
Row Percent	5.4	3.9	4.5
Column Percent	45.1	54.9	
Total Percent	2.0	2.4	
Hearing Handicapped			
Total	46	77	123
Row Percent	5.4	5.3	5.4
Column Percent	37.4	62.6	
Total Percent	2.0	3.4	

Appendix B5 (continued)

Special Education Category	Sex of Author		
	Male	Female	Row Total
Visually Handicapped			
Total	13	35	48
Row Percent	1.5	2.4	2.1
Column Percent	27.1	72.9	
Total Percent	.6	1.5	
Socially Handicapped			
Total	31	31	62
Row Percent	3.7	2.1	2.7
Column Percent	50.0	50.0	
Total Percent	1.4	1.4	
Speech Handicapped			
Total	1	7	8
Row Percent	.1	.5	.3
Column Percent	12.5	87.5	
Total Percent	.0	.3	
Multiple Handicapped			
Total	26	53	79
Row Percent	3.1	3.7	3.4
Column Percent	32.9	67.1	
Total Percent	1.1	2.3	
Orthopedically Impaired			
Total	18	31	49
Row Percent	2.1	2.1	2.1
Column Percent	36.7	63.3	
Total Percent	.8	1.4	
Medically Handicapped			
Total		2	2
Row Percent		.1	.1
Column Percent		100.0	
Total Percent		.1	
Gifted and Talented			
Total	28	79	107
Row Percent	3.3	5.5	4.7
Column Percent	26.2	73.8	
Total Percent	1.2	3.4	
Early Education			
Total	14	43	57
Row Percent	1.7	3.0	2.5
Column Percent	24.6	75.4	
Total Percent	.6	1.9	

Appendix B5 (continued)

Special Education Category	Sex of Author		
	Male	Female	Row Total
Autism			
Total	9	27	36
Row Percent	1.1	1.9	1.6
Column Percent	25.0	75.0	
Total Percent	.4	1.2	
Column Total	846	1445	2291
	36.9	63.1	100.0

Chi Square (16, N = 2291) = 64.797, $p < .05$
 sig. = 0.0000

Appendix B6

Degree Awarded vs. Research Type

Research Type	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
Survey			
Total	330	331	661
Row Percent	25.3	33.6	28.9
Column Percent	49.9	50.1	
Total Percent	14.4	14.5	
Quasi-Experimental			
Total	313	206	519
Row Percent	24.0	20.9	22.7
Column Percent	60.3	39.7	
Total Percent	13.7	9.0	
Case and Field Study			
Total	151	59	210
Row Percent	11.6	6.0	9.2
Column Percent	71.9	28.1	
Total Percent	6.6	2.6	
Content Analysis			
Total	14	12	26
Row Percent	1.1	1.2	1.1
Column Percent	53.8	46.2	
Total Percent	.6	.5	
Correlational			
Total	134	85	219
Row Percent	10.3	8.6	9.6
Column Percent	61.2	38.8	
Total Percent	5.9	3.7	
Causal-Comparative			
Total	245	179	424
Row Percent	18.8	18.2	18.5
Column Percent	57.8	42.2	
Total Percent	10.7	7.8	
Philosophic			
Total	1	4	5
Row Percent	.1	.4	.2
Column Percent	20.0	80.0	
Total Percent	.0	.2	
Historical			
Total	15	21	36
Row Percent	1.2	2.1	1.6
Column Percent	41.7	58.3	
Total Percent	.7	.9	

Appendix B6 (continued)

Research Type	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
Material and Test Development			
Total	56	59	115
Row Percent	4.3	6.0	5.0
Column Percent	48.7	51.3	
Total Percent	2.4	2.6	
Ethnography			
Total	45	28	73
Row Percent	3.5	2.8	3.2
Column Percent	61.6	38.4	
Total Percent	2.0	1.2	
Column Total	1304	984	2288
	57.0	43.0	100.0

Chi Square (9, N = 2288) = 46.753, $p < .05$
 sig. = 0.0000

Appendix B7

Sex of Author vs. Research Type

Research Type	Sex of Author		
	Male	Female	Row Total
Survey			
Total	269	390	659
Row Percent	32.0	27.1	28.9
Column Percent	40.8	59.2	
Total Percent	11.8	17.1	
Quasi-Experimental			
Total	195	325	520
Row Percent	23.2	22.6	22.8
Column Percent	37.5	62.5	
Total Percent	8.6	14.3	
Case and Field Study			
Total	71	139	210
Row Percent	8.5	9.7	9.2
Column Percent	33.8	66.2	
Total Percent	3.1	6.1	
Content Analysis			
Total	12	13	25
Row Percent	1.4	.9	1.1
Column Percent	48.0	52.0	
Total Percent	.5	.6	
Correlational			
Total	83	135	218
Row Percent	9.9	9.4	9.6
Column Percent	38.1	61.9	
Total Percent	3.6	5.9	
Causal-Comparative			
Total	133	286	419
Row Percent	15.8	19.9	18.4
Column Percent	31.7	68.3	
Total Percent	5.8	12.5	
Philosophic			
Total		5	5
Row Percent		.3	.2
Column Percent		100.0	
Total Percent		.2	
Historical			
Total	18	18	36
Row Percent	2.1	1.3	1.6
Column Percent	50.0	50.0	
Total Percent	.8	.8	

Appendix B7 (continued)

Research Type	Sex of Author		
	Male	Female	Row Total
Material and Test Development			
Total	39	76	115
Row Percent	4.6	5.3	5.0
Column Percent	33.9	66.1	
Total Percent	1.7	3.3	
Ethnography			
Total	20	53	73
Row Percent	2.4	3.7	3.2
Column Percent	27.4	72.6	
Total Percent	.9	2.3	
Column Total	840	1440	2280
	36.8	63.2	100.0

Chi Square (9, N = 2280) = 20.387, $p < .05$
 sig. = 0.0157

Appendix B8

Degree Awarded vs. Data Analysis Technique

Data Analysis Technique	Degree Awarded		
	Ph.D.	Ed.D.	Row Total
Correlational Analysis			
Total	68	53	121
Row Percent	9.2	9.5	9.3
Column Percent	56.2	43.8	
Total Percent	5.2	4.1	
Nonparametrics			
Total	73	63	136
Row Percent	9.9	11.3	10.5
Column Percent	53.7	46.3	
Total Percent	5.6	4.9	
Analysis of Variance			
Total	285	252	537
Row Percent	38.5	45.2	41.4
Column Percent	53.1	46.9	
Total Percent	22.0	19.4	
Multivariate Analysis			
Total	133	92	225
Row Percent	18.0	16.5	17.3
Column Percent	59.1	40.9	
Total Percent	10.3	7.1	
Descriptive Statistics			
Total	44	36	80
Row Percent	5.9	6.5	6.2
Column Percent	55.0	45.0	
Total Percent	3.4	2.8	
Qualitative			
Total	48	33	81
Row Percent	6.5	5.9	6.2
Column Percent	59.3	40.7	
Total Percent	3.7	2.5	
Multiple Baseline			
Total	89	28	117
Row Percent	12.0	5.0	9.0
Column Percent	76.1	23.9	
Total Percent	6.9	2.2	
Column Total	740	557	1297
	57.1	42.9	100.0

Chi Square (6, N = 1297) = 22.094, $p < .05$
 sig. = 0.0012

Appendix B9

Sex of Author vs. Data Analysis Technique

Data Analysis Technique	Sex of Author		
	Male	Female	Row Total
Correlational Analysis			
Total	38	82	120
Row Percent	8.4	9.8	9.3
Column Percent	31.7	68.3	
Total Percent	2.9	6.4	
Nonparametrics			
Total	51	83	134
Row Percent	11.3	9.9	10.4
Column Percent	38.1	61.9	
Total Percent	4.0	6.4	
Analysis of Variance			
Total	178	356	534
Row Percent	39.4	42.4	41.4
Column Percent	33.3	66.7	
Total Percent	13.8	27.6	
Multivariate Analysis			
Total	83	141	224
Row Percent	18.4	16.8	17.4
Column Percent	37.1	62.9	
Total Percent	6.4	10.9	
Descriptive Statistics			
Total	28	52	80
Row Percent	6.2	6.2	6.2
Column Percent	35.0	65.0	
Total Percent	2.2	4.0	
Qualitative			
Total	25	56	81
Row Percent	5.5	6.7	6.3
Column Percent	30.9	69.1	
Total Percent	1.9	4.3	
Multiple Baseline			
Total	49	69	118
Row Percent	10.8	8.2	9.1
Column Percent	41.5	58.5	
Total Percent	3.8	5.3	
Column Total	452	839	1291
	35.0	65.0	100.0

Chi Square (6, N = 1291) = 5.021, $p < .05$
 sig. = 0.5411

APPENDIX C
CLASSIFICATION OF KEYWORDS

Age/Grade Level

Adults	890
Nonspecific	618
Children	548
Adolescents	443
Elementary Education	430
Elementary Secondary Education	348
Secondary Education	210
Preadolescents	148
Intermediate Grades	133
Preschool Education	114
Male	101
Young Children	101
Preschool Children	78
Primary Education	78
Early Childhood Education	66
Young Adults	64
Junior High Schools	57
Early Education	56
Infants	45
High Schools	31
Female	19
Two Year Colleges	18
Postsecondary Education	16
Kindergarten	14
Blacks	14

Category of Special Education

Noncategorical	856
Learning Disability	441
Mentally Handicapped	153
Mild Mentally Handicapped	153
Emotionally Disturbed	138
Hearing Handicapped	132
Gifted-Talented	113
Multiple Handicapped	97
Socially Handicapped	87
Severe Mentally Handicapped	86
Educable Mentally Retarded	75
Moderate Mentally Handicapped	69
Orthopedically Handicapped	59
Early Education	56
Deafness	54
Mildly Handicapped	53

Severely Handicapped	50
Visually Handicapped	48
Mentally Retarded	46
Developmental Disability	42
Autism	42
Behavior Disordered	41
Physically Handicapped	29
Blindness	23
Down's Syndrome	23
Profoundly Mentally Retarded	21
Educable Mentally Handicapped	20
Trainable Mentally Retarded	14
Hyperactivity	13

Research Type

Survey	683
Quasi-Experimental	524
Causal-Comparative	426
Case and Field Study	222
Correlational	217
Material and Test Development	121
Ethnography	80
Historical	36
Content Analysis	30

Data Analysis Technique

Analysis of Variance	621
Multivariate Analysis	275
Nonparametrics	188
Correlational Analysis	176
Multiple Regression Analysis	128
Multiple Baseline	123
Chi Square Analysis	106
Qualitative	86
Descriptive Statistics	85
Discriminant Analysis	51
Mann-Whitney U Test	17
Kruskal-Wallis Test	13
Wilcoxon Signed Rank Test	12

Development Characteristics

Academic Achievement	128
Creativity	27
Cognitive Development	26
Success	21
Cognitive Skills	20
Intelligence	20
Cognitive Style	17
Information Processing	13
Cognitive Processes	12
Piaget	12
Selective Attention	12

Social Emotional Development

Attitudes	130
Self Concept	83
Locus of Control	44
Social Skills	36
Student Attitudes	33
Social Interaction	22
Self Esteem	21
Job Satisfaction	19
Affective Behavior	18
Social Competence	17
Role Perception	16
Social Behavior	16
Coping Behavior	14
Motivation	14
Peer Acceptance	14
Peer Interaction	14
Social Acceptance	12

Learning and Instruction

Generalization	69
Teaching Methods	56
Individual Education Programs	53
Skill Acquisition	40
Maintenance	32
Problem Solving	31

Curriculum	31
Direct Instruction	26
Reinforcement	20
On Task Behavior	19
Computer Assisted Instruction	16
Individualized Instruction	16
Modeling	16
Vocational Skills	16
Curriculum Development	15
Reinforcement Contingencies	15
Microcomputers	14
Role Playing	14
Problem Solving Skills	13
Vocational Training	13
Learning Strategies	12
Peer Tutoring	12

Location of Research

California	34
Illinois	27
Massachusetts	27
New Jersey	27
Florida	23
New York City	23
Michigan	22
Ohio	22
Kansas	21
Texas	21
Mississippi	20
Georgia	19
Colorado	18
Rural Areas	17
New York	16
Maryland	14
Missouri	14
North Carolina	14
Developing Country	12
Oregon	12
Tennessee	12
Alabama	11
Arizona	11

Programs and Services

Mainstreaming	174
Service Delivery	104
Residential Facilities	58
Resource Rooms	44
Institutions	43
Least Restrictive Environment	33
Integration	31
Support Services	31
Regular Classrooms	30
Early Intervention	18
Vocational Education	18
Deinstitutionalization	17
Vocational Rehabilitation	15
Consultation	14

Administration

Public Law 94-142	71
Program Evaluation	52
Implementation	47
Evaluation	30
Due Process	26
Compliance	25
Financial Support	24
Special Education Administrators	23
Administrators	22
Special Education Directors	19
Due Process Hearings	18
Educational Policy	16
Court Litigation	15
Planning	15
Legislation	14
Information Dissemination	12

Teachers

Regular Classroom Teachers	138
Special Education Teachers	134
Teacher Attitudes	103
Inservice Training	90

Teacher Competencies	31
Resource Room Teachers	25
Principals	24
Student Teacher Relationship	19
Teacher Student Interaction	19
Teacher Expectations	18
Paraprofessionals	15
School Psychologists	15
Teacher Burnout	13
Preservice Training	12

Parents

Parent Attitudes	49
Parent Involvement	31
Parent Participation	26
Socioeconomic Status	26
Parents	24
Mothers	17
Parent Training	17
Parent Education	12

Language

Language Disability	21
Language Development	17
Communication	16
Language Acquisition	15
Oral Language	15
Communication Skills	13
Spelling	13
Listening Comprehension	12
Total Communication Method	12

Perceptual and Motor

Perceptual Motor Learning	25
Visual Perception	23
Memory Recall	12

Motor Skills	12
--------------	----

Identification and Classification

Identification	46
Placement Decisions	41
Decision Making	37
Labeling	24
Screening	16
Referral	13

Measurement Evaluation

Questionnaire	250
Interview	130
Assessment	58
Observation	38
Videotaping	37
Likert Scale Questions	32
Dyadic Interaction	23
Needs Assessment	21
Classroom Observation	18
Delphi Technique	18
Semantic Differential	18
Time Sampling	18
Naturalistic Observation	16
Direct Observation	14
Sample Vignettes	14

Tests - Specific Names

Wechsler Intelligence Scale for Children-Revised	56
Piers-Harris Children's Self Concept Scale	40
Wide Range Achievement Test	37
Attitude Toward Disabled Persons Scale	27
Rucker-Gable Educational Programming Scale	20

Metropolitan Achievement Tests	17
Peabody Individual Achievement Test	17
California Achievement Tests	16
Torrance Tests of Creative Thinking	16
AAMD Adaptive Behavior Scale	14
Intellectual Achievement Responsibility Scale	14
Nowicki-Strickland Locus of Control Scale	14
Bender Visual Motor Gestalt Test	13
Bayley Scales of Infant Development	12

Reading and Mathematics

Reading Comprehension	47
Mathematics Skills	36
Reading Achievement	35
Reading Disability	30
Mathematics Achievement	28

Behavior Development

Adaptive Behavior	22
Classroom Behavior	18
Juvenile Delinquents	17
Self Monitoring	17
Aggressive Behavior	16
Play Behavior	14
Behavior	12
Behavioral Characteristics	12

APPENDIX D
USER'S GUIDE

A. INTRODUCTION

1. Research in Special Education

Research in special education has experienced exponential growth. In the past two decades this may be due to a growing public awareness of exceptional children and to the United States' Public Law 94-142 (1975) which mandated education for all handicapped children. The need for access to information in areas of exceptionality, such as mentally handicapped, learning disabilities, emotionally disturbed, hearing and visually handicapped, physically handicapped or gifted and talented, has also created a strong concomitant demand for the organization, analysis and synthesis of the information. Doctoral dissertations, theoretically "on the cutting edge," are an invaluable source of information, but unfortunately very little dissertation research reaches publication. The only method of accessing the dissertation literature is in a large reference index, *Dissertation Abstracts International*. However accessibility is still not optimal, for an inquirer must search through hundreds of abstracts to find the particular dissertation of interest.

2. Microcomputer Personal Information Retrieval System

With the growing use of personal computers and the concept of a "personal information environment," this personal information retrieval system has been developed in order to make the process of accessing the dissertation literature in special education more efficient. The abstracts under the key term "special

education" in *Dissertation Abstracts International* have been identified and organized. Each abstract has also been classified with key terms which describe its substantive content. The classification process has involved the use of both controlled indexing using the ERIC thesaurus and natural language indexing. Thus, with the help of an information retrieval system, the valuable information found in special education dissertations and the vocabulary describing the information can be synthesized and utilized.

3. The Potential User

The potential user of the personal information retrieval system is the individual who needs access to research providing an indepth perspective on investigations in a variety of areas of special education. These individuals may be undergraduate or graduate students, researchers, teachers or professors.

4. The Manual

This manual has been prepared to provide a description of the purpose and design of the personal information retrieval system. The computer software and hardware requirements and the creation of the database are reviewed. Instructions are given on how to start the system, display vocabulary, conduct automatic searches and how to ouput the information selected. The 270 most frequently used keywords, classified according to content categories, are listed for additional use in searching (see Appendix C).

Note: The User's Guide is intended to provide the user with basic knowledge on

how to operate the system, however, for more advanced searches using full Boolean control, the user is advised to refer to the *FYI 3000 Plus User's Manual*.

B. DESIGN OF THE PERSONAL INFORMATION RETRIEVAL SYSTEM

The personal information retrieval system uses a combination of two software packages, floppy disks and the personal computer.

1. Hardware Requirements

The personal information retrieval system uses the IBM personal microcomputer, XT, AT or a computer that is 100% compatible.

2. Software Requirements

Upon identifying and organizing the dissertation literature in special education (from *Dissertation Abstracts International*) the text database was typed using the word processing package *Microsoft Word* (1986). Each file was saved in ASCII format. The database management system used to index the information was the FYI 3000 Plus software program. FYI 3000 Plus does not have the means to create text.

3. Text Database

Microsoft Word was chosen as the word processing package to type the following text for each abstract entry. The format used corresponds to Entry Style Format #3 of the FYI 3000 Plus program (see Appendix F).

In the filing system all keywords have been changed to upper case and each data file corresponds to approximately 50 abstract entries. Each file was formatted in ASCII style.

4. Text Database Management System

Using FYI 3000 Plus, the database management system, the text files are read and two "management files" are created. One file, the "index file," contains the information on the locations of each key word in the text, in each file on each disk. The second file, the "vocabulary file," lists in alphabetical order all the keywords used in the filing system.

Keywords are the "keys" to the accessibility of the text database. FYI 3000 Plus uses the separate keywords and cross indexes them. The vocabulary also indicates the frequency with which each keyword appears. It provides a thesaurus of keywords in the system. (Appendix C lists the 270 most frequently used keywords, classified according to content categories.)

a. Maintenance of the Database

Adding new text, changing text already in the system or re-indexing is possible. The *FYI 3000 Plus User's Manual* outlines instructions on how to maintain the database.

C. INSTRUCTIONS

The instructions include information on how to:

1. get started
2. view the keyword vocabulary
3. search the filing system
4. output of retrieved information

1. Getting Started

1. Turn on the computer and start it ("boot it") with the DOS system disk.

An "A>" prompt should appear on the screen.

2. Put the Management Disk (Index and Vocabulary Files) into drive A.
3. Type FYI3000P and press ENTER

START UP MENU will appear on the screen.

4. Press F1 which will provide access to the existing filing system.

This filing system is "1 dissertations"

5. Type the number 1 to open the "dissertations" filing system and press ENTER.

Information about the "dissertations" filing system will now appear on the screen.

The title and date that the filing system was last modified and the current number of entries and keywords used is displayed (see Appendix I).

2. Keyword Vocabulary

Appearing below the information about the filing system "dissertations" is the MAIN MENU. The vocabulary file lists, in alphabetical order, all the keywords in the filing system.

1. Press F2 to display vocabulary.

VOCABULARY OUTPUT MENU will appear on the screen.

Summary of Output Options:

F1 - Full Vocabulary

F2 - Alphabetical range

F3 - key words with a specific character sequence

The full vocabulary will display all the keywords in the filing system. FYI 3000 Plus subordinates the keys, first numerically (in ascending order) and then alphabetically. This subordination has been used to keep certain keywords clustered together for the purpose of clearly organizing content vocabulary (see Appendix G). The frequency count of each keyword is also included in the vocabulary list (see Appendix C).

The alphabetical range of keywords shows all the key words that fall between the ones selected as first and last in the range of keywords. This option avoids having to go through the full vocabulary.

Keywords with a specified character sequence are useful when one doesn't remember a specific keyword. By entering just a few letters, all the keywords containing that character sequence will appear. (Remember numerical subordination for content keywords - Appendix G.)

2. Make a selection of one of the three vocabulary output options.
3. The vocabulary output can be sent to:

F1 - the screen

F2 - the printer

F3 - a disk file

Note: If the vocabulary file is sent to the printer or a disk, the output

will be continuous.

3. Search the Filing System

The process of effectively searching and retrieving accurate information is fundamental to an information retrieval system. A "hit" is a unit of text (each entry = one abstract) that matches a search request.

a. Boolean search logic operators

The Boolean search logic operators AND, OR and NOT are used to link keywords and structure search requests that are specific or general. The "automatic" search mode builds search clauses using the Boolean operators.

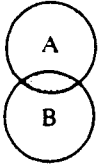
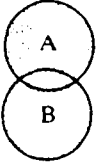
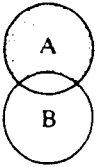
b. Using comment (\C) and standard (\S) commands

These commands may be entered whenever FYI 3000 Plus asks for a keyword. Only the backslash (\) and the first letter need be typed.

- i. Comment (\C): Entering \C allows comments to be inserted that will be displayed in the search label. This does not affect the search request. The comment may include information about a particular search. To make the comment most readable, it should be entered at the beginning of a search. Type \C, type the comment and press ENTER. Comments are limited to 64 characters.
- ii. Standard (\S): Entering \S is the way to "call up" a search request that has been saved on a disk file. When \S is entered, FYI 3000 Plus will ask for the name and type of the file that contains the search request, and which disk drive it is on.

Table 1

Boolean logic operators

Operator	Search type	Venn diagrams	Meaning
AND	Conjunctive		Logical product, symbolized by A AND B, A . B, A \times B or (A) (B). Both index terms A and B must be assigned to a document for a match. MICROCOMPUTER \times INFORMATION \times RETRIEVAL implies that all of the above terms must have been assigned to a document for a match.
OR	Additive		Logical sum, symbolized by A OR B, or A + B. Only one of the two index terms, A or B, need be associated with a document for a match. This operator is usually introduced when A and B can be regarded as equivalent for the purposes of the search, e.g. United Kingdom + Great Britain would serve to retrieve all documents with either the term 'United Kingdom' or the term 'Great Britain' assigned.
NOT	Subtractive		Logical difference, symbolized by A NOT B, or A - B. The index term A must be assigned, and assigned in the absence of the term B for a match, e.g. Ball Games - Football requires all documents on 'Ball Games' <i>except</i> those where 'Football' is also assigned.

Note: from "Text retrieval systems - an outline," by J. E. Rowley, 1986, in P. I. Zorkoczy (Ed.), Oxford Surveys in Information Technology, 3, p. 218.

c. *Truncation*

When building a search request FYI 3000 Plus accepts only words that are in the key word vocabulary. The word must be typed exactly (including number subordination of content keywords - Appendix G), and must be capitalized. Using truncated search words is a way of doing an "ambiguous" search. By entering just a few letters, all keywords beginning with that character sequence will appear. Type the first letters of the word followed by *. The * must be immediately adjacent to the letters.

NOTE:

1. The user is reminded that in searching, the numerical subordination of content keywords must be included (see Appendix G).
2. The 270 most frequently used keywords are classified according to content categories. They may be useful when formulating a search query (see Appendix C).
3. The user, who wishes to formulate search requests with full control over Boolean operator sequence and clauses, is directed to the *FYI 3000 Plus User's Manual*.

d. *Instructions for searching*

MAIN MENU: F1 - Search filing system

1. Press F1 to search the filing system.

Two important messages will appear on the screen:

- For "automatic" searching, just type a search word and press ENTER and
- For truncation, type the first letters of the word followed by *.

(If a mistake is made while typing a word, press BACK SPACE Key and correct error.)

2. Type the search word (or truncation) and press ENTER.

The word will be accepted or FYI 3000 Plus will give the following response: "Sorry, that's not in the vocabulary, but these are close." FYI 3000 Plus will then list in alphabetical (or numerical) order, several keys before and after the closest match to the keyword entered.

The screen will then say Retype

If the search word is accepted it can either stand alone or an additional word may be added using the Boolean logic operators.

3. When the entire search has been accepted press ENTER twice.

The SEARCH RESULTS MENU will appear on the screen.

Summary of Output Options:

ENTER to proceed with output to screen

F1 - other output options

F2 - save search criteria on disk

F3 - do another search (results of current search will be lost)

The text files are on floppy disks, numbers 1 to 6. FYI 3000 Plus will state which floppy disk is to be inserted.

4. Press the drive A or B into which the text disk has been inserted.

(At this point, there should be two disks inserted into drive A and B. One drive should contain the "dissertations" management disk and the other drive should contain the text disk just inserted. The FYI 3000 Plus disk may be removed.)

The entry which contained the search keywords will appear on the screen.

If several entries are found,

5. Press N (for Next) or ENTER to retrieve the next hit entry.

e. Browse

Browse means to "look around" within a file that contains a hit. FYI 3000 Plus is designed to retrieve the exact entries that match the search request, regardless of which file they are in. The text database does not need to be thought of in terms of files. However, the browse function allows one to see and retrieve additional text from a file that contains a hit.

6. Scroll forward with the direction keys to browse within the file. To go back to the start of the current hit, type ENTER.

4. Output of Retrieved Information

The SEARCH RESULTS MENU appears on the screen when a hit has been found.

1. Press F1 to choose other output options.
2. Press F1 to SELECT OUTPUT DESTINATION

When this menu appears on the screen, a wide range of choices are provided to output retrieved information. The output can be displayed on the screen, sent to the printer or saved on a disk. FYI 3000 Plus also manages a combination of on screen and printing, or saving on disk. Printing may be continuous or may be presented as an entry per page.

a. Output content when browsing

Everything that comes to the screen during browsing is stored in a special buffer. When the program is directed to print or save on disk, all of this text is output. To clear this buffer press B (Back) which takes one back to the start of the current hit.

b. Output vocabulary

The choices for output of vocabulary are similar to that of retrieved information. See Instructions for Keyword Vocabulary.

APPENDIX E
CUMULATIVE STATISTICS - KEYWORDS, INSTITUTIONS

Appendix E1
Cumulative Statistics-Keywords

Keywords	Rank	%Rank	Freq.	CumFr	%CumFr
adults	1	0.000	890	890	0.038
noncategorical	2	0.001	856	1746	0.075
survey	3	0.001	683	2429	0.104
analysis of variance	4	0.001	621	3050	0.130
nonspecific	5	0.002	618	3668	0.157
children	6	0.002	548	4216	0.180
quasi-experimental	7	0.002	524	4740	0.203
adolescents	8	0.002	443	5183	0.222
learning disability	9	0.003	441	5624	0.241
elementary education	10	0.003	430	6054	0.259
causal-comparative	11	0.003	426	6480	0.277
elementary secondary educ.	12	0.004	348	6828	0.292
multivariate analysis	13	0.004	275	7103	0.304
questionnaire	14	0.004	250	7353	0.315
case and field study	15	0.005	222	7575	0.324
correlational	16	0.005	217	7792	0.333
secondary education	17	0.005	210	8002	0.342
nonparametrics	18	0.005	188	8190	0.350
correlational analysis	19	0.006	176	8366	0.358
mainstreaming	20	0.006	174	8540	0.365
mentally handicapped	21	0.006	153	8693	0.372
mild mentally handicapped	22	0.007	153	8846	0.378
preadolescents	23	0.007	148	8994	0.385
regular classroom teachers	24	0.007	138	9132	0.391
emotionally disturbed	25	0.008	138	9270	0.397
special education teachers	26	0.008	134	9404	0.402
intermediate grades	27	0.008	133	9537	0.408
hearing handicapped	28	0.008	132	9669	0.414
attitudes	29	0.009	130	9799	0.419
interview	30	0.009	130	9929	0.425
academic achievement	31	0.009	128	10057	0.430
multiple regression analysis	32	0.010	128	10185	0.436
multiple baseline	33	0.010	123	10308	0.441
material and test dev.	34	0.010	121	10429	0.446
preschool education	35	0.011	114	10543	0.451
gifted-talented	36	0.011	113	10656	0.456
chi square analysis	37	0.011	106	10762	0.460
service delivery	38	0.011	104	10866	0.465
teacher attitudes	39	0.012	103	10969	0.469
male	40	0.012	101	11070	0.474
young children	41	0.012	101	11171	0.478
multiple handicapped	42	0.013	97	11268	0.482
inservice training	43	0.013	90	11358	0.486
socially handicapped	44	0.013	87	11445	0.490
severe ment. handicapped	45	0.014	86	11531	0.493
qualitative	46	0.014	86	11617	0.497
descriptive statistics	47	0.014	85	11702	0.501

Appendix E1 (continued)

Keywords	Rank	%Rank	Freq.	CumFr	%CumFr
self concept	48	0.014	83	11785	0.504
ethnography	49	0.015	80	11865	0.508
preschool children	50	0.015	78	11943	0.511
primary education	51	0.015	78	12021	0.514
educable ment. retarded	52	0.016	75	12096	0.517
Public Law 94-142	53	0.016	71	12167	0.520
generalization	54	0.016	69	12236	0.523
moderate ment. handicapped	55	0.017	69	12305	0.526
early childhood education	56	0.017	66	12371	0.529
young adults	57	0.017	64	12435	0.532
higher education	58	0.017	64	12499	0.535
orthopedically impaired	59	0.018	59	12558	0.537
assessment	60	0.018	58	12616	0.540
residential facilities	61	0.018	58	12674	0.542
junior high schools	62	0.019	57	12731	0.545
teaching methods	63	0.019	56	12787	0.547
Wechsler Intell. Scale for Children - R.	64	0.019	56	12843	0.549
early education	65	0.020	56	12899	0.552
deafness	66	0.020	54	12953	0.554
individualized educ. programs	67	0.020	53	13006	0.556
mildly handicapped	68	0.020	53	13059	0.559
teacher training	69	0.021	53	13112	0.561
program evaluation	70	0.021	52	13164	0.563
discriminant analysis	71	0.021	51	13215	0.565
severely handicapped	72	0.022	50	13265	0.567
parent attitudes	73	0.022	49	13314	0.569
visually handicapped	74	0.022	48	13362	0.572
implementation	75	0.023	47	13409	0.574
reading comprehension	76	0.023	47	13456	0.576
identification	77	0.023	46	13502	0.578
mentally retarded	78	0.023	46	13548	0.579
infants	79	0.024	45	13593	0.581
locus of control	80	0.024	44	13637	0.583
placement decisions	81	0.024	44	13681	0.585
resource rooms	82	0.025	44	13725	0.587
institutions	83	0.025	43	13768	0.589
dev. disability	84	0.025	42	13810	0.591
autism	85	0.026	42	13852	0.592
behavior disordered	86	0.026	41	13893	0.594
Piers-Harris Child Self Concept Scale	87	0.026	40	13933	0.596
skill acquisition	88	0.026	40	13973	0.598
observation	89	0.027	38	14011	0.599
self contained classrooms	90	0.027	38	14049	0.601
decision making	91	0.027	37	14086	0.603
videotaping	92	0.028	37	14123	0.604
Wide Range Achiev. test	93	0.028	37	14160	0.606

Appendix E1 (continued)

Keywords	Rank	%Rank	Freq.	CumFr	%CumFr
mathematics skills	94	0.028	36	14196	0.607
social skills	95	0.029	36	14232	0.609
historical	96	0.029	36	14268	0.610
reading achievement	97	0.029	35	14303	0.612
California	98	0.029	34	14337	0.613
least restrictive environ.	99	0.030	33	14370	0.615
student attitudes	100	0.030	33	14403	0.616
Likert scale questions	101	0.030	32	14435	0.617
maintenance	102	0.031	32	14467	0.619
integration	103	0.031	31	14498	0.620
parent involvement	104	0.031	31	14529	0.621
problem solving	105	0.032	31	14560	0.623
support services	106	0.032	31	14591	0.624
teacher competencies	107	0.032	31	14622	0.625
high schools	108	0.032	31	14653	0.627
curriculum	109	0.033	30	14683	0.628
evaluation	110	0.033	30	14713	0.629
reading disability	111	0.033	30	14743	0.631
regular classrooms	112	0.034	30	14773	0.632
content analysis	113	0.034	30	14803	0.633
physically handicapped	114	0.034	29	14832	0.634
mathematics achievement	115	0.035	28	14860	0.636
Att. toward Dis. Persons Scale	116	0.035	27	14887	0.637
creativity	117	0.035	27	14914	0.638
Illinois	118	0.035	27	14941	0.639
Massachusetts	119	0.036	27	14968	0.640
New Jersey	120	0.036	27	14995	0.641
cognitive development	121	0.036	26	15021	0.642
direct instruction	122	0.037	26	15047	0.644
due process	123	0.037	26	15073	0.645
parent participation	124	0.037	26	15099	0.646
socioeconomic status	125	0.038	26	15125	0.647
	126	0.038	25	15200	0.650
to	128		(3x25)		
	129	0.040	24	15320	0.655
to	133		(5x24)		
	134	0.042	23	15504	0.663
to	141		(8x23)		
	142	0.044	22	15636	0.669
to	147		(6x22)		
	148	0.046	21	15783	0.675
to	154		(7x21)		
	155	0.048	20	15903	0.680
to	160		(6x20)		
	161	0.050	19	16036	0.686
to	167		(7x19)		
	168	0.054	18	16252	0.695
to	179		(12x18)		

Appendix E1 (continued)

Keywords	Rank	%Rank	Freq.	CumFr	%CumFr
	180	0.057	17	16456	0.704
to	191		(12x17)		
	192	0.062	16	16696	0.714
to	206		(15x16)		
	207	0.065	15	16846	0.721
to	216		(10x15)		
	217	0.071	14	17140	0.733
to	237		(21x14)		
	238	0.074	13	17270	0.739
to	247		(10x13)		
	248	0.080	12	17522	0.749
to	268		(21x12)		
	269	0.087	11	17753	0.759
to	289		(21x11)		
	290	0.092	10	17943	0.767
to	308		(19x10)		
	309	0.102	9	18222	0.779
to	339		(31x9)		
	340	0.112	8	18502	0.791
to	374		(35x8)		
	375	0.126	7	18817	0.805
to	419		(45x7)		
	420	0.139	6	19081	0.816
to	463		(44x6)		
	464	0.161	5	19451	0.832
to	537		(74x5)		
	538	0.196	4	19915	0.852
to	653		(116x4)		
	654	0.249	3	20446	0.875
to	830		(177x3)		
	831	0.379	2	21310	0.912
to	1262		(432x2)		
	1263	1.000	1	23379	1.000
to	3331		(2069x1)		

Appendix E2
Cumulative Statistics-Institutions

Institutions	Rank	%Rank	Freq.	CumFr	%CumFr
COLUMBIA U. TEACH. COLL.	1	0.006	93	93	0.040
VANDERBILT U., GEORGE					
PEABODY COLLEGE	2	0.012	74	167	0.072
U. OF KANSAS	3	0.018	65	232	0.101
U. OF ALABAMA	4	0.024	55	287	0.124
U. OF OREGON	5	0.030	53	340	0.147
U. OF PITTSBURGH	6	0.036	52	392	0.170
U. OF FLORIDA	7	0.042	51	443	0.192
U. OF SOUTHERN CAL.	8	0.048	51	494	0.214
U. OF WISCONSIN-MADISON	9	0.054	47	541	0.234
U. OF NORTHERN COLORADO	10	0.060	46	587	0.254
U. OF NORTH CAROLINA					
AT CHAPEL HILL	11	0.065	42	629	0.273
BOSTON U. SCHOOL OF ED.	12	0.071	40	669	0.290
U. OF ILLINOIS AT					
URBANA-CHAMPAIGN	13	0.077	40	709	0.307
U. OF CONNECTICUT	14	0.083	39	748	0.324
TEMPLE U.	15	0.089	37	785	0.340
SOUTHERN ILLINOIS U.					
AT CARBONDALE	16	0.095	36	821	0.356
RUTGERS U., ST. U. OF					
NEW JERSEY (N.B.)	17	0.101	34	855	0.370
U. OF MICHIGAN	18	0.107	32	887	0.384
U. OF MARYLAND	19	0.113	31	918	0.398
U. OF VIRGINIA	20	0.119	31	949	0.411
KENT STATE U.	21	0.125	29	978	0.424
OHIO STATE U.	22	0.131	29	1007	0.436
U. OF MINNESOTA	23	0.137	29	1036	0.449
U. OF WASHINGTON	24	0.143	29	1065	0.461
U. OF CAL., L.A.	25	0.149	28	1093	0.474
U. OF MISSOURI-COLUMBIA	26	0.155	28	1121	0.486
GEORGIA ST. U.					
- COLLEGE OF ED.	27	0.161	27	1148	0.497
MICHIGAN ST. U.	28	0.167	27	1175	0.509
U. OF CINCINNATI	29	0.173	27	1202	0.521
U. OF GEORGIA	30	0.179	27	1229	0.532
U. OF TEXAS AT AUSTIN	31	0.185	27	1256	0.544
AMERICAN U.	32	0.190	26	1282	0.555
BOSTON COLLEGE	33	0.196	25	1307	0.566
U. OF SOUTH CAROLINA	34	0.202	24	1331	0.577
SAINT LOUIS U.	35	0.208	23	1354	0.587
VIRG. POLYTECHNIC INST.					
AND STATE U.	36	0.214	23	1377	0.597
GEORGE WASHINGTON U.	37	0.220	22	1399	0.606
INDIANA U.	38	0.226	22	1421	0.616
U. OF MASSACHUSETTS	39	0.232	22	1443	0.625
TEXAS WOMAN'S U.	40	0.238	20	1463	0.634

Appendix E2 (continued)

Institutions	Rank	%Rank	Freq.	CumFr	%CumFr
U. OF SOUTHERN MISSISSIPPI	41	0.244	20	1483	0.643
NORTH TEXAS STATE U.	42	0.250	19	1502	0.651
PENNSYLVANIA STATE U.	43	0.256	19	1521	0.659
WEST VIRGINIA U.	44	0.262	19	1540	0.667
YESHIVA U.	45	0.268	19	1559	0.675
EAST TEXAS STATE U.	46	0.274	18	1577	0.683
MEMPHIS STATE U.	47	0.280	18	1595	0.691
NORTHWESTERN U.	48	0.286	18	1613	0.699
BRIGHAM YOUNG U.	49	0.292	17	1630	0.706
NEW YORK U.	50	0.298	17	1647	0.714
SYRACUSE U.	51	0.304	17	1664	0.721
U. OF DENVER	52	0.310	17	1681	0.728
WAYNE STATE U.	53	0.315	17	1698	0.736
U. OF IOWA	54	0.321	16	1714	0.743
U. OF NEBRASKA-LINCOLN	55	0.327	16	1730	0.750
U. OF SAN FRANCISCO	56	0.333	16	1746	0.756
TEXAS TECH U.	57	0.339	15	1761	0.763
U. OF ARIZONA	58	0.345	15	1776	0.769
U. OF SOUTH FLORIDA	59	0.351	15	1791	0.776
COLUMBIA U.	60	0.357	13	1804	0.782
KANSAS STATE U.	61	0.363	13	1817	0.787
U. OF TORONTO (CANADA)	62	0.369	13	1830	0.793
UTAH STATE U.	63	0.375	13	1843	0.799
LOYOLA U. OF CHICAGO	64	0.381	12	1855	0.804
NORTHERN ARIZONA U.	65	0.387	12	1867	0.809
U. OF NORTH DAKOTA	66	0.393	12	1879	0.814
ARIZONA STATE U.	67	0.399	11	1890	0.819
FLORIDA STATE U.	68	0.405	11	1901	0.824
GALLAUDET COLLEGE	69	0.411	11	1912	0.828
PURDUE U.	70	0.417	11	1923	0.833
U. OF KENTUCKY	71	0.423	11	1934	0.838
HARVARD U.	72	0.429	10	1944	0.842
UNITED STATES INT. U.	73	0.435	10	1954	0.847
U. OF CAL., BERKELEY	74	0.440	10	1964	0.851
U. OF COLORADO					
AT BOULDER	75	0.446	10	1974	0.855
U. OF IDAHO	76	0.452	10	1984	0.860
WESTERN MICHIGAN U.	77	0.458	10	1994	0.864
AUBURN U.	78	0.464	9	2003	0.868
ILLINOIS STATE U.	79	0.470	9	2012	0.872
NORTHERN ILLINOIS U.	80	0.476	9	2021	0.876
U. OF NEW ORLEANS	81	0.482	9	2030	0.880
U. OF TENNESSEE	82	0.488	9	2039	0.883
BOSTON U.	83	0.494	8	2047	0.887
CLAREMONT GRAD. SCHOOL	84	0.500	8	2055	0.890
LEHIGH U.	85	0.506	8	2063	0.894
U. OF CAL., BERKELEY,					
SAN FRAN. ST. U.	86	0.512	8	2071	0.897

Appendix E2 (continued)

Institutions	Rank	%Rank	Freq.	CumFr	%CumFr
U. OF NORTH CAROLINA					
AT GREENSBORO	87	0.518	8	2079	0.901
U. OF OKLAHOMA	88	0.524	8	2087	0.904
CASE WEST. RESERVE U.	89	0.530	7	2094	0.907
FORDHAM U.	90	0.536	7	2101	0.910
U. OF UTAH	91	0.542	7	2108	0.913
BALL STATE U.	92	0.548	6	2114	0.916
CATHOLIC U. OF AMERICA	93	0.554	6	2120	0.919
ST. U. OF N.Y. AT BUFFALO	94	0.560	6	2126	0.921
U. OF HOUSTON	95	0.565	6	2132	0.924
U. OF MISSISSIPPI	96	0.571	6	2138	0.926
U. OF PENNSYLVANIA	97	0.577	6	2144	0.929
FLORIDA ATLANTIC U.	98	0.583	5	2149	0.931
LOUISIANA ST. U.	99	0.589	5	2154	0.933
OKLAHOMA ST. U.	100	0.595	5	2159	0.935
PEPPERDINE U.	101	0.601	5	2164	0.938
U. OF CAL., RIVERSIDE	102	0.607	5	2169	0.940
U. OF CAL., SANTA BARBARA	103	0.613	5	2174	0.942
U. OF NEVADA, RENO	104	0.619	5	2179	0.944
U. OF PRETORIA (SOUTH AFRICA)	105	0.625	5	2184	0.946
U. OF THE PACIFIC	106	0.631	5	2189	0.948
U. OF TOLEDO	107	0.637	5	2194	0.951
BOWLING GREEN ST. U.	108	0.643	4	2198	0.952
DUKE U.	109	0.649	4	2202	0.954
FAIRLEIGH DICKINSON U.	110	0.655	4	2206	0.956
NEW MEXICO ST. U.	111	0.661	4	2210	0.958
SEATTLE U.	112	0.667	4	2214	0.959
S. ILLINOIS U. AT EDWARDSVILLE	113	0.673	4	2218	0.961
U. OF SOUTH DAKOTA	114	0.679	4	2222	0.963
CLARK U.	115	0.685	3	2225	0.964
COLL. OF WILLIAM AND MARY IN VIRG.	116	0.690	3	2228	0.965
HOFSTRA U.	117	0.696	3	2231	0.967
JOHNS HOPKINS U.	118	0.702	3	2234	0.968
MARQUETTE U.	119	0.708	3	2237	0.969
TEXAS A&M U.	120	0.714	3	2240	0.971
UNION FOR EXPERIMENTING COLL. AND U.	121	0.720	3	2243	0.972
U. OF LOUISVILLE	122	0.726	3	2246	0.973
U. OF MIAMI	123	0.732	3	2249	0.974
U. OF NEVADA, LAS VEGAS	124	0.738	3	2252	0.976
U. OF ROCHESTER	125	0.744	3	2255	0.977
BOSTON U., SARGENT COLL.	126	0.750	2	2257	0.978
DRAKE U.	127	0.756	2	2259	0.979
MIAMI U.	128	0.762	2	2261	0.980
NORTHWEST. ST. U. OF LA	129	0.768	2	2263	0.981

Appendix E2 (continued)

Institutions	Rank	%Rank	Freq.	CumFr	%CumFr
OREGON ST. U.	130	0.774	2	2265	0.981
U. OF B.C. (CANADA)	131	0.780	2	2267	0.982
U. OF CAL., CAL. ST. U., L.A.	132	0.786	2	2269	0.983
U. OF LA VERNE	133	0.792	2	2271	0.984
U. OF MISSOURI-KANSAS CITY	134	0.798	2	2273	0.985
U. OF SOUTH AFRICA (SOUTH AFRICA)	135	0.804	2	2275	0.986
BAYLOR U.	136	0.810	1	2276	0.986
BRYN MAWR COLLEGE	137	0.815	1	2277	0.987
CITY U. OF NEW YORK	138	0.821	1	2278	0.987
CLAREMONT GRAD. SCHOOL AND SAN DIEGO ST. U.	139	0.827	1	2279	0.987
EAST TENNESSEE ST. U.	140	0.833	1	2280	0.988
FIELDING INSTITUTE	141	0.839	1	2281	0.988
INDIANA ST. U.	142	0.845	1	2282	0.989
INDIANA U. OF PENNSYLVANIA	143	0.851	1	2283	0.989
MCNEESE ST. U.	144	0.857	1	2284	0.990
MISSISSIPPI ST. U.	145	0.863	1	2285	0.990
N. CAROLINA ST. U. AT RALEIGH	146	0.869	1	2286	0.990
NORTHEAST LOUISIANA U.	147	0.875	1	2287	0.991
NORTHEASTERN U.	148	0.881	1	2288	0.991
OHIO U.	149	0.887	1	2289	0.992
RUTGERS U., STATE U. OF NEW JERSEY G.S.A.P.P.	150	0.893	1	2290	0.992
RUTGERS U.	151	0.899	1	2291	0.993
STANFORD U.	152	0.905	1	2292	0.993
STATE U. OF NEW YORK AT STONY BROOK	153	0.911	1	2293	0.994
TEXAS SOUTHERN U.	154	0.917	1	2294	0.994
UNION GRAD. SCHOOL (OHIO)	155	0.923	1	2295	0.994
U. OF ARKANSAS	156	0.929	1	2296	0.995
U. OF ILLINOIS AT CHICAGO	157	0.935	1	2297	0.995
U. OF ILLINOIS AT CHICAGO CIRCLE	158	0.940	1	2298	0.996
U. OF MAINE	159	0.946	1	2299	0.996
U. OF MISSOURI-SAINT LOUIS	160	0.952	1	2300	0.997
U. OF MONTANA	161	0.958	1	2301	0.997
U. OF NEW MEXICO	162	0.964	1	2302	0.997
U. OF SAN DIEGO	163	0.970	1	2303	0.998
U. OF SASK. (CANADA)	164	0.976	1	2304	0.998
U. OF TULSA	165	0.982	1	2305	0.999
U. OF WISCONSIN-MILWAUKEE	166	0.988	1	2306	0.999
WASHINGTON ST. U.	167	0.994	1	2307	1.000
WASHINGTON U.	168	1.000	1	2308	1.000

APPENDIX F
TEXT ENTRY STYLE FORMAT #3 FROM FYI 3000 PLUS

*C

Identification number

Date:

Author:

Title:

Institution:

DAI: Year, Volume, Page

Order Number:

*

*K

Keywords: ID number & Author / Date / Degree / Sex of Author / Institution /
Category of special education / Research type / Data analysis technique / Sex of
subjects / Type of subjects / Educational level /

Other descriptive KEYWORDS

*E

APPENDIX G
TEXT DATABASE - KEYWORD NUMERICAL SUBORDINATION

The text database has been formatted to correspond to the FYI 3000 Plus Entry Format #3. Between the markers *C and *, information is given about the abstract entry. Between the markers *K and *E, the keywords which are the "keys" to the filing system are listed. An attempt was made to develop content keywords which have been subordinated by a decimal and number. These numbers must be used in formulating search queries.

.0#### Author

.1 Date

.2 Degree

.3 Sex of Author

.4 Institution

.5 Page Length

.6 Category of Special Education

.7 Research Type

.8 Data Analysis Technique

.9 Sex of Subjects

.9 Type of Subjects

.10 Educational Level

Other keywords which were assigned to the abstract entry, describing either specific or general concepts, are subordinated alphabetically.

APPENDIX H
CODING SHEET

APPENDIX I
TEXT DATABASE SAMPLES

**PATTERNS IN THE EMERGENCE OF LANGUAGE OF
PROFOUNDLY AND SEVERELY MENTALLY RETARDED AND
MULTIPLY HANDICAPPED PERSONS Order No. DA8405963**

DREIFUSS, ARNOLD ROY, Ed.D. *Wayne State University*, 1983. 169pp.
Adviser: Kenneth A. Hanninen

Previous studies as reported in the literature on emerging language of the mentally retarded, based on the application of the work of Piaget, suggested that sensorimotor development was more delayed than language development and both were delayed more than could be expected considering the MA. Language did not emerge until Stage VI of the Sensorimotor Period had been achieved. This study involved 26 institutionalized profoundly and severely mentally retarded and multiply handicapped individuals with chronological ages from 15 to 25 years and a mean CA of 21 years. Scores obtained from subtests of the *REEL*, the *Ordinal Scales* and a *Declarative/Imperative Statement* procedure were compared with each other and with the MA. Results tended to support the findings of previous studies that scores on sensorimotor subtests were lower than scores on language subtests and that symbolic language was not present unless sensorimotor skills were sufficiently developed. All subtest scores were lower than expected considering the MA. Correlations between MA and five other subtests including receptive language were not significant while correlations between all other subtests were high. Subtest scores tended to be significantly different from each other even though correlations between them were high. Results not previously reported in the literature were that expressive language scores were significantly lower than receptive language scores and "Vocal Imitation" and "Gestural Imitation" scores tended to be significantly lower than other scores. The need for further study is indicated, but based on these findings and the work of others, sensorimotor development may be a better predictor of language ability and potential than MA and the necessity to include sensorimotor training and imitation training in the language curriculum for this population is strongly indicated.

Filing system title: dissertations

Last modified: 88-01-22

Comment:

Type of entries: Start and end markers

Number of entries: 2308

Type of key words: Separate keywords

Number of key words: 6140

Total number of key words

in entire filing system: 39102

Disks currently indexed in the filing system:
dissertations DISK NO.

- 1 6
- 2
- 3
- 4
- 5

((MAINSTREAMING \AND PLACEMENT DECISIONS))

dissertations DISK NO. 1 ABS00300.D06

*C

00330

Author: Segal, M. S.

Date: 1980

Title: The influence of a mainstream vocational placement on achievement, self-esteem and behavior

Inst.: Lehigh University

DAI: 1980, 41, 1023A

Order No. 8019725

*

*K

.00330 Segal, M. S. / .1 1980 / .2 Ed.D. / .3 female /

.4 Lehigh University / .5 214pp /

.6 mild mentally handicapped / .6 learning disability /

.7 causal-comparative / .8 analysis of variance /

.9 male-female / .9 adolescents / .10 secondary education /
vocational placement / placement decisions /

educable mentally handicapped / mainstreaming /

educable mentally retarded /

Gray Oral Reading Inventory /

Key Math Diagnostic Arithmetic Test /

Coopersmith Self Esteem Inventory /

Coopersmith Behavior Rating Scale /

Teacher Attitude Form / academic achievement / self esteem /
behavioral characteristics /

*E

*C

00126

Author: Glaser, M. L.

Date: 1980

Title: Attitudes of elementary school students and teachers toward hearing impaired children in integrated and nonintegrated settings

Inst.: American University

DAI: 1979, 40, 5820-5821A

Order No. 8010691

*

*K

.00126 Glaser, M. L. / .1 1980 / .2 Ph.D. / .3 male /

.4 American University / .5 150pp /

.6 hearing handicapped / .7 causal-comparative /

.9 male-female / .9 children / .9 adults /

.10 elementary education / mainstreaming /

social acceptance / peer acceptance /

regular classroom teachers / attitudes /

Attitude toward Disabled Persons Scale /

Peer Acceptance Scale /

sociometric analysis / social status /

*E

*C

00127

Author: Glimps, B. E. J.

Date: 1980

Title: An exploratory study of the childrearing attitudes and caregiving behaviors of selected adolescent mothers

Inst.: University of Michigan

DAI: 1979, 40, 5398A

Order No. 8007743

*

*K

.00127 Glimps, B. E. J. / .1 1980 / .2 Ph.D. / .3 female /

.4 University of Michigan / .5 181pp / .6 early education /

.7 survey / .9 male-female / .9 infants / .9 adolescents /

.10 early childhood education / adolescent mothers /

adolescent mother attitudes / childrearing attitudes /

care giving behaviors / attitudes /

Maryland Parent Attitude Survey /

Assessment of Mothering Scale /

*E

*C

00148

Author: Hall, R. J.

Date: 1980

Title: An information processing approach to the study of learning disabilities: The effects of cue elaboration on the maintenance and generalization of problem solving strategies

Inst.: University of California, Los Angeles

DAI: 1979, 40, 3948-3949A

Order No. 8001376

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.00148 Hall, R. J. / .1 1980 / .2 Ph.D. / .3 male /
 .4 University of California, Los Angeles / .5 173pp /
 .6 learning disability / .7 quasi-experimental /
 .9 male-female / .9 children / .10 intermediate grades /
 information processing / cue elaboration /
 maintenance / generalization /
 problem solving strategies /

*E

*C

00164

Author: Hollimon, V. A.

Date: 1980

Title: A study of the development of selective attention in selected specific learning disabled male subjects

Inst.: University of Southern Mississippi

DAI: 1979, 40, 5399A

Order No. 8008102

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*K

.00164 Hollimon, V. A. / .1 1980 / .2 Ed.D. / .3 female /
 .4 University of Southern Mississippi / .5 108pp /
 .6 learning disability / .7 causal-comparative /
 .8 analysis of variance / .9 male / .9 children /
 .9 adolescents / .10 elementary secondary education /
 selective attention / Florida /
 Central Incidental Task /
 Goldman-Fristoe-Woodcock Test of Auditory Discrimination /
 auditory discrimination / visual discrimination /

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APPENDIX J
MANAGEMENT DISK FOR INFORMATION RETRIEVAL SYSTEM

Please ask in Special Collections
for this computer diskette.

APPENDIX K
TEXT DATABASE DISKS

Please ask in Special Collections
for these 6 diskettes.