HEDDESHEIMER, Janet Craig, 1943-
A COMPUTER-BASED MANAGEMENT AND EDUCATION
INFORMATION SYSTEM FOR COUNSELOR EDUCATION.

The Ohio State University, Ph.D., 1971
Education, guidance and counseling

University Microfilms, A XEROX Company, Ann Arbor, Michigan
A COMPUTER-BASED MANAGEMENT AND EDUCATION INFORMATION SYSTEM FOR COUNSELOR EDUCATION

DISSertation

Presented in Partial Fulfillment of the Requirement for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

BY

Janet Craig Heddesheimer, B.A., M.A.

The Ohio State University
1971

Approved by

[Signature]
Adviser
College of Education
PLEASE NOTE:

Some Pages have indistinct print. Filmed as received.

UNIVERSITY MICROFILMS
I wish to acknowledge my gratitude and appreciation to the people who made this project possible.

My thanks to Dr. Joseph J. Quaranta for his assistance in conceptualizing the study and in following it through to completion. His support and insight during the past three years have greatly enriched my graduate career.

Special recognition is given to Mr. Richard O. Shafer of the Instruction-Research Computer Center. Mr. Shafer provided computer programming for the system and spent many hours helping me design the system.

Acknowledgment goes to Dr. Anthony C. Riccio and Dr. Donald Tosi for their support of this project.

Finally, I wish to express my gratitude to my husband without whose help, patience and understanding I would not have completed this project.
VITA

November 30, 1943 ........ Born- Pittsburgh, Pennsylvania

1965 .................. B.A., Coe College, Cedar Rapids, Iowa

1965-1966 ............. Teaching Assistant, Department of English, Ohio State University, Columbus, Ohio

1966-1967 ............. Teacher of English, Columbus School for Girls, Columbus, Ohio

1968 .................. M.A., The Ohio State University, Columbus, Ohio

1969-1971 ............. Elementary School Counselor, Columbus Public Schools, Columbus, Ohio

FIELDS OF STUDY

Major Field: Guidance and Counseling

Studies in Guidance. Professors Joseph J. Quaranta and Anthony C. Riccio

Studies in Counseling Psychology. Professor Samuel Osipow
<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>VITA</td>
<td>iii</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vii</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Rationale</td>
<td></td>
</tr>
<tr>
<td>Information System Methodology</td>
<td></td>
</tr>
<tr>
<td>II. REVIEW OF RELATED LITERATURE AND RESOURCES</td>
<td>18</td>
</tr>
<tr>
<td>Information Systems in Education</td>
<td></td>
</tr>
<tr>
<td>Information Systems in Guidance</td>
<td></td>
</tr>
<tr>
<td>Research on Counselor Characteristics and Selection</td>
<td></td>
</tr>
<tr>
<td>Ohio State University Information and Data Processing Resources</td>
<td></td>
</tr>
<tr>
<td>III. DEVELOPMENT OF THE INFORMATION SYSTEM</td>
<td>64</td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td>Objectives</td>
<td></td>
</tr>
<tr>
<td>Functions</td>
<td></td>
</tr>
<tr>
<td>Feasibility</td>
<td></td>
</tr>
<tr>
<td>Steps toward Implementation</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Data Base Contents</td>
<td></td>
</tr>
<tr>
<td>Data Base Upkeep Design</td>
<td></td>
</tr>
<tr>
<td>Security Features</td>
<td></td>
</tr>
<tr>
<td>Completion of Data Base System</td>
<td></td>
</tr>
<tr>
<td>Non-Standardized Information</td>
<td></td>
</tr>
<tr>
<td>Standardized Information</td>
<td></td>
</tr>
<tr>
<td>Computer Programs</td>
<td></td>
</tr>
</tbody>
</table>
IV. PROJECTED DEVELOPMENT OF THE TOTAL INFORMATION SYSTEM .................. 111

Information System Development
Information System Resources
Guidance Processes
Program Goals
Evaluation

APPENDIX

A. Data Base Contents, Coding Instructions, and Tables ........................... 128
B. Operating Manual ...................................................... 172
C. Proposed Data Sheets ................................................. 193

REFERENCES ................................................................. 200
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Information Available in File of Graduate Office of Education</td>
<td>54</td>
</tr>
<tr>
<td>2.</td>
<td>Information Available from University Reports</td>
<td>57</td>
</tr>
<tr>
<td>3.</td>
<td>Costs Estimated for a Computer-based System</td>
<td>73</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The System Followed in the Development of the Student Information System for the Department of Counselor Education</td>
<td>14</td>
</tr>
<tr>
<td>2.</td>
<td>Systems Flow Chart for Operations Occurring at a Fixed Time</td>
<td>84</td>
</tr>
<tr>
<td>3.</td>
<td>Systems Flow Chart for Operations Occurring at Random Times</td>
<td>85</td>
</tr>
<tr>
<td>4.</td>
<td>Parameters of the Role of an Information System in a Program of Counselor Education</td>
<td>112</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The field of guidance and counseling is moving into the age of technology more rapidly every year. Projects utilizing the methods and tools of technology crosscut all levels of education. The purpose of this project was to illustrate how one aspect of technology, information systems can aid in assisting a university program of counselor education in meeting some of its objectives more efficiently and effectively.

Specifically, the project sought to accomplish two purposes. The first was to design a data base system. The data base system was produced to meet departmental needs for student information. Initially, a survey of the literature on computers in education and information resources at Ohio State University was conducted. A method for collecting the data, for storing it on tape, and updating it was presented. Also included were suggested non-standardized and standardized personal data to be collected from students and used for research purposes as well as for furthering a counselor's self-knowledge. These suggestions were intended to have the impact of current change in the counselor education program.
The second purpose was to develop a framework to illustrate the interaction between a total information system and the processes and goals of a department of counselor education. The components in the framework are: (1) system development; (2) system resources; (3) guidance processes; (4) program goals; and (5) evaluation. Within the information system the following resources are available: storage; on and off line access to the data; statistical programs; reports; and interactive programs. The system of counselor education contains the processes of monitoring, planning, counseling, skill development, and research. The goals are foundation skills and understandings, guidance skills and understandings, and personal-professional development. Each of these areas interact within the larger system of counselor education. Also included in the section were specific suggestions for use of the information system as well as potential improvements in the system.

Rationale

Silverman's (1968) definition of technology furnishes a framework for developing and implementing the proposed system. He distinguishes between technology as method and technology as application.

Technology as method is an approach to problem solving and to the creation of new programs, methods and machines that is rational and orderly. There is an important dynamic quality involved. One of the current methods is that of system analysis and synthesis.
Through this process one first attempts to understand the present system by defining its goals, parts, and interrelationships. He then attempts to create a better system to achieve the stated goals. The process is continuous. One must constantly evaluate the operating system in terms of stated objectives. This means that in order to create a computer-based information system, one must first evaluate what goals are to be achieved through the system; then ascertain to what extent they are being met; and finally, determine how a new system can meet them more effectively.

Technology as application uses the results of technology as method. These results often take the form of new machines and designated ways of applying approaches. Technology as application becomes static and useless unless it is constantly combined with technology as method. Walz (1970) effectively conveyed this concept in a discussion of technology in guidance.

To perceive of technology narrowly in the sense of a machine is to focus on an outcome of technology rather than on the ideas fundamental to different technologies which constitute their enormous potential for effecting change. The present physical manifestations of technology (computers, teaching machines, audio-visual devices, etc.) are embryonic and will rapidly be displaced by new generations of hardware. Any discussion of technology which focuses on the hardware alone is thus likely to deal with what has been rather than what will be, and to overlook the fundamental power of technology. This is especially true of guidance technology where the applications are still miniscule compared to the opportunities and needs (p. 176).
Computer information systems in guidance are specific examples of the interrelationship between technology as method and technology as application. Grossman and Howe (1965) furnish the following definition for an information system:

An information system is nothing more than a planned method of collecting necessary data and converting it to summaries and other reports that serve some vital purpose in the educational program. All of these systems are powered either by hand (manual systems) or by machines (automated systems) (p.3).

Moorhouse (1969) has provided another description of a computer information system appropriate for a guidance setting.

A computer information system is the intricate procedural plan (system design) which encompasses an operation where information is needed and obtained for use through a selection and synthesis of facts. This includes receipt of factual input, editing, storage, processing and production of informational output by machinery called the 'computer system' (p.2).

The previously described information system contains two subsystems. The first is the hardware or the computer system. It consists of the machines and equipment making up the physical facilities.

The computer system comprises a central processing unit (CPU), or computer, that has devices attached which receive input, store data, and produce outputs. The CPU does the processing with the help of attachments and related devices (Moorhouse, 1969, p.2).

Software constitutes the second subsystem which consists of both programs and information. Programs are essential for every
operation the computer is asked to perform. But programs are of no value without data being available for them to process.

These data are usually held in a computer-information file, also called the data base. These files can be set up to hold any alphabetic or numeric data. Williams (1968) defines a data base as providing "... one data structure and common store for users and contributors of information (p.416)." In an information system there are often several data bases. A computer-based vocational guidance system, for example, may contain three such bases.

One data base contains information on each student relevant to vocational choice.

One data base includes information on a range of vocations coded to include the level and combination of student characteristics required for each vocation.

One data base contains names of employers in the immediate geographic area keyed to the various occupations listed.

These data bases are all held in storage ready to be retrieved when needed by any of the programs.

Constructing the data base is a key aspect in the development of a computer-based information system. The major consideration is to compare presently available data with a list of objectives in order to determine what additional data should be collected for the system.

The needs of the larger system within which the information system operates should also be considered when developing a data
base. For example, the needs and characteristics of the school for which the computer-based vocational guidance system is being developed are crucial variables.

To summarize, technology as method aids in establishing the goals of the information system based on the needs of the larger system within which the information system operates. In addition, it can assist in formulating a method for continual evaluation of the project in order to determine whether or not the originally prescribed goals are being met. On the other hand, technology as application provides the tools such as hardware and software for implementing the goals previously outlined. Such tools are necessary to operationalize what can only be discussed theoretically through technology as method.

Information systems are being utilized on all educational levels. The following overview of educational information systems furnishes a framework for examining how they might operate in a university counselor education program. The emphasis will be on programs specifically related to guidance.

Data processing centers. — Some public school systems and colleges and universities use data processing centers for storing information on each student throughout his educational career. Information on enrollment, student scheduling, grade reporting, attendance accounting and test scores is typical. Based on the users'
needs, a variety of reports can be generated from this information. For example, a test profile for a given school can be plotted against the mean profile of other schools in the system.

Computer assisted instruction (CAI). -- In a CAI system a student manipulates and responds to a display device controlled by a computer. The design provides for a student's active participation and for immediate reinforcement after each response. As an example, some elementary schools are using CAI for routine drill and practice in spelling and arithmetic skills.

Computer assisted instructional management (CAIM). -- CAIM is used by the teacher rather than the student. An ideal system of CAIM grades and evaluates frequent tests of each student's level of achievement relative to specific learning objectives. The system also recommends remedial activities designed to strengthen areas in which a student has not reached a prescribed level of achievement.

Computer based vocational guidance systems. -- The usual format of vocational guidance systems is the interaction of a student with a program via a terminal in order to provide him with educational and occupational information appropriate for his needs and interests. These systems match a collection of user interests, needs, preferences, financial resources and other characteristics with the characteristics of educational institutions and/or of job opportunities. Out of the system emerges a list of the suggested best institutions or job opportunities for the user's needs.
Information retrieval systems. -- Gulick (1968) has described an information retrieval system as any system designed to facilitate the:

... total process of gathering, analyzing, indexing, filing, and making available information using humans and/or hardware to carry out the process (p. 214).

Uses in guidance include providing students with occupational information, furnishing teachers and administrators with information on students such as might come from data processing centers, and supplying staff members with information about current educational programs, practices, and results through a system such as Educational Resources Information Center (ERIC).

Research. -- Computers aid research by storing data needed in studies and by providing rapid and accurate statistical treatment of relevant data.

The previous overview of educational information systems suggests potential applications at the university level in programs of counselor education. While programs of counselor education have made a limited use of technology, they have not been active in developing information systems for their own programs. Thus far, the uses of technology have been in three areas.

Audio-visual equipment. -- Audio and video-tape machines have become standard equipment in almost all programs of counselor education. The availability of this equipment has made possible the
development of methods such as micro-counseling (Ivey and Haase, 1968) and interpersonal process recall (IPR) (Kagan, et al., 1967).

**Systems design.** -- Systems design has the specific task of understanding a total program and improving its performance. The approach has been used in programs of counselor education to design curriculum and systematic ways of counseling.

**Computers for research.** -- Computers have become essential tools in conducting the research of faculty members and graduate students. The statistical manipulation of data has been their primary use.

Despite the current dearth of computer information systems in programs of counselor education, these systems show rich promise for meeting existing needs.

First, the amount of cognitive material available to any class increases markedly every year. On the other hand, there is also a need to deal in the affective domain and to encourage inquiry. The use of CAI provides the opportunity for students to learn factual material outside of the classroom. This allows more time in class for activities other than information dispensing.

Second, research in counseling has suffered from a lack of longitudinal data. One of the recommendations of the Bromwoods Invitational Conference on Research Problems in Counseling (Whiteley, 1967) was:
Counselor selection should be studied comprehen- 
sively at the levels of preselection, performance 
in training, and performance as a practicing 
counselor (p.251).

More specifically, this conference suggested:

First there should be a consideration of the initial 
data gathered in counselor selection programs. At-
ttempts in this direction should be toward making the 
initial data gathering more systematic and more usable' 
in studies of later counseling performance (p.251).

Yet traditionally, longitudinal data in counselor training programs 
has been unobtainable because of a lack of funds and the difficulty 
of staffing one project over a long period of time. This problem 
can be solved through the utilization of data banks which contain 
information on current and past students in programs of counselor 
education.

Third, in a large university much information is available on 
graduate students; yet it is frequently unorganized and in several 
locations. Information systems are capable of providing a method 
of information storage and retrieval that is responsive to users' 
needs. Information needs in Ohio State's guidance department in-
clude:

Adviser needs

List of advisees at M.A. level
List of advisees at Ph.D. level
List of each advisee's status in the program
Academic history of each advisee
Personal history of each advisee
Professional goals of each advisee
List of courses taken by each advisee

**Student needs**
- Record of courses taken
- Status in the program
- Department normative base for test results

**Department needs**
- Statistics on past enrollment
- Technological methods to assist with implementation of changes in the program
- Personal and academic information on each student
- Grade point average of students

**Research needs**
- Longitudinal record of information on past and present students

Essential to all mentioned areas of need is a data base of information on people enrolled in guidance and counseling. In addition to meeting present needs, this data base can serve as the foundation for constructing future data bases as further needs arise.

Ohio State University presently has the data processing equipment to establish an information system for guidance and counseling.
In addition, considerable information on students in the program is being collected although it is difficult to access. All that is lacking is a system for bringing the two areas together. This project seeks to join the two and to establish a foundation for future development of the system.

Information System Methodology

The system development methodology proposed is appropriate for future development of the total information system as well as the current data base system. This project focused on the latter. Since the data base system was developed within the context of a program of counselor education, the needs of the program shaped the development of the data base system.

Selecting a methodology for the design of the system required a synthesizing of several approaches. Hunt (1967) comments that "an emerging new partnership between education and industry is apparent. (p.v)" The basis of this project was to effect such a partnership despite the fact that a distinction is usually made between information systems for management and business purposes (Enger, 1969, Rothery, 1969, and Rosove, 1967) and information systems for educational purposes (Grossman and Howes, 1965). The methodology finally employed in this study was a merger of those proposed by Rosove (1967), Rothery, (1969) and Mager, (1971). Also of assistance was Antoinette Ryan's (1970) work with systems analysis.
Rosove's (1967) statement on the development of an information system furnished a useful framework for the merger:

The development of an information system consists of translating a user's goals and objectives into a design for and, eventually, the creation of a physical configuration of facilities, computers, computer programs, personnel communications, and equipment (p. 67).

Figure 1 outlines the relationship between each stage of the methodology and shows what reports are the results of each stage. For several reasons, not all stages in the methodology were completed. First, time restraints precluded the development of a more sophisticated method of storage and also prevented the programming of reports to be generated. Second, the process assumes an ongoing development of the system. Thus, the project will never be complete. Third, while the system for developing the data base was completed, the actual transfer of information on all students to cards was not completed because of time limitations and because of present gaps in information.

The first stage of the methodology is a three-part review of related literature and projects. This review was essential for:

1. Determining the hardware and software limits within which the system must operate.

2. Generating ideas based on other projects as to possible uses for the system.

3. Ensuring that as many technical aspects as possible were considered in building a model for Ohio State University's computer based system.
FIGURE I
THE SYSTEM FOLLOWED IN THE DEVELOPMENT OF THE INFORMATION SYSTEM FOR THE DEPARTMENT OF COUNSELOR EDUCATION

REVIEW OF EXISTING PROJECTS AND RESOURCES

REVIEW OF LITERATURE

REVIEW OF UNIVERSITY RESOURCES

DEVELOPMENT OF REQUIREMENTS

REQUIREMENTS REPORT

DESIGN REPORT

DESIGN

APPROVAL

YES

NO

WORK WITH PROGRAMMER

PROGRAMMING

PRODUCTION

OPERATING MANUEL

EVALUATION AND MAINTENANCE
4. Providing resources for future developers to draw upon in implementing departmental changes in the system.

A report comprised of three sections came out of this review. The first segment provides an examination of information systems in education relative to guidance. The second contains a review of the type of information resources and university data processing facilities available at Ohio State University.

The second stage of the methodology is the requirements phase. This involves a statement of objectives based on the needs of users, a feasibility study for the project encompassing "... the investigation of a variety of factors including cost, schedules, technical state of the art, and availability of technical and operational personnel (Rosove, p. 79)," and a development strategy which indicates the steps to be taken in moving towards full implementation of the system.

Out of the requirements phase grew the design for the system. In this, the heart of the project, the new information system was created based on the objectives and requirements already established. The steps taken in the process are delineated within the design document. The last part of the design phase was approval by the users.

Once the design was approved, the next phase was to work with a computer consultant to develop a program for maintenance and updating of the data base. Additional programs to generate reports
and to increase the capabilities of the system will require continual assistance of a programmer. The results of the programming phase are contained in the operating manual.

Having developed the system design and the program to be utilized in updating the information base, the production or implementation of the system occurred. This necessitated the preparation of operating instructions for both users and computer operators and the supervision of conversion and changeover procedures.

The final step, the evaluation and maintenance process, is a vital link in ensuring that the system maintains its technology as method component. This is essentially a continuous process. Its objectives are threefold:

1. The periodic review of systems performance.
2. The evaluation of requests for systems changes.
3. The design and implementation of system changes (Rothery, 1969, p.119).

An important point is that:

The process involved in project maintenance are essentially a repetition of the entire system development process on an extremely limited scale (Rothery, 1969, p.119).

Hence the importance of the yearly review of the system by a departmental committee is emphasized. The final step of this project is particularly crucial because the project was not fully implemented.
Future developments will require close attention to the evaluation and maintenance process which is really the first step toward a system more responsive to user needs.
CHAPTER II

REVIEW OF RELATED LITERATURE AND AVAILABLE RESOURCES

The first part review of the literature focused on three areas: (1) information systems in education, (2) information systems in guidance, and (3) studies of counselor characteristics and counselor selection. The first two are closely related and at times may overlap. The second part reviewed the information and data processing resources available at Ohio State University.

Information Systems in Education

Siegmund (1969) in a discussion of universities as information systems divides the systems into three types: administrative information systems; teaching information systems; and research information systems. This division is an appropriate one for reviewing information systems at all levels of education.

Administrative-Information Systems. -- Administrative information systems or management information systems are designed to aid administrators in decision-making. Cook (1968) has provided a definition of management information systems in education.
A third type of application can be identified and is, in a general sense, the development of management information systems for better decision-making on the part of chief school officials. The basic essential of a management information system is the establishment of a data base which can be used not only for operational control of the school on a day-to-day basis but also as a source of information for long-range planning within the school district. The information base generally consists of data elements relating to faculty, students, finance, research, and similar variables which can be organized into information useful to the school district in making the decision (p.6).

Siegmann (1969) notes that an administrative information system requires both maintenance and retrieval procedures in order to keep it current. In addition to providing access to the information stored, an advanced management information system can furnish other capabilities: (1) modeling and simulation; (2) program budgeting; (3) class scheduling; (4) on-line access to the data base; and (5) source data input.

Simulation allows a school to predict what will probably happen if a change is instituted. Goodlad (1966) describes simulation as a way of seeing the results of interrelated decisions before they are made. This is accomplished by anticipating and imitating the operation of a school system into which certain changes are proposed.

Program budgeting assigns costs to objectives rather than to traditional categories such as personnel, services, and travel.
Since program budgeting crosscuts organizational lines, a system design which contains information on an entire school system or university is necessary.

Class scheduling can be accomplished quickly through a computer based information system. The data processing equipment can handle the numerous time consuming details often done by hand.

On-line access to the data base allows rapid responses to administrative questions. On-line access via a terminal and/or cathode ray tube usually is provided as an adjunct to an off-line system which furnishes regular reports and batch processing facilities.

Source data input means that data is recorded into machine readable form at its original source and immediately supplied to the system. Machine readable data can be accomplished by a pencil-punched card, mark-sensed papers, or optically read forms.

A number of operational administrative information systems in public schools, universities and colleges supply the capabilities described.

Goodlad (1966) reviewed the New England Educational Data Systems (NEEDS). This provides computerized services for up to 100 schools as well as for six state departments of education and various cooperating universities in the area. In addition to performing routine activities pertaining to schedules, report cards, attendance, and testing, the system trains school personnel in educational applications of data processing technology. Some of its aims are to
eliminate information processing inefficiencies to bring technology within the range of the public schools, and to develop personnel with technological skills in educational and data processing.

Another functioning system is found at State University of Iowa, the Unlimited Personnel Data through Automation Technology in Education (UPDATE) (Goodlad, 1966). Its goal has been to provide local districts with increased capacity to deal with involved and large data problems and to facilitate educational research through applications of data processing and computer science. This program is unique in that it is designed to provide a wide range of educational data from administrative and planning facts to student achievement and environmental information.

The Chicago Board of Education has developed a Total Information Service (TIS) (AEDS Bulletin, 1963) which furnishes teaching and research applications during the day and administrative applications at night. TIS is attempting to develop a total system approach to data processing in the schools.

California (Moorhouse, 1969) has instituted a series of regional educational data processing centers which provide the following for the schools they serve:

... a system of pupil personnel services which initially include enrollment, student scheduling, grade reporting, attendance accounting test scoring, and reproduction of a report at the end of the semester which contained output from the above services on a single form called the California Guidance Record (p.6).
This system combines administrative objectives with pupil personnel objectives.

Goodlad (1966) discusses other programs in Anchorage, Alaska; Ann Arbor, Michigan; Baltimore, Maryland; Bellevue, Washington; Fort Lauderdale, Florida; Sacramento, California; Auburn, New York; Cleveland, Ohio; and Hartford, Connecticut.

At the university level there are also numerous administrative information systems. Much of the work has been done in the area of computer-assisted scheduling (Journal of Educational Data Processing, 1964). Purdue University had one of the earliest systems for registering, scheduling, and assessing fees for all students. This was designed to improve a student's choice of courses and the overall utilization of resources. Other universities which have since developed similar programs include Massachusetts, Rhode Island, M.I.T., Notre Dame, Illinois, and Pittsburgh.

Modeling and simulation are used for predictive purposes. The University of Toronto CAMPUS system (Pfeiffer, 1968) provides ten year projections for future budget and staff requirements. Koenig and Keeney (1966) have developed a computer-based model which deals with the problems of planning and resource allocation in educational institutions. Their model views the university as a total, dynamic, and interrelated system. Siegmann (1969) describes similar programs at the University of California (Berkeley), Tulane, Cleveland State and Johns Hopkins.
A number of administrative information systems at the university level combine management with guidance functions. Gerard (1967) describes two such systems. In the Department of Education at the University of Rochester, computers are being used to identify "under-achieving" bright students with the hope of encouraging them to raise their level of achievement. At Carnegie Institute of Technology, a computer is analyzing personality tests in an attempt to locate students with emotional difficulties and provide counseling for them.

At Ohio State University, Ihrig (1966) has proposed a Student Information System (SIS). SIS would use computers to maintain student data in a central file which would be available to campus agencies on a need-to-know basis. The purpose of the system is to provide data essential for:

... improved counseling of students heading into academic trouble before they are actually placed on probation or dismissed, institutional research studies, and continuing retention studies on entering freshman classes, along with providing the administrative flexibility required to promote experimentation with techniques of instruction (p.1).

This system is not currently operational nor will it be for at least two years.

Also at Ohio State, the College of Administrative Science under the direction of Georges (1971) has developed Automated Student Programs and Electronic Counseling Techniques (ASPECT). The three objectives of ASPECT are:
1. give each student a better understanding of his capabilities and interests and his academic progress and alternatives;

2. communicate more effectively with each student the relationship between his personal academic history, his academic progress, his academic requirements, and his selection of a specific academic program toward a general area; and

3. provide for automated data which can give the College immediate access to reliable information for research and program management purposes and extension of the information system to other needed areas (p.2).

The system contains a data base of academic information on each student, a copy of the academic programs available to each student which can be matched against any student's program, and a system for generating routine and special administrative reports.

Teaching Information Systems. -- Teaching Information systems are those which can be used to increase the effectiveness of university teachers in the performance of their duties. Systems which are computer based fall into the three categories of computer-assisted instruction, computer-assisted instructional management, and simulation.

A standard definition for CAI has yet to be established. For guidance purposes, Silvern's (1968) explanation which is concerned with communication between student and computer seems appropriate.

... it (CAI) is a man-machine relationship in which the man is a learner and the machine is a computer system. Two-way communication exists between them, with the objective of human learning and retention... During instruction the only humans in the system are learners.
... the term CAI should be reserved for those particular learning situations in which a computer contains a stored instructional program designed to inform, guide, control, and test the student until a prescribed level of proficiency is reached (pp. 48-49).

Rather than attempt an exhaustive review of CAI projects and of available hardware and software resources, the modes of instruction or types of program available in CAI will be discussed. If further information is required regarding specific projects and programs, a number of sources provide bibliographies and directories (Engel and Temple, 1966; Hickey, 1968; Zinn, 1968). In addition, libraries now have a card file by ENTELEK which lists available CAI programs and articles related to CAI.

The mode of drill and practice is often designed to supplement the regular curriculum. Chorvinsky (1967) views drill and practice as an objective learning condition under which responses receive immediate evaluation, and there is provision for repeating those items that are presenting difficulty to the learner.

The tutorial mode is the one most often referred to when the term CAI is used. Suppes (1967) described the aim of this mode as that of taking responsibility for developing skill in the use of a given concept. The method usually employed is question and answer with extensive branching to adapt to individual differences.

The dialogue mode is primarily in the prototype stage. This differs from the tutorial mode in that there is increased student control over the selection and sequencing of the messages which make
up the conversation. In a sense, there is true dialogue between student and computer as the computer assembles a reply based on student input as well as on information stored by the author.

The calculation mode refers to the computer's ability to solve mathematical problems. The mode can be utilized in CAI for teaching methods of problem solving as well as for students generating and analyzing their own research data.

Numerous capabilities of CAI can be seen in all of the modes considered. Learning and teaching are facilitated through provisions for varying levels of individualization. Immediate and constant feedback are provided in even the simplest program. Student-machine interaction requires active involvement of the learner, and practice is distributed and monitored.

Professors are assisted in their work with students by knowing that all students in the class have been exposed to the same body of knowledge. Entering behavior can be assessed to determine what knowledge students possess when they begin a program. In addition, periodic on-line tests of material covered in the program furnishes feedback to professors, students and developers of the system.

At this time there are not a large number of CAI programs available in the area of guidance and counseling. The ENTELEK card system does list several programs in statistics. In addition, they list a program called TEMPATHY which was developed at the University of Texas and is designed to develop teachers' skills in attending to
student communication in the classroom. There is also a program called KUDER developed at Florida State University which deals with the administration and scoring of the Kuder Preference Record. Finally, Chang Ahn, a graduate student in guidance at Ohio State University, is developing a CAI program which teaches a method for using the Dictionary of Occupational Titles.

A second use of computers in the area of teaching information systems is computer assisted instructional management (CAIM). Coulson (1969) defines CAIM as:

Specifically, computer-assisted instructional management, or CAIM, is the use of a computer to help teachers monitor student performance and make management decisions about meeting each student's instructional needs (p.1).

An ideal system of CAIM grades and evaluates frequent tests of each student's level of achievement relative to specific learning objectives. The system also recommends remedial activities designed to strengthen areas in which a student has not reached a prescribed level of achievement.

An example of an operating system of CAIM is SDC's Instructional Management System (IMS) (Kooi, 1968). IMS allows for three levels of testing in grades one through six, assessment, diagnosis, and prescription. The tests and remedial materials were selected in conversation with the teachers in the schools using the system.

Simulation experiences constitute the third teaching information system. Wickey (1968) notes that through simulation a computer
is used to imitate some characteristics of the environment, frequently a laboratory environment. The student manipulates this environment as he would the real one. Computer based simulation has been used primarily in industry, the sciences and the military.

While computer-based simulation has not been employed in counselor education, other methods have been developed. Kagan's (1968) IPR provides films of clients expressing varying degrees of rejection, being rejected, intimacy received, and intimacy given. Students in training respond to these films as though the actors were real clients.

Loughary (1968) has proposed a system of simulation labeled "perpetual evaluation and teaching exercise for counselor education" (PETE). PETE would use simulated counseling interviews and interview segments as the instructional vehicle. The purpose of the interviews would be to teach and evaluate specific behaviorally designed counseling competencies.

Loughary (1968) has also developed a decision-making game for counselors. Each participant plays the role of a high school counselor and is given decision problems in groups of ten. All decisions are recorded and later discussed.

Research Information Systems. Although all information systems have implications for research, a number of them are specifically designed as research tools. These include: (1) library storage and
retrieval systems; (2) storage of data for longitudinal research projects; (3) programs designed to perform statistical analysis of data.

Library storage and retrieval systems facilitate the organization, identification, retrieval and dissemination of information. Libraries have always performed these functions, but with the advent of computers they can be accomplished more efficiently and in a way more responsive to the needs of the users.

One of the best known retrieval systems is the Educational Resources Information Center (ERIC). Walz (1967) describes ERIC as a national decentralized information system designed to provide current research and research related materials rapidly and inexpensively to a wide variety of potential users. Articles and books are read and abstracted at one of the twelve ERIC centers. Monthly copies of the abstracts are distributed to libraries along with microfiche copies of the documents. Abstracts can be obtained by going through the index or by requesting a computer search using key-word descriptors.

Computers assist in longitudinal research by providing a method for long term storage of data. Flanagan's (1965) Project Talent study began in March, 1960 when 440,000 high school students were measured by a battery of achievement, aptitude, and information tests as well as biographical and self-descriptive inventories. The results
of the testing was then stored on tape. Four follow-up studies were conducted later. Based on Project Talent information, the PLAN instructional system has been developed. The guidance component of PLAN will be described later.

On the college level, the American Council on Education (ACE), is currently collecting biographical and other data on approximately 300,000 freshmen annually and continuing longitudinal research based on subsamples of these students (Brouch, 1969). ACE is assessing the impact of college on students (and vice versa) by examining factors relevant to attrition rates, achievement and development of students. The project stores its data on tape and disk. A unique feature of the system is the use of sophisticated methods to protect the privacy of the members of the sample.

Programs which perform statistical analysis of data constitute a third research use of computers. The Biomedical Computer Programs (1968) are the ones most frequently employed. They provide programs in the following classes: description and tabulation; multivariate analysis; regression analysis; special programs; time series analysis; and variance analysis.

In addition, university computer centers have files of other available programs. As a result, special programming is not required each time a researcher wishes to use a statistical treatment. This allows considerable savings of time and money.
Information Systems in Guidance

Within information systems in education are a number of systems developed exclusively for guidance purposes, the majority of which are designed to assist the student in making occupational and educational decisions.

The earliest work in computer assisted counseling was conducted by Cogswell (1966 and 1967) at Systems Development Corporation (SDC). The system provided a program for pre-interview appraisal which (1) accepted input such as school grades, test scores and biographical data, (2) analyzed the data according to the inferred model of the counselor's decision-making rules, and (3) printed out evaluative statements. This was designed to aid counseling through assisting students with course programming, post-high school educational planning and vocational exploration.

Based on Cogswell's work, Loughary, Friesan and Hurst (1966) developed AUTOCOUN. This system simulates a counselor's behavior in the initial interviews with a student. The final design consisted of seven components:

Appraising data regarding pupils (grades, test scores and family socioeconomic data) stored on tape.

Prediction or experience tables for the school in which the system operates.

The curriculum offerings of a particular high school.
A set of instructions and rules for deciding what to say to pupils and for determining what to report to counselors.

A repertoire of statements which the computer can make to the pupil.

A set of instructions for data analysis and synthesis.

The computer and related input/output devices.

Tiedeman (Super, 1970) in cooperation with Harvard University, NEEDS, and the Newton, Massachusetts School System, has developed The Information System for Vocational Decisions (ISVD). ISVD focuses on teaching Tiedeman's Paradigm of Vocational Decision Making. ISVD brings personal data together with educational and vocational information in an effort to direct the inquiring student toward viable goals. He is expected to become involved in the computer system while maintaining an awareness that it can only aid him in reaching decisions; the student himself must make the final decision. Career games in which decisions are made and the user sees the possible consequences are another unique feature of the system.

Harris (1970) has been active in developing Project CVIS (Computerized Vocational Information System) which assists with vocational exploration in several Illinois schools including Willowbrook High School, College of Du Page, and Naperville Community High School. The computer stores a large amount of information concerning occupations, apprenticeships, local job opportunities, technical and
specialized schools, four-year colleges, community college programs and the military. Also in storage are the records of all current Willowbrook students. Students explore occupational and educational opportunities by means of scripts which relate ability, interest, and school achievement to occupational and educational choice, and which allow flexibility for trying alternative paths. The student interacts with the system via a cathode ray tube and a keyboard. Each counselor has a cathode ray tube on his desk to retrieve information about occupations and colleges and for on-line registration and schedule changes.

The systems reviewed are examples of computer-assisted counseling. Other projects are being developed by Minor (1970), Katz (1966 and 1969), Tondow and Betts (1967), Impellitteri (1968), and Roberts (1970).

In addition to these university and school based computer-assisted counseling projects, there are several commercial ventures designed to assist students with making occupational and educational choices. Search, in Boston, Massachusetts, and Select, of Harcourt, Brace, and World, provide lists of colleges which meet a student's requirements. Match (1969) has a student complete a "Career Anticipation Inventory I" which is mailed to Educational Planning Associates and matched with the occupational data bank of the computer. A print-out of recommended occupational opportunities is then furnished.
Interactive Learning Systems (ILS) developed by Guidance Information System in Boston, Massachusetts provides students and counselors with immediate access to current information on occupations, vocational and technical schools, and colleges and universities. A school which purchases this system communicates with the computer in Boston through a telephone and typewriter terminal.

The most comprehensive individualized educational system with a guidance component is Flanagan's Project PLAN (Flanagan, 1969). PLAN relies on individualized learning units. The two primary goals of the system are to identify and to define the needs of children between the ages of six and eighteen and to develop procedures which will enable these young people to acquire the knowledge, skills, abilities, attitudes, and appreciations which have been identified and defined. The system itself contains five components. The first is a comprehensive set of educational objectives. A second is the teaching-learning unit. The third component is a set of tests. The fourth set of procedures is related to guidance and individual planning for the students. The last component is the evaluation and systems aspect of the project.

The computer aspects of the guidance component provide for the storage of (1) student scores on the project TALENT test battery; (2) correlations for the original Project TALENT sample between test scores and success and satisfaction in occupations; and (3) the
names of guidance learning units and other materials which will provide the students with an understanding of work in various occupations. The computer reviews a student's occupational interests and informs him of his probabilities of becoming a successful, satisfied worker in those areas. It also recommends guidance learning units for the fields suggested.

Despite the apparently enthusiastic response to computer-based vocational guidance systems, a number of problems have developed. Roach (1970) indicates that approximately twenty projects have been developed. However, a number have already ceased prior to completion due to a cutback of federal funds. The most notable one to be affected is Tiedeman's ISVD. Others, which have not lost funding, are still primarily laboratory based and have received only limited field testing. Consequently, there is still little evidence to indicate that computer-based vocational guidance systems are more effective than traditional systems. Or, by extension, there is little evidence to demonstrate that the extra expense results in greatly increased effectiveness as compared to traditional methods of vocational guidance.

In addition to economic problems and a lack of evidence of effectiveness, there are psychological barriers to implementation. Students and faculty have frequently had negative experiences with
computers. The chief threat perceived by people is the fear of impersonalization. Consequently, potential users often react unfavorably when a computer-based vocational system is proposed.

Research on Counselor Characteristics and Selection

The third area of the review of the literature examined studies dealing with personality characteristics of counselors-in-training and with the selection of counselors. The purpose of the review was to define what kinds of information have been collected on counselors and what seems to hold promise for future research.

Studies on characteristics of counselors, or more usually counselors in training, are often either descriptive studies or studies which compare groups of counselors, or counselor-in-training, differentiated in terms of effectiveness as counselors.

Some descriptive studies have taken the form of arm chair speculations as to what characteristics counselors should logically possess. Two early reports are examples of this approach. The National Vocational Guidance Association issued such a statement in 1949 which asserted that counselors, ideally, were interested in people, sensitive to others, patient, emotionally stable, objective, respectful of facts, and trusted by others. Cox (1945) identified 24 characteristics deemed desirable for counselors as revealed through a case study technique. Cox listed such characteristics as: (1)
fairness, (2) sincerity, (3) "personality," (4) good character, (5) common sense, (6) health, (7) emotional stability, (8) approachability, (9) ability to get along with people, (10) sympathetic understanding of youth, (11) interest in people, (12) understanding people different from self, (13) flexibility and adaptability, (14) intelligence and mental alertness, (15) social culture, (16) broad knowledge and interests, (17) leadership, (18) awareness of one's own limitations, (19) professional attitude, (20) sense of mission, (21) interest in guidance and personnel work, (22) understanding of classroom conditions, (23) understanding of working conditions, and (24) an understanding of social and economic conditions.

A more recent article from the Association for Counselor Education and Supervision (1964) suggests that a counselor should possess six basic qualities: belief in each individual, commitment to individual human values, alertness to the world, open-mindedness, understanding of self, and professional commitment.

These lists of counselors' traits require an idealized personality. Yet they offer little empirical support as to why these characteristics are desirable or how one can assess whether a person possesses them. Cottle (1953) comments that while the lists are suggestive and helpful, they are not very useful because: (1) they represent only the opinion of those who make them; (2) they fail to distinguish the counselor from other school personnel; (3) the characteristics of successful counselors differ so much that it is
difficult to select a satisfactory list; and (4) it is the inter­relationships or patterns of traits that is important.

Other descriptive studies have a more empirical base. Many of these describe counselors-in-training in terms of standardized measures of interests and personality traits to furnish a picture of counselors in training.

The instruments most frequently used to assess vocational interests are the Strong Vocational Interest Blank and the Kuder Preference Record (Vocational).

Di Michael (1949) found that rehabilitation counselors produced a profile on the Kuder of Social Service at the 98th percentile, Persuasive at the 82nd, Literacy at the 65th percentile and all other scales below the 42nd percentile. Kriedt (1949) conducted an extensive study using the Strong to identify the vocational interests of 1018 male psychologists of whom 115 were guidance counselors. The counselors were found to have a low "A" mean score on social service. A later study by Patterson (1962) of a national sample of rehabilitation counselor students also showed them to have a high social service interest. Nelson (1952) administered the Kuder and the Allport-Vernon Study of Values to 362 guidance and personnel workers. Both men and women ranked highest on the Kuder social service, literacy, and persuasive scales.
As Polmantier (1966) indicates, there is increasing evidence that the counselor does have a differentiated interest pattern on the Strong and the Kuder. On the Strong the Group V Scale is significant with an emphasis on social welfare occupations. For the Kuder, the social service, persuasive, literary and scientific scales are significant.

The instruments frequently used to survey other personality traits of counselors and counselors-in-training are the California Personality Inventory (CPI), the Guilford-Zimmerman Temperament Survey (GZTS), the Edwards Personal Preference Schedule (EPPS), the Allport-Vernon-Lindzey Study of Values, the Minnesota Multiphasic Personality Inventory (MMPI), and the Rokeach Dogmatism Scale.

Patterson has used the California Personality Inventory in two studies. Moredock and Patterson (1965) studied groups of counseling students at four different levels of training using six scales of the CPI: Sociability (Sy), Social Presence (Sp), Self-Acceptance (Sa), Tolerance (To), Intellectual Efficiency (Ie) and Flexibility (Fx), the Rokeach Dogmatism (Form D) and Opinionation (Form C) scales. Each level was represented by different students. Mean scores for students at the first two levels were close to the means for college students given in the manual for the CPI. Scores tended to increase with level of training, with the mean scores of students at the highest
level (practicum) being approximately at the standard score level of 60 on the norms. On the Dogmatism Scale, students at the practicum level scored lower than students at other levels. There were no significant differences on the Opinionation Scale.

In a second study, Patterson (Patterson, 1967) tested NDEA institute students, regular counseling students, and noncounseling students at the beginning and end of an academic year of full time study, using scores on the CPI Self-Acceptance (Sa), Well-being (Wb), Tolerance (To) and Psychological-Mindedness (Py) scales, the Barron Ego Strength Scale and the F scale. There were no significant differences between the NDEA and regular students either at the beginning or the end of the year. Scores of the total counseling group were at about the 60 standard score level on Sa, To, and Py and about 55 on Wb. Scores did not change significantly from the beginning to the end of the year. In the fall, the noncounseling students scored significantly lower than counseling students on Wb and Py; in the spring they were significantly lower than the counseling students on Sa and Py. On the Barron Ego Strength Scale, the counseling students scored slightly above the mean of Barron's 40 graduate students, while the noncounseling students scored slightly below in the fall and spring, the differences being statistically significant in both cases. On the F scale, the counseling group means (2.89, fall;
2.57, spring) were below the author's norm (3.81). But the non-counseling students were also below the norm (3.25 and 2.87), although significantly higher than the counseling means in the fall.

The results of descriptive studies of counselors using the MMPI tend to be consistent. Wrenn (1952) found that counseling students score above the mean on the K scale ($K$) ($T$ score of 70 for women, 65 for men), Hypomania Scale ($Ma$), and Interest Scale ($Mf$) and below on Social-Introversion ($Si$). Cottle and Lewis (1954) found male counselors in college counseling bureaus to score above the mean on the Validity Score ($F$) and $Mf$ scales, and below the means on the $Ma$ and $Si$. Patterson's (1962) rehabilitation counseling students were high on $K$, $Mf$, and $Ma$ and low on $Si$.

Studies by Patterson (1962) and Foley and Proff (1965) using the EPFS with counseling students found male counseling students to score above the mean on Intracception, Deference, Nurturance, and Affiliation; female counseling students were also high on intracception. Kemp's (1962) 45 school counselors scored high on Deference, Intracception, Affiliation, and Achievement, and low on Aggression and Order.

Wrenn (1952) reports that counseling students score high on the Restraint, Emotional Stability, Friendliness, Objectivity and Personal Relations scales and average to low on the General Activity, Ascendence, Thoughtfulness, Sociability and Masculinity scales of the GZTS.
In 1954, Cottle and Lewis reported similar findings except for the Restraint scale. Wrenn's students scored highest on the Theoretical and Religion scale of the Allport-Vernon-Lindzey Study of Values. Nelson (1952) in his study of guidance and personnel workers found that the counselors tended to rank high on the theoretical, social and religious scales of the Allport-Vernon-Lindzey.

In a study that yielded unexpected results, Mahan and Wicas (1964) administered the Ways of Life (consisting of 13 scales related to philosophies of life), Self-Description (a forced choice adjective checklist measuring dominance, inducement, submission and compliance) and the Structured Objective Rorschach Test to 25 students in an advanced NDEA institute. The results were interpreted to characterize the students as "highly controlled, as sensitive to the expectations of society and authority, as 'doers' rather than 'thinkers,' as defenders of the established order, and as rather repressed individuals not much given to introspection or self-analysis (p.81)."

A descriptive study by Webb and Rochester (1969) searched for significant facts about counselor education majors by gathering information in four areas: personal background, scholastic background, teaching experience, and motivation for entering the counselor education program. While they did not draw any conclusions from their data, they suggested a need for additional exploration.
The studies on descriptions of counselor characteristics indicate that counselors-in-training and counselors do differ from the norm group on the measures used. But Patterson (1967) feels that the studies are of little use because: (1) the differences are too small to be of practical use; (2) scores of counseling students are little different from scores of other college graduate students; (3) even though scores of students at advanced practicum level of training are higher than the scores of beginning students, one cannot assume that these students are better counselors, or better potential counselors, than the beginning students; (4) as the Mahan and Wicas (1964) study indicates, some counseling students do not appear to possess characteristics usually considered desirable in counselors. Patterson concludes that it would be advisable to study the characteristics of those functioning as counselors rather than counseling students.

Other studies have attempted to overcome the weaknesses of descriptive studies by comparing groups of counselors in terms of their relative effectiveness as counselors. Many of these studies employ the standardized personality instruments already discussed in addition to researcher developed questionnaires and rating scales.

Brams (1961) studied the relationships between MMPI scores, Manifest Anxiety Scale (MAS) scores, the Bills Index of Adjustment and Values (IVA) scores and the Berkeley Public Opinion Questionnaire
(a measure of tolerance for ambiguity), and the supervisor ratings on the Communication Rating Scale applied to interviews of 27 students in a counseling practicum. The only significant correlation was a negative one; the Berkeley POQ correlated -.36 with the judges rating of effectiveness. This suggests that tolerance for ambiguity is associated with successful communicative relationships. The means of the students were above norms of the MMPI K and Mf scales, and on the IVA, and lower on the MAS and Berkeley POQ.

Stefflre, King, and Leafgren (1962) had 40 NDEA institute students rate each other at the end of the semester in terms of the extent to which they would go to another member of the institute for counseling if they were a student in high school. The top and bottom students were compared on measures of academic aptitude, interest and values, personality and self concept. Those rated most effective had achieved higher grades in prior graduate work, but were not significantly better in academic aptitude as measured by the Miller Analogies Test. They scored higher on five of the SVIB Social Welfare scales, and on the Interest Maturity scale. They were lower on the Dogmatism Scale. On the EPPS, they were significantly higher on Deference and Order, and lower on Abasement and Aggression. There were no differences in self concept.

A number of other studies support the findings of Stefflre, Leafgren and King (1962) that more effective counselors tend to
score lower on the Rokeach Dogmatism Scale (Russo, Kelz and Hudson, 1964; Cahoon, 1920; Milliken and Paterson, 1967). Kemp (1962), in a comparison of counseling students scoring high and low on the Dogmatism scale, found that the high scorers were more evaluative, interpretative, and probing, while the low scoring students chose more understanding and supportive responses on the Porter test.

Joslin (1965) investigated the relationship between counselor trainees' knowledge of counseling and guidance and their competence in conducting counseling interviews; 39 students were tested before and at the end of a nine month program. No significant relationship between knowledge and counseling competence at the beginning of the training program was found; nor was the relationship between the two significantly higher at the end of the training program.

Demos and Zuwaylif (1966) had three practicum supervisors rate the 30 students in terms of counseling effectiveness in an NDEA summer institute. Those in the upper half were compared with those in the lower half of the distribution. There were no differences in scores on the Allport-Vernon-Lindzey or the Kuder Preference Record (Personal). On the EPPS, the counselors rated more effective scored higher on Nurturance and Affiliation, and lower on Autonomy, Abasement, and Aggression.

Combs and Soper (1963) studied 29 NDEA counseling students' reaction to human relationship incidents and found moderately high
positive relationships between twelve characteristic ways of perceiving and effectiveness as a counselor. They concluded that the effective counselor tends to be sensitive and concerned with how things look to others; he is oriented to people rather than things, perceives others as being able rather than unable, dependable rather than undependable, friendly rather than unfriendly, worthy rather than unworthy. He perceives himself as being identified with rather than apart from people, as personally adequate rather than wanting, and as self-revealing rather than self-concealing.

Because of weaknesses in the studies comparing more effective with less effective counselors, the results are of limited value. Patterson (1967) points out that the studies usually deal with students rather than counselors. In addition, the criteria of effectiveness are not clear or sometimes not even stated, and probably vary among raters. Comparing one study with another is also difficult since each study uses a different criteria of effectiveness as well as a different kind of sample. There is a question as to whether differences existed prior to the beginning of the counselor education program. Where differences are found, they tend to be small and thus of little practical use. A final problem is that sample sizes tend to be small which make generalizations to other populations questionable.
A third type of study examines the relationship between characteristics possessed prior to entrance to training or practice and later in performance in training or practice.

Blocher (1963) studied 30 NDEA institute students selected on the basis of undergraduate grades, Miller Analogies Test scores, supervisors' recommendations, and personal interviews. He attempted to discover predictors of success in counselor education. The criterion was level of predicted performance as a school counselor quantified by having four members of the counselor education staff rank the thirty enrollees.

The two predictors of scores on the NDEA Comprehensive Examination in Counseling and Guidance and the High School Counselor score on the Kuder Preference Record, Form D, were obtained at entrance. Pooled peer rankings of predicted effectiveness as a high school counselor and grades were obtained at the end of the first quarter. The multiple R of the latter two measures with the criterion was .71; that for the first two was .77. The total multiple correlation of the four predictors with the criterion was .77. Blocher concluded that the correlation suggests further effort with this approach. He also believes that peer rankings and the high school counselor score of the Kuder provide information which effectively supplements that provided by other academic achievement measures.
Wasson (1965) also studied 30 students in an NDEA institute using the criteria of peer ratings, staff ratings and ratings of taped segments of practicum counseling interviews. All students took the MMPI, EPPS, MAT, OSPE, SVIB and the NDEA Comprehensive Examination in Counseling and Guidance. Prior to entering the institute, tapes were made of each student's responses to eight hypothetical counseling situations. These responses were then rated on the Wisconsin Relationship Orientation Scale (WROS). Out of 350 correlations of test scores with the criteria, only six were significant. But the significant correlations presented no pattern and could well be due to chance. However, the WROS correlated .61 with counseling segments, .54 with staff ratings, and .61 with peer ratings. The scale did not correlate significantly with any of the tests.

Patterson (1967) reports a study of Ohlsen (unpublished) which examined the relation of 80 scores from a selection battery to three criteria in a group of 29 NDEA students in a beginning institute. The measure included the MAT, the OSPE, the MMPI, the SVIB, the EPPS and the NDEA Comprehensive Examination. Criteria were the combined ratings of staff, and the combined ratings of peers of each student as (1) a counselor of children, (2) a counselor of parents, and (3) as a consultant to teachers. The NDEA Comprehensive Examination, the OSPE and the MMPI did not produce any significant correlations.
The MAT correlated negatively (-18 to -48) with ratings. On the EPPS, Intraception showed correlations from .15 to .48 with the criteria ratings, and Dominance and Aggression produced negative correlations (-.07 to -.35 and -.36 to -.60). Several of the SVIB social welfare scales yielded significant correlations.

A study by Dole (1964) dealt with the prediction of school counselor effectiveness before placement. Three groups of counselors varying in amount of experience were appraised independent of selection. The appraisal instruments included the MAT, the Minnesota Teacher Attitude Inventory (MTAI), the Rokeach Dogmatism Scale, the Dole Vocational Sentence Completion Blank, the SVIB, the Gordon Personal Profile, and the Cottle Scale of attitudes, in addition to self-appraisals (rated by judges), ratings of counselor potential by principals, peer ratings and other measures. The criteria used were ratings by principals, NDEA faculty and state supervisors. The three sets of criterion ratings were not significantly correlated with one another. It is thus not surprising that there were no consistent relationships between the selection battery and the criterion scales. Despite these problems, Dole indicates that the most promising measures across groups and criteria were a self-appraisal of essential counselor qualities and skills, a Counselor Rating Scale, completed by the school principal, and undergraduate grade point ratio.
In 1947 and 1948, Kelly and Fiske (1951) conducted a study in which several hundred college graduates entering a four year VA training program in clinical psychology in 40 universities were evaluated by a variety of techniques and predictions were made concerning their probable success in training and future professional competence. In the second half of the project criterion measures of functions which clinical psychologists perform were developed. They were then administered to trainees near the end of the four-year training program and the interrelationship among predictor and criterion measures were analyzed.

While they did not find any definite predictors, they did note that the most generally useful objective tests were the MAT and the SVIB. Predictions of success based on self-ratings, peer ratings and projective techniques were not helpful. In terms of assessment by staff members, it was found that:

... assessment predictions based on the credential file plus the objective test profile tend to be almost as accurate as those based on more materials including an autobiography, projective tests, interviews, and situation tests (p. 196).

None of the prediction studies appear particularly promising. One of the major problems is the lack of adequate criterion of effectiveness. Also lacking are adequate ways to assess the degree of effectiveness for a counselor.
Several methods for overcoming the limitations of the studies of counselor characteristics and prediction of counselor effectiveness have been proposed. Hill and Green (1960) and later Whiteley (1969) in reviews of the literature on counselor selection, training and evaluation, note the lack of a major longitudinal study. One of the recommendations of the Bromwoods Invitational Conference on Research Problems in Counseling (Whiteley, 1967) was that a three-pronged approach to counselor selection is needed. First, the initial data gathered on students as they enter a program should be more systematic and usable in later studies of counselor performance than it is presently. Secondly, the data gathered initially should be related to performance in the training program. Finally, selection procedures should be related to performance of counselors who have finished the program and have taken positions as counselors. Walton and Sweeney (1969) also call for longitudinal research using instruments and methods found to be useful in identifying effective counselors in cross-sectional studies.

Patterson (1967) is concerned that scores or ratings prior to entrance to training be related to competence in therapy. A number of instruments that required the applicant to respond in a therapeutic situation, or at least in a therapeutic manner in an interview, show promise for assessing an applicant's level of functioning
(Truax and Carkhuff, 1967, Wasson, 1965, Fiedler, 1951, and Rank, 1966). These instruments have the disadvantage of being expensive and time consuming.

Patterson (1967) also encourages a re-evaluation of the standardized instruments used in previous studies that evidenced some ability to distinguish between counselors and other groups or between more effective and less effective counselors. In addition, instruments which would appear to be logically related to the criteria of an effective counseling relationship should be explored further. He specifically mentions instruments which are measures of authoritarianism (F Scale, Rokeach Dogmatism Scale and Opinionation Scale), standard personality tests (MMPI, EPPS and CPI) and measures of interest (SVIB).

Bohn (1967) suggests studies of present counselors in order to identify characteristics of successful, competent counselors. Also needed is research on individuals who are only minimally selected "... to provide definitive statements about relationships of counselor personality to initial selection, performance in training, and performance as a counselor (p.105)."

Walton and Sweeney (1969) propose a greater emphasis on self-selection in the early part of a program. They feel that counselors-in-training should be provided with research on characteristics of counselors and with a counseling relationship in which they can discuss the findings of the studies.
Shertzer and Stone (1968) in a summary of a chapter on counselor and counselee characteristics, make several points relative to the research on counselors. They note that distinctions between effective and ineffective counselors seem due to differences in the strength of characteristics rather than to the presence or absence of a characteristic in a counselor. Often the distinguishing traits found are not independent of the design, analysis procedure and effectiveness measures employed in the study.

Ohio State University Information and Data Processing Resources

In order to avoid duplicating information available on students, a review of information resources at Ohio State was initiated. Information available from administrative units in the university was identified by this method. University data processing resources relevant to the needs of the department were also surveyed. The background was obtained from discussions with the Head of the Graduate Office of Education (Dr. Fred Schmeider); the Management Analyst, Office of Student Affairs (Mr. Weldon Ihrig); the Registrar (Dr. Dean C. Clark); computer consultants, (Mr. Earl Raley and Mr. Richard O. Shafer); the Alumni Office (Mr. James Miller); and a graduate student in engineering, Mr. James Mager. Much of the information in this section comes directly from Mager's (1971) M.A. thesis which develops a similar system.
Student Information Resources

There are five sources from which the guidance department can obtain information about graduate students: (1) files in the Graduate Office of Education, (2) reports from various university administrative units, (3) the "Student Directory," (4) the Alumni Office, and (5) the Department of Counselor Education. Most of the information in the Graduate Office of Education files comes from the Graduate School or from Admissions, and therefore should not be considered as an independent source.

The Graduate Office of Education files consist primarily of individual student files. There is a folder and a grade card for each graduate student; these are filed separately. The contents of the folder and grade card are given in Table 1.

TABLE 1
INFORMATION AVAILABLE IN FILES OF GRADUATE OFFICE OF EDUCATION

<table>
<thead>
<tr>
<th>Student File</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Application for Admission</td>
</tr>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Marital status</td>
</tr>
<tr>
<td>Date of birth</td>
</tr>
<tr>
<td>Race</td>
</tr>
<tr>
<td>Place of birth</td>
</tr>
<tr>
<td>Permanent address</td>
</tr>
<tr>
<td>Social Security Number</td>
</tr>
<tr>
<td>Selective Service Number</td>
</tr>
</tbody>
</table>
"TABLE 1-Continued"

Country of citizenship
Present address
Previous education
  Colleges or universities-dates-major-degree
Graduate Department desired
Area of study preference
Degree intended to pursue
Quarter expected to enroll
Campus
Autobiography

2. Application for Fellowship-Assistantship

Name
Telephone number
Dates lived in Ohio
Dates of military service
Information about wife, father, mother, or guardian--
  name, relationship, dates lived in Ohio, address,
  occupation
Graduate School Department
Area of specialization
Preference of Fellowship or Traineeship
Accumulative point hour on all previous academic work
GRE scores or ATGSB scores
Any education, scientific, or professional work
Recommendations

3. Other documents in Student Folder

Official transcripts
Recommendation forms (3)
Statement of admission
Correspondence prior to and after admission
File of Ph.D. program
Results of M.A. and/or Ph.D. exam
Proposal submitted for dissertation
Results of graduate school test sequence
"TABLE 1-Continued"

<table>
<thead>
<tr>
<th>Grade Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Courses taken</td>
</tr>
<tr>
<td>2. Quarter and year taken</td>
</tr>
<tr>
<td>3. Grades received</td>
</tr>
<tr>
<td>4. Adviser</td>
</tr>
<tr>
<td>5. Degree student is pursuing</td>
</tr>
</tbody>
</table>

(Adapted from Mager's Table, p. 14, 1971)

A battery of tests are given to all entering graduate students in education. Incoming M.A. students take the Opinion, Attitude, and Interest Survey, the Watson-Glazer Critical Thinking Appraisal, and the Cooperative English Tests. Incoming Ph.D. students take the Guilford Zimmerman Temperament Survey in place of the Opinion, Attitude and Interest Survey. However, a number of students fail to take these instruments which means that the test file is incomplete.

A number of reports are available within the Graduate Office of Education. The secretary maintains the following on-going records:

1. A quarterly list of newly admitted M.A. students and Ph.D. students and their advisers.

2. A quarterly list of M.A. students who apply to take exams under either Plan A or Plan B.

3. A list of Ph.D. candidates who have passed generals.

4. A list of M.A. and Ph.D. students who have completed the graduate school test sequence.

5. A list of students who graduate each quarter.
Five reports from various administrative offices on campus are also available. (See contents in Table 2)

The Graduate Admissions Weekly Report is not distributed to each department but is available on request from admissions. Due to the one week delay in processing admission files, this report will often have more applicants listed than the number recorded in department files.

The final forms of "Graduate School Enrollment by Department" and the "Student Summary Sheets" are distributed the eighth week of the quarter. Mager (1971) found that these reports have a number of errors in student data.

The "Ohio Board of Regents Classification of Courses" is also available the eighth week of each quarter. It may be useful in predicting course enrollments.

The "Student Directory" contains the name, college, address and the telephone number of each student enrolled for autumn quarter. The directory is available near the end of autumn quarter and is only updated annually.

**TABLE 2**

<table>
<thead>
<tr>
<th>INFORMATION AVAILABLE FROM UNIVERSITY REPORTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Graduate Admissions Weekly Report</td>
</tr>
<tr>
<td>Active admissions</td>
</tr>
<tr>
<td>Inactive admissions</td>
</tr>
</tbody>
</table>
"TABLE 2-Continued"

Total admissions
Rejections
Active applications
Total applications
Total applicants
Fee assessed
Fee paid

All of the above are broken down by Masters, Ph.D., Special, Transient, and Combined Program; and expected quarter of enrollment.

2. Graduate School Enrollment by Department

List of:

Student number
Student name
College
Rank
Sex
Quarter hours
Full or part time
Residency
Student status (new, OSU, old, cont.)
Dayton Graduate Center

3. Student Summary Listing

List of:

Student number
Student name
College
Rank
Dayton Graduate Center
Hours attempted
Total hours failed
Total hours earned
Total OSU hours
Total OSU points
Transfer quarter
OSU quarter
Total quarter
Sex
4. Ohio Board of Regents Classification of Courses

This report shows the number enrolled in each course broken down into "Grad" and "ENP"

5. Autumn 19xx Enrollment Projections

This forecasts the enrollments for each course each autumn quarter.

(Adapted from Mager, 1971, p.16)

Mr. James Miller of the Alumni Office indicated that a base of constantly updated information on alumni is maintained. The information contained on each alumnus in their system is: updated address, business address, title, corporation, degree type, honors, department, commencement date, identification number, spouse's identification number, sex, source of last update, date of last update, and professional code. Once a student has graduated, it is possible to use their system. To this end, he suggested leaving eight columns blank on the first card so that a student's alumni identification number can be added after graduation. This number permits access to the alumni information system.

A final source of information is from within the department of counselor education.

1. Since autumn of 1970, a number of instruments have been administered to students in Education 879, Educational and Vocational Guidance, and the results maintained in file drawers. These include the Edwards Personal Preference Schedule, the Myers Brigg Type Indicator, the Ohio Vocational Interest Survey and the Strong Vocational Interest Blank.
2. An autobiography and a work history are also required in 879.

3. Periodically, some professors request that students complete a data sheet that yields the following information:

   a. Name
   b. Address and phone
   c. Sex
   d. Birth date
   e. Place of birth
   f. Height and weight
   g. Social Security Number
   h. Birth order
   i. Parents' education
   j. Parents living or dead
   k. Parents' marital status
   l. Student's marital status
   m. Number of children
   n. Veteran information
   o. Undergraduate major and degree
   p. Where undergraduate degree obtained
   q. Degree sought
   r. Adviser
   s. If Ph.D. candidate, where, when, and in what field was the M.A. earned
   t. Proposed graduation date
   u. Quarters in full and part time
   v. Employed while seeking degree
   w. G.P.A. for high school, undergraduate and graduate school
   x. Professional goals
   y. Counseling responsibility preferred

Data Processing Resources

The data processing resources available fall into two categories: hardware resources and personnel resources.

During the development and implementation of the proposed information system, the central processing unit (CPU) at Baker Systems
Engineering as well as its branch at Hagerty Hall is available. Currently, the CPU is the I.B.M. System/360 Model 50 and Model 75. As of October 1, 1971 this will be replaced with an I.B.M. System/370 Model 165. The new system is more advanced than the present system and is compatible with System/360; therefore, programs which run on the Model 75 should run without change on the Model 165. Computer time is available at no charge to the department.

The three possible methods of storage available are cards, magnetic tape and disk. Card storage, a manual system, is always available for any amount of storage space since cards can be stored within file drawers in the department office. While cards have the advantage of being easily stored and changed, they are also easily destroyed and are less efficient than the other two methods of storage. Initially they are less expensive than the other two methods of storage, but would require more man hours of maintenance.

Tape storage is available at a cost of $1.00 per tape. Each tape can hold between 28,000 and 350,000 cards, depending upon how the information from the cards is grouped on the tapes. Tapes have the advantage of being more efficient and less trouble to work with than cards. They also make information more rapidly available for processing by a program. The disadvantage is that they require a program to update the information. It is also possible through a
programming error to erase data held in storage. However, this
danger can be reduced through the use of card storage as a back-up
system. Storage of the tape is not difficult since it does not have
to be mounted on the computer.

The third method of storage, disk, has the advantage of random
access of the data. It is also necessary if the system ever becomes
an on-line one accessible from a terminal. Presently, there is no
disk space available. With the installation of the new I.B.M. Model/
370, disk space may be available.

A fourth alternative for storage is to maintain the data on
tapes and place it temporarily on disk for any operations which re­
quire it on disk. Once the operation is completed, the data can be
returned to tape for permanent storage.

There are three sub-alternatives for querying the data. The
first is batch processing in which the user must submit job control
cards and data cards. The other two sub-alternatives, CPS (Conver­
sational Programming System), and TSO (Time Sharing Option) are means
of querying the data directly. With the installation of the I.B.M.
System/370, CPS, and TSO will be available from one terminal even
though they are two different systems. Because of limited space
available for data storage the CPS, and TSO are not options available
currently to the department.
A final point to be considered in a review of hardware resources on campus is the limited time during which the department can use the facilities of Baker Systems Engineering and Hagerty Hall. Baker Systems Engineering is charged primarily with assisting in education and research projects. Once a system becomes permanent it should be maintained at the Learning Resources Computer Center on Kinnear Road. The Center has hardware capabilities compatible with Baker Systems Engineering.

In addition to the hardware facilities, there are a number of human resources on campus. Computer consultants at Baker Systems Engineering and the Hagerty Hall computer center are available at no charge during the conceptualization and implementation phases of a project. Key punch operators are available through Systems Engineering at a cost to be given in the feasibility section. Programmers can be hired at varying rates depending on the nature of the job and their level of experience.

An essential human resource is one that the department must identify for itself. In order to maintain the information system and proceed with its development, someone within the department will have to be responsible for the system on a one-quarter time basis. Ideally, this should be a graduate student with some understanding of programming as well as an interest in the project. Operation and expansion of the project are impossible without this person.
CHAPTER III

DEVELOPMENT OF THE INFORMATION SYSTEM

The development of the information system involved an examination of the requirements for the system and the creation of a design to meet the requirements. This chapter contains a general description of the basis for and operation of the system. More detailed descriptions are found in the appendices.

Requirements

The requirements phase consisted of three steps. The first was to develop objectives based on the present and projected needs of users. The second was to make a statement of feasibility. The third was to outline the steps to be taken toward full implementation of the system. Several sources were consulted when developing the objectives and selecting the information to be collected and stored.

Faculty members within the department were met with individually to ascertain their reactions to the proposed information system and to determine what information they considered essential for the purpose outlined. The literature on research in the areas of counselor
selection and characteristics of counselors was searched to identify the data collected on individual counselors and counselors in training. A third source was a survey of the information currently available at Ohio State on counselors in training.

Objectives

From these sources, four broad purposes for the information system were identified.

1. To provide faculty and the department with student information for management needs.

2. To provide students and their adviser with information which aids in increased self-understanding for the students.

3. To provide the technological facility for improvements in the curriculum.

4. To provide a longitudinal data base of information on students in counselor education for improved research and program development in counselor education.

Within this broad framework a list of specific information suggested to meet these objectives was developed. The list grew out of several sources.

The first objective was based on long-standing difficulties for each adviser in keeping an accurate list of who his advisees are and what their status is in the program. Also difficult has been predicting course enrollment because of no past history of how many guidance students took each guidance course each quarter. A third
problem has been the lack of up-to-date addresses and phone numbers needed to contact students. The specific information suggested to meet these needs was:

Student name
Current address and phone
Permanent address and phone
Date of entrance to program
Degree working toward
Adviser
Examination information for M.A. degree and/or Ph.D. degree
Progress through stages of Ph.D.
Graduation date
Students who leave the department before completion of degree
Record of courses taken, quarter taken and grades received
Quarters on probation

The second objective of providing students and their advisers with information which aids in increased self-understanding for the students was composed of two parts. First of all, the adviser requires personal background on a student in order to facilitate his understanding of the student beyond the student's academic goals. Secondly, the student requires a normative base of information about other students in the program against which he can compare himself.
He also could benefit from tools to assist him in seeing himself from different frames of reference.

The information suggested to meet this objective can be divided into two divisions: non-standardized data and standardized data. The non-standardized data requested to meet that objective are as follows:

- Age
- Race
- Religious preference and degree of involvement
- Birth order
- Whether he had been a twin
- Whether he had been orphaned
- Professional goals
- Work history
- Academic history
- Professional organizations of which he is a member
- Current occupation
- For males, veteran and draft status
- Life experiences outside of academic work and work history that would contribute to this effectiveness as a counselor
- Marital status
- Number of children
- Academic and social experiences in grammar school and high school
Spouse's occupation

Spouse's education

The standardized data in the form of test results were requested as a means for facilitating a look at self rather than as tools for evaluation. The ones suggested were:

- California Personality Inventory
- Edwards Personal Preference Schedule
- Guilford Zimmerman Temperament Survey
- Kuder Preference Record-Vocational
- Minnesota Multiphasic Personality Inventory
- Myers-Brigg Type Indicator
- Ohio Vocational Interest Survey
- Rokeach Dogmatism Scale
- Strong Vocational Interest Blank

The third objective encompasses proposals for making alterations in the counselor education program that could be assisted through a data base of information on students. One current proposal is to have a series of CAI lessons. One of the most important keys in writing CAI programs is an understanding of the characteristics of the population who will be using the system. Also of value is a method to note a student's progress through the program in order to identify possible problem areas for the student.

Also projected is the development of a series of experiences outside of the university in schools, the community and community agencies as an adjunct to course work in the university. When the information system started in this project becomes advanced enough
to be on-line, students, through the use of their social security number, could have access to their file. Based upon the courses they plan to take, a program could suggest experiences to them. At the completion of the experience they could record it, which would then become a part of the permanent file.

The information needed on students for the purpose of implementing program changes is difficult to delineate at this time because of the nebulosity of the projects. To provide for such projects, one aspect of the information system will be the availability of extra space in each file in order to add data to meet changing departmental needs.

The fourth objective of providing a data base of information for improvements in research in counseling focuses on two basic areas. The first is the establishment of methods for selection. The second is studies of the characteristics of counselors relative to any criteria a researcher wishes to establish. Given is the assumption that at the core of both areas is as complete an understanding as possible of the social, emotional and cognitive aspects of a person going through a program. The need for this understanding provides guidelines for amassing and storing information on each person. From this base, one can later conduct more intensive research with an appropriate sample. Thus Chapter IV will propose methods for utilizing
this information. Much of the information already outlined meets research needs. The significant area of family background, however, has not been mentioned:

- Parent's education
- Parent's occupation
- Parent's marital status

Given these needs for information on students, a system is required for obtaining the information in order to store it. The information currently available was outlined in Chapter II. However, the present method of gathering, disseminating and utilizing the data is inadequate for several reasons. First, it is not guided by an integrated set of stated goals. Second, methods of feedback are limited and utilized spasmodically. Third, information on any given student is scattered throughout the University. Fourth, information can easily be misfiled or lost. Finally, what is collected is often not utilized or is designed for one purpose when it could serve other functions.

Functions

Given these needs and objectives and the limitations of the present system of information collection, there are four specific functions that an information system could perform.
First, a system should ensure that the department receives in an orderly manner all the information available on a student that would aid in understanding the student, aid the student in understanding himself, assist in management problems and be available for research purposes. This includes funneling into the department information available from the Graduate Office of Education and providing a method for the collection of information not currently available outside of the department.

Second, the system should provide a method for storage of data. The current method of storage of information is of limited use to members of the guidance department because it cannot be accessed in terms of their unique requirements. As a result, a method of storage which permits the type of access described in the next function is essential.

Third, the system should provide a method for accessing the data in storage. Accessing the data quickly and being able to manipulate it through the commands of any programs written are essential. Initially, the data should be available in a form that can be manipulated through updating and report programs. Later, on-line availability of the data for either immediate manipulation or for display of information in the files is desirable.

Fourth, the system should create a method for examining the possible data to be stored with an eye towards future needs for it.
If any data are of seemingly limited value, the necessity for having them stored should be questioned. In this way, the data collected can be built on a sound rationale. This process of evaluation of information should be on-going.

**Feasibility**

The purpose of the feasibility section is to investigate the alternatives for the conversion and operation of the information system. This investigation often requires subjective estimates because of the interdependence of the final design and the feasibility study. Even though the final design is not known, estimates can be made on the costs and efforts needed to meet the requirements defined in the previous section.

Much of the information for the feasibility section was obtained in conversation with Mr. Richard O. Shafer, Mr. Earl Raley, Mr. James Mager, and Mrs. Martha Finch.

There are three main alternatives to be considered: (1) a computer-based system, (2) a manual system, (3) no system. Within the first two alternatives are sub-alternatives. Table 3 shows costs common to all the sub-alternatives associated with a computer-based system.
<table>
<thead>
<tr>
<th>Conversion Phase</th>
<th>Storage disk</th>
<th>Storage tape</th>
<th>Computer Time</th>
<th>Programming</th>
<th>Keypunching</th>
<th>Supervision of System</th>
</tr>
</thead>
<tbody>
<tr>
<td>not available</td>
<td>$14.00/tape</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$360 to punch all students</td>
<td>$0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$270 to punch all active students</td>
<td></td>
</tr>
<tr>
<td>Operation Phase</td>
<td>$500/disk pack or $14/month rent if space available</td>
<td>$0</td>
<td>$0</td>
<td>$100</td>
<td>$1100/year</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COSTS ESTIMATED FOR A COMPUTER-BASED SYSTEM
As noted in the hardware resources section, computer time is free because the project is viewed as a research effort. Programming in the conversion phase is also costless. Since costs vary with the size of the job and the experience of the programmer, future programming costs for the special reports recommended cannot be estimated.

An estimated 300 hours would be necessary to code the data on active students (those enrolled within the last four quarters), and 130 hours would be required for yearly updating. The coding would cost the department nothing if a work-study person can be hired.

An additional cost would be the supervision of the system by a graduate student on a quarter time basis at a salary of approximately $1100.00. Such a person is essential for maintaining and developing the system.

Storage options in a computer-based system are tape or disk. The cost of tape storage is $14.00/tape. Initially, one tape is sufficient, but as the number of students in the data base increases, additional tapes would have to be purchased. As indicated earlier, disk storage is not currently available. If this changes with the installation of the I.B.M. Model/370, the cost would be $500.00 to purchase a disk pack or $14.00/month to rent one. There is also a possibility that disk space would be free, but this cannot be guaranteed. If the system ever goes on-line there should be no charge
for rental of the terminal since the college of education already has absorbed these costs.

Tape storage with a card back-up system is feasible at the beginning of the system. If disk storage is required for a special operation, information on the tape can be placed temporarily on disk.

A computer-based system would provide all of the utilities of the I.B.M. System/370 in the operation phase. Not only would the sort and list utilities be made available for quick information retrieval, but also the data would be instantly available for any statistical analysis which can be performed on the I.B.M. System/370.

The second major alternative, card storage or a manual system, is difficult to quantify. However, it can be assumed that extra help would be needed to maintain the files if the manual system were to be able to list the requirements on request. A half-time student would be needed to manage the files at an approximate annual cost of $2250.00. In addition, the data would not be in a suitable form for instant analysis by the computer.

"No system" is not a viable alternative if the department hopes to accomplish the objectives outlined. Accessing available information on students on a regular basis is presently very difficult if not impossible. What must be ascertained is whether the needs warrant the expense of instituting an information system.
Steps Toward Implementation

Rosove's (1967) method of "planned evolution" is the most appropriate one for implementation of the system. He emphasizes that the initial system should rely heavily on the existing system with the result that the transition to a computerized one is gradual. This gradual transition keeps costs to a minimum and ensures that the initial operational capability is accomplished in a relatively short time. As the system gradually evolves, contributions of the users can be maximized. In addition, user requirements can be defined more carefully as experience with the system is gained and fed back into the developmental process.

One of the keynotes of "planned evolution" is the emphasis on gradually phasing in more complicated methods of data processing while making the system responsive to present requirements. A system must be dynamic as well as accessible. On the one hand, its capabilities must constantly be improved. On the other, arrangements must be made to assure constant accessibility to any legitimate user. Such a balance is designed to ensure that neither development nor routine use will become the primary emphasis in the system.

The first step in implementation is to make a final decision on information to be collected and stored. Earlier in this section suggested information was outlined. However, the assumption cannot
be made that this is necessarily the most appropriate information to accomplish the objectives. The need for the following information was universally agreed upon by department members:

- Lists of advisees by adviser
- Active or inactive status of students
- Data from the application
- Academic history
- Progress through the graduate program at O.S.U.
- Work history

Department members were divided concerning the desirability of incorporating the remaining information. Objections included the possible lack of confidentiality as well as the absence of an agreed upon rationale for collecting some of the information. These problems are notable in the following areas:

- Family history
- Marital status and history
- Professional goals
- Life experiences
- Test results
- Spouse's occupation and education

In order to reach a temporary solution to this difficulty, a decision was made to code and store that information unanimously agreed upon as having value to the department. Room would be provided for the storage of other information when the faculty reaches an agreement concerning what additional information should be collected and stored. Later in this chapter the author's suggestions for information to be stored based upon the sources already discussed are given.
Using this background as a foundation, five steps in implementation are suggested. First, all information agreed upon as necessary should be coded, punched and placed on tape using the Creation Program. Included are the areas in the data base outline (Appendix A) falling under "permanent information from application," "academic information," "grade files," and the address and occupational cards from the "quarterly update" section. "Permanent test information" will also be included on a transitional basis as discussed in the design section.

Second, the update system will begin the quarter following the completion of the establishment of the data base. This includes the collection of information for updating, the coding of the new information, and the updating of the tapes through the maintenance program. This procedure is explained in the Operating Manual (Appendix B).

Third, a graduate student should present to the faculty the proposed rationale for an outline of information to be collected on each graduate student. Based upon feedback from the faculty, the exact information to be collected can be agreed upon. Then the method for gathering the data quarterly can be instituted.

Fourth, the reports to be generated based on the needs and objectives outlined will be identified and the services of a programmer secured to write the programs necessary to generate the reports.
Once the programs are written, the reports should be provided on a regular basis. Chapter IV provides suggestions for needed reports.

Fifth, once the system as described is operational, it should be made more flexible through programs that will permit anyone access to the data to design his own report. If Query (a program described in Chapter IV) is developed for O.S.U., it will allow access to any information in a data base in any form that the user requests. When the system goes to permanent disk storage, it should be possible to have immediate access to the data from a terminal on a time-sharing option.

Cross-cutting all stages in the implementation of the system will be a periodic review of information being collected and stored in the system for possible deletion and/or addition. The periodic review should be conducted at least once a year by a committee made up of faculty and student members. The composition of this committee should be determined by a vote of the faculty. The committee needs to:

Review the objectives of the system in relation to current departmental needs.

Examine the information collected to determine whether it meets the needs of the department.

Examine the current capabilities of the system in order to establish priorities for future development.

The process of this examination is identical to the methodology proposed for the development of an information system.
Design

The design phase describes the information system established to meet the needs and requirements of the users. The objective of the design phase was to develop a system to meet the four purposes outlined for the system in the requirements phase.

1. To provide faculty and the department with student information for management needs.

2. To provide students and their advisers with information which aids in increased self-understanding for the students.

3. To provide the technological facility for improvements in the curriculum.

4. To provide a longitudinal data base of information on students in counselor education for improved research and program development in counselor education.

This section presents a description of the final design of the system. A detailed description of this design is presented in the appendices.

The first step in the design phase was to design a data base contents to meet the four purposes outlined. The second step was to design a system to maintain the data base. The third was to build in security features to protect the confidentiality of the data.

Data Base Contents

There are two files of student records contained in the data base: (1) the Active File and the (2) Inactive File. The active
file contains the records of students who are pursuing an M.A. or Ph.D. degree and who have been enrolled within the last four quarters. The inactive file contains the records of those students who have graduated, those who were active but who have not taken courses for five or more quarters, and those who are no longer in the program. Special students who are accepted into graduate school but are not working towards a degree are not included because they have no adviser and are consequently difficult to follow.

The contents of an active student's record are listed in the Data Base Outline found in Appendix A. The detailed contents of a record along with coding instructions and tables of codes and abbreviations are also presented in Appendix A. The contents of a student's file are divided on the basis of the location of the information before it is stored and by the degree of permanence of the information.

The first section "permanent information from application" is constant. Changes in the application would be the only reason to alter this section.

The second section on "permanent information from data sheet" is proposed to contain information to be collected within the department on all students. A final decision as to what to retain in this
section and how to collect the information rests with the faculty and students in the department.

The "Permanent Test Information" section initially will contain the results of the instruments given in Education 879, Educational and Vocational Guidance, since autumn of 1970. These instruments are the Strong Vocational Interest Blank, The Edwards Personal Preference Schedule, the Myers-Brigg Type Indicator, and the Ohio Vocational Interest Survey. The primary reason for storing these results is to make data currently available more accessible for computer manipulation.

It will be up to the department to decide which tests will continue to be given, which others will be added or deleted, and at what stage in the program they should be given. Recommendations as to possible instruments to be added or deleted will be given later in this chapter.

The "quarterly update sheet section" will be updated for the address and occupational information. The other information will be decided upon at a later date.

The "academic information" section and the "transcript of grade files" will be fully coded from the onset of the system. The consensus of the department is that this information is needed.
Data Base Upkeep Design

The upkeep of the data base involves three processes. The first is collecting the information needed to update the data base. The second is coding new data and coding changes in existing data. The final step is the actual updating of the cards and the tape. Figures 2 and 3 illustrate the procedure for accomplishing the updating at fixed times and at random times respectively.

There are three sources for information: (1) the Graduate Office of Education; (2) advisers; and (3) department files. The numbers in the corner of the boxes in the first columns indicate the source of information. Information from the Graduate Office of Education can be obtained by requesting it from the secretary at the times indicated. Information from advisers should come automatically from them. Test results and work histories are available in 257 Arps Hall. It is recommended that when students complete work histories that they add the D.O.T. codes for the occupation.

The second column indicates which cards need to be coded to input the data gathered from each original source.

The third column indicates operations to be performed in maintaining the tape and card back-up storage system. There are four operations involved: (1) an operation to initially input cards; (2) an operation to update existing cards; (3) operations to transfer student records from one file to another; and (4) operations to update the card back-up system.
FIGURE 2
SYSTEMS FLOW CHART FOR OPERATIONS OCCURRING AT A FIXED TIME

1. 1ST WEEK
   LIST OF NEW MA STUDENTS FROM PREVIOUS QUARTER
   → CODE CARDS 1, 2, AND K
   → SUBMIT FOR KEY-PUNCHING

2. 1ST WEEK
   LIST OF NEW PHD STUDENTS FROM PREVIOUS QUARTER
   → CODE K COLUMNS 33-37
   → PRINTPUNCH ACTIVE2 FILE FOR STUDENTS, PULL K CARD
   → SUBMIT K CARD FOR KEY-PUNCHING

3. 1ST WEEK
   LIST OF PHD STUDENTS WHO PASSED GENERAL EXAMS PREVIOUS QUARTER
   → CODE K CARD FOR NECESSARY UPDATE CHANGES
   → SUBMIT CARDS TO UPDATE EXAM INFO., TEST INFO. AND GRADUATION INFO.

4. 1ST WEEK
   LIST OF MA AND PHD STUDENTS WHO HAVE TAKEN GRAD. SCHOOL TEST SEQUENCE
   → CODE CARDS N, R, AND S
   → SUBMIT FOR KEY-PUNCHING
   → SUBMIT CARDS FOR UPDATING GRADE FILE

5. 5TH WEEK
   GRADES FROM PREVIOUS QUARTER
   → CODE CHANGES NEEDED FOR CARDS A, B, C, D
   → PRINTPUNCH ACTIVE2 FILE FOR RECORDS NEEDING UPDATING
   → SUBMIT A, B, C, D CARDS FOR KEY-PUNCHING
   → SUBMIT CARDS FOR UPDATING ACTIVE2 FILE

6. 5TH WEEK
   QUARTERLY UPDATE SHEETS FOR STUDENTS PREVIOUSLY ENROLLED
   → CODE CARDS 8-16
   → SUBMIT FOR KEY-PUNCHING
   → SUBMIT FOR ADDING TO ACTIVE RECORD

7. 9TH WEEK
   TEST RESULTS FROM ED. 879: OVIS, SVIB, EPPS, MBTI
   → CODE CARDS D, E, F, A, B
   → BETWEEN QUARTERS
   → PRINTPUNCH RECORDS OF THOSE NOT ENROLLED 4 OR MORE QUARTERS, GRADUATED, OR LEFT DEPARTMENT
   → KEYPUNCH ALUMNI NO. ON CARD 1 COL. 16-23 & CHANGE COL. 5-6-4 ON ALL CARDS TO § 1.
   → SUBMIT RECORDS IN INACTIVE FILE

DATA BASE

DATA BASE

DATA BASE

DATA BASE
# FIGURE 3
SYSTEMS FLOW CHART FOR OPERATIONS OCCURRING AT RANDOM TIMES

<table>
<thead>
<tr>
<th>OPERATIONS INVOLVING SOURCE OF INFORMATION</th>
<th>OPERATIONS INVOLVING CODING OF DATA</th>
<th>OPERATIONS INVOLVING SUBMITTING OF JOBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RANDOM TIMES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHD DEFENSE OF DISSERTATION PASSED</td>
<td></td>
<td>PRINTPUNCH ACTIVE2 FOR RECORDS NEEDING UPDATING</td>
</tr>
<tr>
<td>RANDOM TIMES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHD PROGRAM FILED</td>
<td></td>
<td>KEYPUNCH NECESSARY ADDITIONS ON CARD K</td>
</tr>
<tr>
<td>RANDOM TIMES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STUDENTS TRANSFERRING OUT OF DEPARTMENT</td>
<td></td>
<td>SUBMIT CARDS TO UPDATE PHD INFORMATION &amp; TRANSFER INFORMATION</td>
</tr>
</tbody>
</table>

DATA BASE

DATA BASE

DATA BASE
The detailed description of the data base upkeep design is contained in the Operating Manual, Appendix B. It should be mentioned that the data base upkeep design is one that allows for quick implementation. A number of the operations could have been designed to run more efficiently, but this would have required more difficult and time-consuming programming. It was felt that these improvements should be made in the future while the department is already enjoying the benefits of an operating information system.

Also to be noted is that the information in the personal history section has not been provided for in the data base upkeep design. As previously indicated, what is to be contained in this section and how it is to be collected is not yet clear. Consequently, while there is room in the data base for this information the method for collection and updating has not yet been established.

Security Features

The potential wide variety of users of the system raises the question of how confidentiality of sensitive data is to be preserved. A number of measures will be built into the system based on Lister's (1970) position in "Privacy and large-scale data systems," Brouch's (1969) comments on the establishment of the ACE longitudinal data base, and conversations with Mr. Richard Shafer and Mr. Earl Raley of the computer center.
The first protective measure is to use a scrambling program when the information is stored on tape. The only way to unscramble the information is to run the scrambling program on the data before it is used for output. Thus, even if a person did know how to access the data, the information printed out would be meaningless without the scramble program.

A second protective measure is that information is accessible only by a student's social security number. His name appears only on the first card in the file. The master list of these numbers should be held only by the person who is responsible for the system.

Thirdly, students should be told that the information system exists and have its purposes explained to them upon entering the program. If for any reason they object to being a part of the data base, the data on them should not be entered. The option also serves to protect the validity of the information.

Fourthly, no data will be released for research purposes until the chairman of the department is satisfied that the project has a definite value and will in no way infringe on the right of the people in the sample. To the extent possible, the anonymity of the people in the sample should be preserved.

Fifthly, no information should ever be given to anyone other than advisers, students, and approved researchers without the written
consent of the people on whom the information is requested. Other than normative information, a student should never have access to any file except his own.

Finally, at any time, a student has the right to see the entire contents of his file and make corrections or changes.

When the system becomes an on-line one, more protective devices will need to be added in order to avoid giving someone access to a file simply by virtue of knowing the social security number of a student. Security codes can be added, and different files can require different security codes to access them.

Brouch (1969) makes an excellent point when discussing the security problem in longitudinal research. He notes that many of the information systems which cause concern are those established for evaluation purposes (e.g. to make decisions on employment or financial matters). But information systems for longitudinal research have a different function. In longitudinal research, usually regular identification of the individual is unnecessary. The function of access to records is not to evaluate with respect to one individual, but to trace the development of a group of individuals. However, records must be identified because unambiguous conclusions about a population are possible only if researchers can follow the student's progress by merging records available at different points in time.
Completion of Data Base System

Before the current data base system can be fully implemented, two stages remain. The first stage is the final decision on the non-standardized and standardized personal data to be included in the information system. The second stage requires the writing of computer programs needed to provide the stated capabilities of the off-line system.

Non-Standardized Information

Suggested data to meet the objectives of the system were reviewed in the Requirements section. This section will present a rationale for the inclusion of the following personal data: family history, marital status and history, outside activities and a student's results on standardized instruments.

Underlying the rationale is the assumption that personal information is being collected to partially meet two of the objectives of the information system.

To provide students and their advisers with information which aids in increased self-understanding for the students.

To provide a longitudinal data base of information on students in counselor education for the purpose of improving research in counselor education.

A second assumption is that the confidentiality of the information will be maintained through the protective devices already discussed.

The review of the literature on characteristics of counselors revealed numerous studies on what a counselor should be or what
distinguishes a so-called "more effective" from "less effective" counselor. Identifying and describing a good practicing counselor is easier than choosing individuals who have the potential to become effective counselors when they complete their education. Also difficult is assisting potential counselors to decide whether counseling in any form is an appropriate vocational choice for them.

There are a lack of valid empirical methods for assisting an individual to develop his potential for becoming an effective counselor or for assisting him in predicting the probabilities for his success and satisfaction in counseling. Despite the lack of methods, the current emphasis on the influence of the person of the counselor in the counseling relationship suggests new approaches for guiding counselors-in-training as well as potential improvements for conducting research on counselors. Kell and Mueller (1966) note that:

The counselor, then, functions more or less effectively as a consequence of his professional training and experience; yet his own experiential person is constantly intertwined in the counseling process and facilitates or impedes as the case may be (p.23).

In order to help a counselor become integrated and congruent as a counselor and as a person, one must deal with as much of the whole person as possible. This involves training which requires information on counselor characteristics and an approach which is process oriented. In the first, typically two kinds of information are used in assisting a person to become a counselor: his academic
and professional background and his future plans. Also of importance are his family history, his marital history, and his interests.

In the second, the process emphasis, Quaranta (1970) in his proposed elementary school counselor education program, suggests a developmental core which runs through the program. The process core is based on the assumption that for a counselor to provide guidance assistance he needs to consider his own personal and professional growth. The growth is facilitated through two components: Personal Development and Professional Development.

Personal Development aims toward the counselor's self-knowledge, self-acceptance, and self-affirmation. The counselor is encouraged to examine himself in terms of "...his interests, his aptitudes, his skills, his perceptual screen including values and attitudes and his goals (pp.10-11)." The counselor becomes the subject matter of group experiences and individual counseling. For the purpose of his own growth and development, he participates in the process he will use in counseling. This type of program recommendation further validates the consideration of an information system of personal data.

Research needs also require a total picture of an individual. The recommendations of the Bromwwoods Conference (Whiteley, 1967) suggest that counselor selection be studied comprehensively at the levels of pre-selection, performance in training and performance as
a practicing counselor. This information should be in a form that is usable in studies at all three levels. By extension, the information should be comprehensive enough to provide a reservoir of data on all aspects of a person's functioning assessed by a variety of methods.

Some trends in research on counselor selection and characteristics of counselors as seen in the review of the literature are (Whiteley, 1967, and Shertzer and Stone, 1968):

More emphasis on the process of counseling or the interaction between counselor and counselee.

A need for longitudinal research.

Studies of counselors-on-the-job in addition to counselors-in-training.

The use of multiple measures of personality.

A move toward providing empirical and/or theoretical bases for explaining how differences in personality characteristics are related to differences in effectiveness.

A need to identify and develop instruments helpful in predicting and/or assessing counseling effectiveness.

While each of these general areas of suggested future research require different approaches, one thing is common to all of them. Each necessitates or would be assisted by a bank of information on counselors-in-training and later practicing counselors. An understanding of the counselor himself is fundamental, irregardless of the type of research conducted concerning him.
Webb and Rochester (1969) point out that merely accumulating data on a person cannot be equated with knowing him. However, knowing facts about a person may help us understand why he thinks, feels and behaves as he does. To know the facts about a group of people with common or similar goals may give important information which can be used to help these people reach their goals. Knowing about these same people in terms of what characterizes them when they enter a program, as they go through a program and eventually go into the field will assist in aiding future groups as they begin the same process of utilizing information to improve self-knowledge.

Part of the information on a counseling student’s background, academic history and work history is already available at Ohio State University. Lacking is information on family history, marital status and history, and life experiences. The proposed data sheet to collect the information draws on those already developed by Kelly and Fiske (1951) and Roe (1964) in addition to incorporating the suggestions made by faculty members. The instrument consists of two forms. The first form is the initial data sheet to be completed the first quarter a student is enrolled in a guidance program. The second form is a quarterly update form to be completed every quarter when a student has his schedule cards signed. Based on feedback from users, alterations in the forms are anticipated as the system develops. A copy of the forms will be found in Appendix C.
The work history is to be collected in Educational and Vocational Guidance. It is recommended that when students complete their work history that they add the *Dictionary of Occupational Titles* number for each job. This will facilitate coding of the data, will ensure that occupations receive the correct coding, and that the students have some acquaintance with the D.O.T. A suggested form for the work history is included in Appendix C.

**Standardized Information**

A number of standardized measures are proposed to be included in the information system in addition to the non-standardized data suggested in the previous section. These provide a method for quantifying data on the personality characteristics and interests of students as well as furnishing a norm group against which students in the guidance program can be compared. In addition, once these data are collected, departmental norms can be established, thus making the scores more meaningful than they are presently.

The tests currently being utilized in counselor education are the Myers-Briggs Type Indicator, the Strong Vocational Interest Blank, the Edwards Personal Preference Schedule, and the Ohio Vocational Interest Survey. The graduate school gives entering M.A. students the Opinion, Attitude and Interest Survey, the Watson-Glazer Critical Thinking Appraisal and the Co-Operative English Test.
The incoming Ph.D. students take the Guilford Zimmerman Temperament Survey instead of the Opinion, Attitude and Interest Survey.

Previous research on counselors and counselors-in-training suggest that selected interest measures tend to differentiate counselors from other populations. The Social Service Interest Scales (Group V Scales) on the SVIB have consistently met this criterion.

Secondly, selected personality traits as measured by standardized instruments also appear to differentiate counselors from non-counselors and "more effective" from "less effective" counselors. Some of the traits fall into the categories of dogmatism, characteristics important in social interaction, needs, and dimensions of temperament. The following represents a brief survey of these traits. Details of the studies from which the information is drawn are available in the review of the literature and the discussion of each instrument.

The Rokeach Dogmatism Scale has differentiated "more effective" from "less effective" counselors. Effectiveness has been assessed by peer ratings as well as supervisor ratings.

The scales of Sense of Well-Being, Psychological Mindedness, and Self-Acceptance of the California Personality Inventory have distinguished between counseling and non-counseling students. The Social Presence, Self-acceptance, Tolerance, Intellectual Efficiency, and Flexibility scores have been shown to increase with level of training.
Scores on manifest needs as measured by the Edwards Personal Preference Schedule indicate that counselors score high on Intraception, Deference, Nurturance, and Affiliation and low on Aggression and Order. Also, "more effective" counselors are higher than "less effective" counselors on Nurturance, Affiliation, and Intraception and lower on Autonomy, Abasement, Aggression and Dominance.

On the factor analytically derived temperament traits of the Guilford Zimmerman Temperament Survey counseling students tend to score high on the Restraint, Emotional Stability, Friendliness, Objectivity, and Personal Relations Scales and average to low on the General Activity, Ascendance, Thoughtfulness, Sociability, and Masculinity Scales.

Based upon the results of previous studies and on suggestions for future research found in the literature, four recommendations are made for administering standardized instruments in counselor education.

First, it is recommended that the following tests continue to be given by the guidance department to its students: Myers-Briggs Type Indicator, Strong Vocational Interest Blank, and the Edwards Personal Preference Schedule. In addition, the California Personality Inventory and the Rokeach Dogmatism Scale should be added.

It is also recommended that these tests be administered in the course on Standardized Guidance Appraisal Techniques. The purpose for giving them is to provide the students with practical experience in taking standardized instruments while they are studying about them in class. They also have the opportunity of interpreting each others tests and of discussing reactions to their own scores. It is not
recommended that students take the instruments prior to entering the program unless these tests are administered for selection purposes. This recommendation is made due to the probability of low motivation on the part of students taking such instruments before entering the program.

A third recommendation is that M.A. students should take the Guilford Zimmerman Temperament Survey in place of the Opinion, Attitude and Interest Survey.

A fourth recommendation is that departmental norms be developed for each of the standardized instruments taken by all graduate students in counselor education.

All standardized information serves the same two functions as the non-standardized information. Results furnish data of assistance in the process of increasing a counselor's self-knowledge. They also are of vital importance in research studies on counselors-in-training.

The recommended inventories can be justified by examining their purposes, reliability and validity data, and reviewing research on them related to counselors.

California Personality Inventory (CPI). -- The CPI is an empirically designed instrument that purports to measure personality characteristics important for social living and social interaction. It consists of 480 items, 200 of which were drawn from the Minnesota
Multiphasic Personality Inventory. The testee responds to each item as "True" or "False" according to whether he agrees or disagrees with a statement. Eighteen standard scores are yielded with a mean of 50 and a SD of 10.

There are eighteen scales divided into four classes: Class I, Measures of Poise, Ascendancy, and Self-Assurance; Class II, Measures of Socialization, Maturity, and Responsibility; Class III, Measures of Achievement Potential and Intellectual Efficiency; Class IV, Measures of Intellectual and Interest Modes. Eleven of the scales are based on empirically derived scoring weights assigned to differentiate defined criterion groups; four of the scores are based on weights originally judged by the author as indicating the presence of a designated variable. The remaining three scores were also derived empirically to detect tendencies of subjects to fake or to respond in a manner that weakens the validity of the other scores.

The norms are based on 6,000 cases for males and on 7,000 cases for females. While the sample includes a wide range of ages, socio-economic groups, and geographical areas, it is not offered as a true random sample of the general population.

Two test-retest reliability studies are reported by Gough (1964) in the manual. The first tested 226 high school students in their junior year and in their senior year. The second tested
200 male prisoners twice with a lapse of from seven to twenty-one days. The correlations tend to be high (.57 to .87) on all scales except Communality (Cm) and Psychological Mindedness (Py). Cronbach (1959) criticizes the absence of evidence of stability over sample items such as split-half reliability.

Validity of each scale was determined by comparing groups which the scale ought to discriminate; dozens of cross validities on sizeable samples are reported. Kelly (1965) indicates that there is convincing evidence that each of the scales has some validity when judged against life performance criteria. But Cronbach (1959) questions the legitimacy of the figures on which the validity is based.

Studies by Moredock and Patterson (1965) and Patterson (1967) using the CPI with counseling students and with non-counseling students indicate that some scales differentiate counselors at different levels of training and differentiate counseling students from non-counseling students.

**Edwards Personal Preference Schedule (EPPS).** -- The EPPS is designed to measure fifteen personality variables as based on Murray's list of Manifest Needs. The instrument attempts to minimize the influence of social desirability. The manual emphasizes that the fifteen variables are normal ones and are normed on a normal population. The fifteen needs assessed by the instruments
are: Achievement (Ach), Deference (Def), Order (Ord), Exhibition (Exh), Autonomy (Aut), Affiliation (Aff), Intraception (Int), Succorance (Suc), Dominance (Dom), Abasement (Aba), Nurturance (Nur), Change (Chg), Endurance (End), Heterosexuality (Het), and Aggression (Agg).

Split half reliability of the scales range from .60 to .87 and test retest from .78 to .88 (Edwards, 1959). Few validity data are available. However, Dunnette and others (1958) did state that relationships between EPPS scales, California Personality Scales and SVIB make good "clinical sense."

Some of the descriptive studies of counselors cited earlier (Patterson, 1962; Foley and Proff, 1965; and Kemp, 1962) found that counseling students tended to score above the mean on Int, Def, Nur, Aff, and Ach and low on Agg and Ord. Steffler, King and Leafgren (1962) found counselors rated most effective by their peers as higher on Def and Ord and lower on Aba and Agg than the counselors rated least effective. Future research needs to focus on the influence of the need structure of the counselor and of the client on the counseling relationship and on the outcomes of counseling. Also, the results of the research already completed should be reported to counselors-in-training in conjunction with their scores.

Guilford Zimmerman Temperament Survey (GZTS). — The GZTS was designed to measure ten relatively independent temperament traits
found in normal people. The inventory was constructed by combining, through factor analytic techniques, those items of other personality inventories which related to the ten traits. The traits assessed are: General Activity (G), Restraint (R), Ascendence (A), Sociability (S), Emotional Stability (E), Objectivity (O), Friendliness (F), Thoughtfulness (T), Personal Relations (P), and Masculinity (M).

Reliability was assessed through odd-even and first-half-second-half correlations of a random sample of 100 men (Guilford and Zimmerman, 1949). The reliability coefficients for each trait range from .75 to .85. The intercorrelations between traits are generally small although some are as high as .69 (between E and O) and .61 (between S and A).

Validity rests on the factorial validity of the scores. The authors (Guilford and Zimmerman, 1949) believe that what each scores measures is well defined and represents a confirmed dimension of personality.

Cottle (1954a and 1954b) found that male counselors working in a college counseling center scored significantly higher than college students on the R, S, E, O, F, P, and M scales of the GZTS. He went on to construct an experimental scale made up of items from the GZTS, MMPI, and SVIB designed to differentiate between counselors and teachers. The results supported that the instrument did discriminate.
These results suggest that the GZTS may be a valid instrument to use in selection of counselors if further studies indicate that it has predictive validity.

**Rokeach Dogmatism Scale-Form E (RDS).** The RDS consists of sixty items considered to be representative of the characteristics of open-and closed-belief systems. Of the sixty items, only forty comprise the actual scale. The forty items are responded to on a six-point continuum ranging from strong agreement (+3) to strong disagreement (-3). A high score represents a close-belief system; a low score represents an open-belief system.

In a review of the literature on dogmatism, Vacchiano, Strauss, and Hochman (1967) found that reliability measures for the RDS have been generally high for adult and high school populations. Rokeach (1960) reported split-half reliability coefficients ranging from .68 to .85. Hough (1965) later reported a corrected split-half reliability coefficient of .86. Tosi (1968), using the Spearman-Brown formula for determining reliability coefficients, obtained a value of .81 for an \( N \) of 69 clients.

While many of the investigations on the dogmatism construct employ the RDS to discriminate among subject groups and thus deal with the scales' predictive or concurrent validity, other studies have examined the scales' construct validity. For example, Vacchiano, Schiffman and Strauss (1967) performed a factor analysis on the
items of the RDS and reported that although the instrument was internally complex, factors tended to group around Rokeach's conceptualizations.

The results of research with counselors using the RDS indicate that it discriminates among counselors on several dimensions. Studies cited earlier (Steffire, King and Leafgren, 1962; Russo, Kelz, and Hudson, 1964; and Milliken and Paterson, 1967) suggested that counselors rated "more effective" tend to score lower on the RDS than those rated "less effective." Kemp's (1962) study reported that high dogmatic counselors-in-training simulated greater changes in training in the direction favored by the institution than low dogmatic counselors-in-training. But in actual counseling situations, the high dogmatic group changed significantly in their responses from hypothetical to actual situations. The change was toward fewer understanding and supportive responses. Work by Tosi (1968) and Osborne (1970) suggests that dogmatism is a factor in the counselors' and cousellee's expectations for and perceptions of the counseling relationship. In view of these findings, the RDS has implications for the counselor's self-knowledge.

The Strong Vocational Interest Blank for Men (SVIB). — The SVIB is an empirically derived instrument. Strong administered hundreds of items to members of forty-five different occupational groups and, through a process of item analysis, determined which
items discriminated between each group and "men in general." Those items which were found to so discriminate are assigned weights in proportion to the degree to which they discriminate between the given group and "men in general." The original form of the SVIB was published in 1927 and consisted of 420 items; it was revised in 1938, 1966, and 1969 and eventually shortened to 399 items for the men's form.

In its present form, the SVIB consists of different item formats which relate to preferences for occupations, preferences for school subjects, preferences for amusements, preferences for activities, reactions to peculiarities of people and self-ratings on certain characteristics. Some of the items ask that a respondent answer in terms of "like," "dislike," and "indifferent." Others are in a forced-choice or a modified forced-choice format.

The results are reported on three scales: The Basic Interest Scales, the Occupational Scales and the Nonoccupational Scales.

The Basic Interest Scales, made up of twenty two scales, are used to identify the dominant themes in a person's interest. They were constructed by clustering items with high inter-correlations. They have been standardized on a population of 650 men tested when they were 16 and when they were 52. The Profile indicates the average scores for the group at each age; therefore, a person can
compare his score with the score of an average teen age boy and an average adult male.

The occupational scales focus on the content of the person's interests in terms of specific occupations. Scores are reported as letter grades and as standard scores. Each score provides an index of the similarity between a person's interest and the characteristic interests of men in the designated occupations. There are eleven clusters of related occupations and supplementary occupational scales consisting of 54 scales.

The Nonoccupational scales are primarily experimental at this time.

When used with adults, test-retest correlations over 30 days average slightly over .90, dropping to about .75 over 20 years for adults and to .55 over 35 years for men first tested at age 16. Correlations over the four years of college are approximately .60 (Strong, 1966).

A large number of validity studies have been conducted with the SVIB. In one of the largest longitudinal studies, Strong (1955) found that eighteen years after graduation approximately four out of five were in occupations on which they scored "A" while in college and approximately four out of five were not in occupations on which they scored "C."
The Group V Scale on the SVIB with an emphasis on the Social Welfare Occupations have differentiated counselors from other groups in a number of studies (Polmantier, 1966). The Basic Interest Scales, which are new with the 1969 revision, hold promise for future research.

**Myers-Briggs Type Indicator (MBTI).** -- The MBTI, a forced-choice, self-report inventory designed for use with normal subjects, is based upon the Jungian theory of personality type. It is a theoretically derived instrument with an empirical base. The scores are purported to be bipolar and discontinuous; that is, the dimensions are dichotomous. Despite this, it is possible to convert each of the four indexes into continuous scores.

The four dichotomous preferences are: Extraversion-Introversion (EI), orienting toward the external world of people and things or toward the inner-world of concepts and ideas; Sensing-Intuition (SN), perceiving directly through the five senses or indirectly in an imaginative way; Thinking-Feeling (TF), arriving at decisions by logical analysis or by appreciating personal and interpersonal subjective values; and Judgment-Perception (JP), preferring to take a judgmental attitude or an understanding, perceptive attitude toward the environment.

The direction of a subject's preferences is indicated by the corresponding letter. The four letters are then combined to form
a type (e.g. ESTJ or INFP type). Theoretically, the four preferences interact to form a personality type; thus, there are sixteen possible types.

It is questionable whether the scales actually are bipolar. Also, whether the MBTI measures Jung's four personality types or whether the four preferences interact to form a type has been challenged. (Mendelsohn, 1965, and Sundberg, 1965). Despite these limitations, reviewers are hopeful about its research and counseling potential.

Internal consistency reliabilities for the scales range from .75 to .85, with a low coefficient of .44 for TF. In a fourteen month test-retest, correlations of approximately .70 were obtained for EI, SN, and JP and .48 for TF (Myers, 1962).

The manual's (Myers, 1962) reports on validity rest primarily on concurrent studies. The relationship to a large number of scales on tests of interest, values, and personality are mostly in the expected direction. For example, SVIB Interest in Sales correlates significantly with Extraversion, interest in Psychology with Intuition, and EPPS scores for Nurturance correlate with a Feeling preference.

While there have been only limited studies with the MBTI on counselor characteristics or counselor selection, the instruments hold promise for future research. Mendelsohn and Geller (1963)
found that similarity of type between counselor and client is related to continuation in counseling and perhaps to greater ability to communicate with each other.

Patterson (1967) has proposed that instruments that appear to be logically related to a counseling relationship should be considered in research on counselors. Mendelsohn (1965) after a review of the literature on work with the MBTI indicates that type scores "...relate meaningfully to a wide range of variables including personality, ability, interest, value, aptitude, and performance measures, academic choice, and behavior ratings (p. 1127)." This already established relationship to a range of general variables indicates that the MBTI may also be related to counseling variables. As an example, a person's standing on the JP scales may have implications for his attitude toward a client and his problem. The TF dimension should indicate the kind of counseling approach with which a counselor would be most comfortable.

Computer Programs

In addition to reaching agreement on the personal information to be collected, the current data base system requires a number of computer programs to make it more responsive to the needs of users. Also necessary is a method for acquainting users with its capabilities.
Regular Reports. -- Programs are needed to generate regular reports of information contained in the system. These reports are to be distributed to all faculty members to be used in solving administrative problems and to assist advisers in knowing who their advisees are and at what stage they are in their program. Suggested reports are:

Report A: A quarterly listing of students officially in the department of counselor education but who have not been enrolled for four or more quarters.

Report B: A quarterly listing the M.A. advisees by adviser accompanied by information on their progress in the program.

Report C: A quarterly listing on the Ph.D. advisees by adviser, accompanied by information of their progress in the program.

Report D: A yearly listing of the number of M.A. and Ph.D. students in counselor education enrolled in each guidance course each quarter.

Report E: A yearly listing of updated departmental norms for the standardized instruments administered within the department of counselor education to all graduate students.

Access to the Data. -- In addition to regular reports, the ability to access any data in the data base not considered restricted is necessary. This requires a program which enables users to query data on a need-to-know basis and in any format desired. A program entitled QUERY will provide this facility. QUERY is capable of retrieving and disseminating information from diversely formatted files maintained on tape or disk.
Introduction to the System. -- The users of the system need to be introduced to the system in order to understand its capabilities. This can be accomplished by explaining the system to users and providing them with a manual which succinctly describes the system. Users should be notified immediately when changes in the system are made.
CHAPTER IV

PROJECTED DEVELOPMENT OF THE TOTAL INFORMATION SYSTEM

This study attempted to develop a data base system of student information for a department of counselor education. A procedure for gathering the data, for tape storage, and for updating the data was presented. Also included were suggested non-standardized and standardized personal student data to be contained in the information system.

A secondary purpose of the study was to present a framework for a comprehensive information system for a department of counselor education. A comprehensive information system must be viewed in the context of the counselor education system of which it is a part.

Within that context an information system functions on a number of levels. At the method level an information system becomes a clarifier and developer of the larger system of counselor education. It clarifies by forcing an examination of the goals of counselor education in order to decide how an information system can be utilized most effectively. It develops by offering capabilities that suggest program goals never before considered possible. At the application
level, an information system provides the capabilities to assist in implementing the goals of the contextual system.

This chapter will focus on the development of a comprehensive information system by discussing its role in the total program of counselor education. The emphasis will be on the hardware and software developments in the information system as well as suggested uses for the resources of the information system.

The discussion is divided into five sections: (1) information system development; (2) information system resources; (3) guidance processes; (4) program goals; and (5) evaluation. Despite this division, all areas are assumed to be interrelated. A model of the relationship between an information system and guidance processes and program goals within a program of counselor education is presented in Figure 4.

Information System Development

Information system development is a method outside counselor education used to assist in reaching the proposed outcomes of counselor education. As it functions within the department it becomes part of the total system. Figure 4 illustrates "information system development" as partially inside of and partially outside of the program.

Developing a more comprehensive information system than the one currently in operation requires the same process as the one illustrated
FIGURE 4
PARAMETERS OF THE ROLE OF AN INFORMATION SYSTEM IN A PROGRAM OF COUNSELOR EDUCATION
in Figure 1. A special emphasis on the information system requirements which are derived from guidance processes and program goals is important.

Also important are the potential information system resources which may suggest changes in the counselor education program. For example, a series of CAI programs in one area such as standardized appraisal which include measures of level of proficiency could provide a student with an option of either taking the course as an independent study or traditional class.

At the program level it has already been suggested that a committee made up of faculty and students meet continuously. Consideration should be given to input on program needs from users combined with input from developers of technological capabilities. Based on the interaction of both areas of input new system resources are designed and implemented.

**System Resources**

System resources are developed on the basis of the outcome of the process of information system development. While the technological capabilities of the system are limited, the direction of the development and the uses of the information system are not. The six basic system resources for the program of counselor education are outlined in Figure 4.
Regular Reports and Off-Line Access to the Data-Base. --

Regular reports and off-line access to the data base have already been considered in Chapter III. While these facilities provide some capabilities not currently available in the department of counselor education, they need to be supplemented by the other system resources such as those listed below in order to expand the information system.

On-Line Access. -- On-line access coupled with a terminal provides immediate access to the information in storage if the method of querying is known. This means that a user does not have to use batch processing to obtain the information he requires. At a terminal he can request any information on program in storage to which he legally has access.

Interactive Programs. -- Interactive programs are designed to assist a student with learning and with vocational and educational decisions. The results of the student's interaction with each of the programs can be recorded in his file in the data base. Thus it will be possible to determine at any time what activities a student has completed and what his level of proficiency has been for the instructional activities. Even if a number of programs are developed separately, they can all be coordinated through the central information system. In some cases information in the student's data base file can be interfaced with information in the program.
Four types of interactive programs are suggested as illustrations of possible uses for the resource: (1) introductory program; (2) professional exploration program; (3) computer-assisted instruction programs; and (4) related experience program.

An introductory program could fulfill two functions. The first part would provide a brief introduction to the field of guidance and counseling for potential applicants to the department. Such information as the jobs available in the field, certification requirements for public school counselors, activities of a counselor, and settings in which counselors work would be given. The second would provide detailed information on the program at Ohio State University. The prerequisites for admission, the procedure for admission, required courses, and steps to be followed at each stage of M.A. and Ph.D. programs could be covered.

The professional exploration program is designed to aid counselors-in-training examine their characteristics relative to those who have already been through the counselor education program. The computer program is dependent upon having departmental norms available for standardized tests and on having information on graduates who are now working in the field. Once this information becomes available it can be interfaced with information on individual students currently in training. For example, at a terminal a student might inquire about his results on the SVIB. He could then be furnished with several kinds of normative information on the SVIB:
departmental norms, norms for counselors now working in various areas of guidance and the norms of practicing counselors rated either more or less effective on given criteria. This might be followed with an explanation of what implications his scores have for his professional future relative to the normative data he has just received.

CAI programs can present factual subject matter normally covered in class or in outside readings and furnish simulated counseling activities to which the student responds. Feedback is furnished constantly to the student as he proceeds through a program. The student's progress through any of the programs can be recorded. Thus the number of people who have completed each program and their level of proficiency based on the results of the periodic assessment throughout the programs can be determined through the random access capability.

CAI programs consisting solely of proficiency tests for each course can also be provided. These are used for pre-testing a student before he begins a course in order to assess an individual student's and the total class' strengths and weakness in a given area. Periodic tests throughout the quarter and a final exam at the end, which could be the same as the entry exam, can provide data on students' progress.

A related experiences program would furnish a list of suggested non-classroom activities for each course. Each activity can be keyed
for specific areas of interest. For example, there may be suggested activities for students planning to enter elementary guidance, secondary guidance, community mental health agencies, and counselor education programs in colleges and universities. Once a student has completed the suggested activity, he should record a description of it and comment on his reaction to the experience. This information will be valuable in refining this program.

**Storage Capacity.** -- The storage capacity provides a method for keeping information in a form that is quickly retrievable as well as available for manipulation through programs. Initially, the contents of the information system such as academic information, personal non-standardized data and personal standardized data will be stored on magnetic tape and cards. As the system develops, storage will be on disk.

**Statistical Manipulation of Data.** -- As discussed earlier, a number of programs are available to perform statistical analysis of data. In addition to pre-packaged programs such as the Biomedical Computer Programs (Dixon, 1968), special programs to meet departmental needs can be written. For example, a program to compute departmental norms on standardized instruments is desirable. This program could be run on a regular basis on the constantly updated bank of test results in order to provide up-to-date norms.
Guidance Processes

The information system development and system resources serve primarily to assist in the procedure of training counselors. The procedure consists of five guidance processes utilized in preparing counselors to enter a number of job setting. Each of the processes is assisted by the information-system resources and, in turn, has a role in influencing changes in the system resources.

Skill Development. — Skill development occurs through providing the experiences necessary to train the counselor in the competencies, techniques and understandings he is expected to possess when he becomes a practicing counselor. These skills are traditionally developed through course work, field experiences, practicum and supervision.

An information system can assist this process in several ways. Factual material can be conveyed through CAI material. Simulation can provide an opportunity to try out behaviors before encountering an actual situation. Suggestions for experiences at the university and in the community provide the student with a range of field experiences that he does not have to seek on his own.

Monitoring. — Through monitoring, a student's progress through an M.A. or Ph.D. program is tracked. Several levels of monitoring are possible. Presently, the monitoring is at the gross level of keeping track of courses taken the degree requirements completed.
With an information system that provides the resources listed, a student's progress within individual courses could be monitored. Moving one step further, the traditional program of taking a set number of courses could be abandoned in favor of developing a resource base of experiences. Thus each student could participate in those experiences necessary for him to reach his vocational objectives. His individualized program could be monitored through the information system.

Monitoring of the number of students enrolled in courses each quarter and the advisees assigned to each adviser will assist with solving administrative problems. Once the file is established, information will be available on the proportion of M.A. and Ph.D. candidates who have already taken a course, the proportion that usually take the course, and the proportion that take courses in their specialty and related specialties. With this information, the expected number of students who will want to take the courses during the coming year can be calculated. Almost any information needed to develop a forecasting model can be calculated. An updated list of the number of active M.A. and Ph.D. advisees each adviser has will aid in ensuring that students are equally distributed within the limitations of professional goals determining adviser.

Counseling. -- The placement of counseling in guidance processes is based on the premise that:
By attending to his own personal growth the counselor becomes a model for his own counseling. Moreover, he internalizes the guidance assistance for which he is preparing (Quaranta, 1970, p.10).

The counseling is both individual and group.

An information system can assist by providing input for the student in counseling to consider when he looks at himself. For example, the updated standardized test norms as well as non-standardized characteristics of counselors will provide a base against which counselors-in-training can compare themselves. The information is not considered as a standard against which counselor's measure themselves, but as a method for greater self-knowledge.

Counterpart models for utilizing information systems in counseling with graduate students are the computer-based vocational guidance systems in high schools and junior colleges (Harris, 1970; Impellitteri, 1970; and Super, 1970). Even though their primary emphasis is on occupational-vocational information, the framework used in their development is appropriate for a counseling system at the graduate level.

Planning. -- Planning incorporates both educational and vocational planning. At every point in a counselor's career there are important educational-vocational decisions for him to make and these should be grounded in as complete an understanding as possible of his interests abilities, and goals.
Monitoring and planning are similar processes. However, the emphasis in monitoring is on tracking the progress of a student as he moves through a program of counselor education. Planning has the broader goal of assisting with a student's educational and vocational planning during the program and after the program as a counselor moves into the field. The results of monitoring assist with the process of planning.

The introductory program described earlier would aid potential counselors in making a decision as to whether to enter counseling. The professional exploration program would be of assistance once they have entered the program. The information available through the information system would also help advisers in assisting advisees in making educational and vocational decisions.

Research. -- Research as process has two divisions. The first is the process of graduate students conducting their own research in order to gain research competencies as well as contribute to knowledge. The second is the research of faculty members directed toward increased understanding of counselors and the process of counseling.

The statistical capabilities of the information system is of obvious assistance in research. The storage capacity makes possible longitudinal studies of counselor-in-training and counselors-in-the-field. The results of longitudinal follow-up studies which gather
information on counselor's reactions to their training program and changes in counseling as seen from the field would be invaluable in directing development of the counselor education program. Longitudinal studies of job activities of counselors as well as assessments of on-the-job effectiveness would be of use in assisting counselors-in-training with their professional development.

Researchers can view the information system as a source of data and as a tool for experimental as well as descriptive studies. As a source of data it furnishes the information in the original data base in addition to the information added from other studies and projects.

As a tool, the system provides a method for narrowing and/or widening a study. It can narrow by limiting the population of a study to the people who meet a set of criteria. It can widen by providing the address of people who meet the criteria; subjects can be contacted to provide further information on the dimensions being studied.

Program Goals

The program goals are reached through the guidance processes which in turn are supported and assisted by an information system. At the same time that guidance processes are used as a vehicle to accomplish goals, they are also ends in themselves. The processes are ones that counselors-in-training will use when they enter the field.
Foundation Skills and Understandings. -- Foundation skills and understandings are drawn from areas related to guidance and counseling. For example, in elementary school guidance such areas as child growth and development, learning theory, motivation, sociological foundations of family, school and society, educational philosophy, and educational psychology seem particularly appropriate. Foundation skills could include research skills and communication skills. Even though the understandings and skills mentioned are not the primary focus of a counselor education program, they are fundamental to many of the guidance skills and understandings.

These goals can assist in directing the development of an information system. Suggested courses in areas outside of guidance could be provided through an interactive program. CAI programs could focus on the relationship of foundation areas to areas in guidance. The suggested community experiences could well include visits of different types of neighborhoods, perhaps to live there for a few days.

The guidance processes of skill development and research seem especially appropriate for accomplishing the goals of conveying foundation understandings and developing foundation skills. Monitoring would also aid by keeping track of the planned experiences a student has completed.
Guidance Skills and Guidance Understandings. -- Guidance skills and understandings are essential in providing a counselor-in-training with the necessary skills, tools, and techniques in implementing a program of assistance in any guidance setting. The understandings include: counseling theory; group processes; career development theory; tests and measurements; consulting process; personality development; and role definition and program development. The skills include: individual and group counseling; appraisal techniques; use of occupational-vocational information; consultation; and program development.

A number of information system resources are of use. CAI programs could treat subject matter more comprehensively and in more depth than in the foundation area. There may be more emphasis on simulated activities in preparation for field and practicum activities. Suggested activities outside of the classroom are also necessary.

The guidance processes of skill development, research and monitoring are again seen as appropriate for the same reasons as discussed in the previous section.

Personal-Professional Development. -- Personal-professional development is at the core of the total program. As mentioned earlier, the content of the personal development phase is the counselor. Through the counseling process he examines himself in an effort to
learn to handle his problems and thus become a model for his own counseling.

Professional development focuses on aiding the counselor to develop his own professional identification. This necessitates a clearer understanding of the scope of his own profession and its activities at the university, state, and local levels. As a part of this, he develops his program model for the setting in which he expects to function. Professional development can be facilitated through counseling as well as through the educational-vocational planning activities.

Evaluation

A number of evaluation models are currently available for implementation within a counselor education program. The CIPP model (Stufflebeam, 1970) of evaluation provides one useful paradigm for the evaluation of the information system. The model suggests four types of evaluation: context, input, process and product. Each of the four types of evaluation can be incorporated into a phase of the process of information system development illustrated in Figure 1. The CIPP model of evaluation is appropriate because it provides for on-going evaluation and allows for the interaction of all aspects of information system development.

Context evaluation is the most fundamental kind of evaluation. It provides a rationale for determination of objectives by defining the relevant environment, identifying unmet needs and unused
opportunities, and diagnosing problems that prevent needs from being met. Some of the techniques helpful in context evaluation are systems analysis to describe the system to be served, survey techniques to determine user's perceptions of needs, visits to other systems, and surveys of the research literature. In information system development context evaluation occurs in the "review of existing projects and resources" and "development of requirements."

Input evaluation determines how best to meet stated objectives; the method for utilizing resources to meet program goals is provided. At a higher level it seeks general strategies to meet the information needs of the system of counselor education. At a lower level it assesses how the general strategy is to be operationalized within the system in order to meet the objectives of the system. Possible techniques are committee meetings, reading in the professional literature, and the employment of consultants. The "design phase" of information system development is based on input evaluation.

Process evaluation is necessary for providing periodic feedback to persons responsible for implementing plans and procedures. In process evaluation the operation of the information system is monitored constantly. The two objectives of process evaluation are to detect defects in the design and to maintain a record of the procedures as they occur. Useful procedures are interaction analysis, end-of-the-day reaction sheets, interviews, rating scales, and
records of staff meetings. Process evaluation is found in the "production" and "evaluation and maintenance" stages of the system development.

Product evaluation focuses on whether the objectives of the system as outlined in the requirements section are being met. Since an information system is never completed, this occurs on an on-going basis. Process evaluation provides a basis for interpreting the reason for the obtained outcomes. The most common method for product evaluation is experimental design. Product evaluation takes place in the "evaluation and maintenance" stages of the system development. The results of process and product evaluation influence changes made in the objectives and design of the information system.

Summary

Chapter IV focused on the development of a total information system within the context of a program of counselor education. The interaction between the methods and resources of the information system and the processes and goals of the program was stressed.

Also provided were suggestions for evaluation of the information system through context, input, process, and product evaluation. Each of the stages in evaluation corresponds to stages in the system proposed for development of the information system.

Thus, the project has come full circle with the evaluation being integrated within the original development design. As the system continues to develop, this integration should be maintained.
APPENDIX A

DATA BASE CONTENTS
CODING INSTRUCTIONS
AND TABLES
DATA BASE OUTLINE

I. Active Master File

A. Permanent Information from Application

1. Student name, SSN, birth info., and sex
   Card 1: col. 1-80

2. Race, Veteran Status, Undergrad. Info.
   Card 2: col. 16-39

3. Graduate studies other than in Guid. Dept. at O.S.U.
   Card 2: col. 40-58

B. Permanent Information from Data Sheets

1. Family History
   Card 3: col. 16-55

2. Expressed Interests
   Card 4: col. 16-76
   Card 5: col. 16-76
   Card 6: col. 16-33

3. BLANK CARD FOR INFO. TO BE ADDED LATER
   Card 7

C. Permanent Test Information

1. SVIB--Qtr. and Year taken, Interest Scales, Occupational Scales and Experimental Scales
   Card 8: col. 16-77
   Card 9: col. 16-78
   Card 10: col. 16-78
   Card 11: col. 16-69

2. EPPS--Qtr. and Year taken, Raw Scores and Percentiles
   Card 11: col. 70-80
   Card 12: col. 16-71

3. MBTI: Qtr. and Year taken, Code Type and Scores
   Card 12: col. 72-80
   Card 13: col. 16-27

4. OVIS--Scale Number, Scale Score, %ile, Rank, Stanine, and Scale Clarity
   Card 13: col. 28-78
   Card 14: col. 18-79
   Card 15: col. 16-79
   Card 16: col. 16-31

5. GRE--Raw Score and %ile
   Card 17: col. 16-29
II. Quarterly Update

A. Quarterly Update from Qtrly Update Sheets

1. Permanent Address and Phone Card A: col. 16-79
2. Current Address and Phone Card B: col. 16-79
3. Marital Status, Draft Status Card C: col. 16-56
   Children, and Current Emp.
4. Work History Card D: col. 16-59
5. BLANK CARDS FOR INFO. TO BE Card E: col. 16-59
   ADDED LATER Card F: col. 16-59
   6. BLANK CARDS FOR INFO. TO BE Card G: col. 16-59
      ADDED LATER Card H: col. 16-59
   7. Overall Points and Hours Credit Card I and J
      and Transferred Credit

B. Academic Information

1. Degree Working Toward Card K: col. 16
2. Grad. Test Sequence Completed Card K: col. 17
5. Qtr. of Transfer, Dismissal Card K: col. 68-70
   or Dropout
6. BLANK CARDS FOR INFO. TO BE Card L and M
   ADDED LATER
7. Overall Points and Hours Credit Card S
   and Transferred Credit
### III. Transcript of Grade Files from Grade Slips

1. **This Quarter**
   - Card N: col. 16-18
   - Card O: col. 17-18
   - Card P: col. 17-18
   - Card Q: col. 17-18
   - Card R: col. 17-18

2. **Probation**
   - Card N: col. 19

3. **Degree Pursued and Adviser**
   - Card N: col. 20-22

4. **Points and Hours Credit and Failed Information**
   - Card N: col. 23-32

5. **Courses Taken and Grades this Qtr.**
   - Card N: col. 33-64
   - Card O: col. 19-50
   - Card P: col. 19-50
   - Card Q: col. 19-50
   - Card R: col. 19-50
General Coding Instructions

1. If none of the entries in a table are appropriate for the information to be entered, add the information along with an appropriate code or abbreviation to the table.

2. If an asterisk appears after the column designation, make the entry right justified. All other entries are left justified.

3. If a social security number is not available for a student, assign him a nine-digit number that could not be the duplicate of a social security number (e.g. 000-00-0440). A master list of identifying social security numbers in ascending order will prevent the duplication of assigned numbers.

4. When coding information distinguish an alphabet "0" from a number "0" by marking the former as "Ø" on the coding sheet.

5. Be certain in coding that "I," "L" and "l" are clearly distinguished.
CARD 1

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;O1&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER (Including hyphens) (If SSN is not available assign a temporary number beginning with 000-00-0001)</td>
</tr>
<tr>
<td>Col. 16-23</td>
<td>Leave eight empty columns for alumni office number to be added when student graduates</td>
</tr>
<tr>
<td>Col. 24-53</td>
<td>NAME—Enter last name first, then first name, then middle name. Leave one blank between each name.</td>
</tr>
<tr>
<td>Col. 54</td>
<td>SEX—1=male; 2=female.</td>
</tr>
<tr>
<td>Col. 55-67</td>
<td>CITY OF BIRTH</td>
</tr>
<tr>
<td>Col. 68-69</td>
<td>STATE OF BIRTH—See Table 1 for abbreviations. Leave blank if not born in U.S.A.</td>
</tr>
<tr>
<td>Col. 70-72</td>
<td>COUNTRY OF BIRTH—See Table 2. Enter U.S.A. if United States.</td>
</tr>
<tr>
<td>Col. 73-80</td>
<td>DATE OF BIRTH—Use numbers for month, day, and year, and separate by hyphens (e.g. 11-30-43).</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;02&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16</td>
<td>RACE (See Table 3 for coding)</td>
</tr>
<tr>
<td>Col. 17</td>
<td>Veteran: Y=yes; N=no</td>
</tr>
<tr>
<td>Col. 18-22</td>
<td>G.P.A. FOR ALL PREVIOUS ACADEMIC WORK (Ex. 3.172)</td>
</tr>
<tr>
<td>Col. 23-25</td>
<td>UNDERGRADUATE DEGREE (Enter BA, BS, BIE, etc.)</td>
</tr>
<tr>
<td>Col. 26-28</td>
<td>UNDERGRADUATE MAJOR (See Table 4 for coding)</td>
</tr>
<tr>
<td>Col. 29-33</td>
<td>DATE OF UNDERGRADUATE DEGREE (Use month and year, ex. 06-67)</td>
</tr>
<tr>
<td>Col. 34-39</td>
<td>INSTITUTION--Enter institution where undergrad. degree obtained. (Use Table 5 for coding)</td>
</tr>
<tr>
<td>Col. 40</td>
<td>NUMBER OF ADVANCED DEGREES RECEIVED OTHER THAN THOSE FROM GUIDANCE DEPART. AT O.S.U.</td>
</tr>
<tr>
<td>Col. 41-43</td>
<td>LAST ADVANCED DEGREE OTHER THAN THOSE FROM GUIDANCE DEPARTMENT AT O.S.U. (enter MA, MS, MBA, etc.)</td>
</tr>
<tr>
<td>Col. 44-46</td>
<td>GRADUATE MAJOR--Enter the major for above degree received. (Use Table 4 for coding)</td>
</tr>
<tr>
<td>Col. 47</td>
<td>IF IN EDUCATION, INDICATE AREA (Use Table 6 for coding)</td>
</tr>
<tr>
<td>Col. 48-52</td>
<td>DATE OF LAST ADVANCED DEGREE (Use month and year, ex. 06-69)</td>
</tr>
<tr>
<td>Col. 53-58</td>
<td>INSTITUTION WHERE ADVANCED DEGREE RECEIVED (Use Table 5 for coding)</td>
</tr>
</tbody>
</table>
### CARD 3

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;03&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-17</td>
<td>FATHER'S AGE</td>
</tr>
<tr>
<td>Col. 18-19</td>
<td>FATHER'S AGE AT DEATH</td>
</tr>
<tr>
<td>Col. 20-21*</td>
<td>STUDENT'S AGE AT FATHER'S DEATH</td>
</tr>
<tr>
<td>Col. 22</td>
<td>FATHER'S EDUCATION LEVEL (See Table 7 for coding)</td>
</tr>
<tr>
<td>Col. 23-29</td>
<td>FATHER'S OCCUPATION (Use DOT coding ex., 621.789)</td>
</tr>
<tr>
<td>Col. 30-31</td>
<td>MOTHER'S AGE</td>
</tr>
<tr>
<td>Col. 32-33</td>
<td>MOTHER'S AGE AT DEATH</td>
</tr>
<tr>
<td>Col. 34-35*</td>
<td>STUDENT'S AGE AT MOTHER'S DEATH</td>
</tr>
<tr>
<td>Col. 36</td>
<td>MOTHER'S EDUCATIONAL LEVEL (See Table 7 for coding)</td>
</tr>
<tr>
<td>Col. 37-43</td>
<td>MOTHER'S OCCUPATION (Use DOT coding ex., 621.789)</td>
</tr>
<tr>
<td>Col. 44-45</td>
<td>PARENT'S PRESENT MARITAL STATUS (Use Table 8 for coding)</td>
</tr>
<tr>
<td>Col. 46-47*</td>
<td>IF PARENT'S DIVORCED, STUDENT'S AGE AT TIME</td>
</tr>
<tr>
<td>Col. 48-49*</td>
<td>NUMBER OF OLDER BROTHERS</td>
</tr>
<tr>
<td>Col. 50-51*</td>
<td>NUMBER OF YOUNGER BROTHERS</td>
</tr>
<tr>
<td>Col. 52-53*</td>
<td>NUMBER OF OLDER SISTERS</td>
</tr>
<tr>
<td>Col. 54-55*</td>
<td>NUMBER OF YOUNGER SISTERS</td>
</tr>
<tr>
<td>Field</td>
<td>Content</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;04&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-76</td>
<td>EXPRESSED INTERESTS (Code across allotting number of columns as given below:</td>
</tr>
<tr>
<td></td>
<td>2 columns--Number of interest</td>
</tr>
<tr>
<td></td>
<td>1 column--Intensity of interest</td>
</tr>
<tr>
<td></td>
<td>1 = Very strong</td>
</tr>
<tr>
<td></td>
<td>2 = Strong</td>
</tr>
<tr>
<td></td>
<td>3 = Moderate</td>
</tr>
<tr>
<td></td>
<td>4 = Mild</td>
</tr>
<tr>
<td></td>
<td>5 = None</td>
</tr>
<tr>
<td></td>
<td>2 columns--Number of years interest persisted</td>
</tr>
<tr>
<td></td>
<td>1 column--Active now: $Y$ = yes; $N$ = no</td>
</tr>
</tbody>
</table>
### CARD 5

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;05&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-76</td>
<td>EXPRESSED INTERESTS (cont.)</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;06&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-76</td>
<td>EXPRESSED INTERESTS (cont.)</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;08&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>Qtr. and YEAR SVIB TAKEN (See Table 11, ex., 171 for summer, 1971)</td>
</tr>
<tr>
<td>Col. 19-62*</td>
<td>SVIB-INTEREST SCALES</td>
</tr>
<tr>
<td>Col. 63-77*</td>
<td>SVIB-OCCUPATIONAL SCALES (Begin with left column and record scores moving from top to bottom. Then go to right column and do the same. Allow a three column field for each standard score to provide room for negative numbers. For one digit numbers code the tens column with an 0. Ex., &quot;9&quot; is coded &quot;09&quot;)</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;09&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-78*</td>
<td>SVIB-OCCUPATIONAL SCALES (cont.)</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;10&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-78</td>
<td>SVIB-OCCUPATIONAL SCALES (cont.)</td>
</tr>
</tbody>
</table>
### CARD 11

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;11&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-36</td>
<td>SVIB-OCCUPATIONAL SCALES (cont.)</td>
</tr>
</tbody>
</table>
| Col. 37-69* | SVIB-EXPERIMENTAL SCALES (Use the following sequence:  
Col. 37-38 AACH  
Col. 39-40 AR  
Col. 41-42 DIV  
Col. 43-44 MFII  
Col. 45-46 MO  
Col. 47-48 OIE  
Col. 49-50 OL  
Col. 51-52 SL  
Col. 53-55 TR  
Col. 56-58 UNP  
Col. 59-60 FC  
Col. 61-63 IF  
Col. 64-66 IP  
Col. 67-69 DP) |
| Col. 70-72 | QTR. AND YEAR EPPS TAKEN (Ex., 171 for summer, 1971) |
| Col. 73-80* | EPPS-RAW SCORES (Be certain to include "con" raw score) |
CARD 12

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;12&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-39*</td>
<td>EPFS-RAW SCORES (cont.)</td>
</tr>
<tr>
<td>Col. 40-71*</td>
<td>EPFS-FILE ADULT NORMS (Be certain to include &quot;con&quot; %ile)</td>
</tr>
<tr>
<td>Col. 72-74</td>
<td>QTR. AND YEAR MBTI TAKEN (Ex., 171 for summer, 1971)</td>
</tr>
<tr>
<td>Col. 75-76</td>
<td>MBTI CODE (If it is an &quot;I&quot; type, code the appropriate number in col. 75 leaving col. 76 blank. If it is an &quot;E&quot; type, code the appropriate name in col. 76, leaving col. 75 blank.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Col. 75</th>
<th>Col. 76</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTJ</td>
<td>1. ENFJ</td>
</tr>
<tr>
<td>2. INFJ</td>
<td>2. ENFJ</td>
</tr>
<tr>
<td>3. INFP</td>
<td>3. ENFP</td>
</tr>
<tr>
<td>4. INTP</td>
<td>4. ENTP</td>
</tr>
<tr>
<td>5. ISFP</td>
<td>5. ESFP</td>
</tr>
<tr>
<td>6. ISTJ</td>
<td>6. ESTJ</td>
</tr>
<tr>
<td>7. ISFJ</td>
<td>7. ESFJ</td>
</tr>
<tr>
<td>8. ISTP</td>
<td>8. ESTP</td>
</tr>
</tbody>
</table>

| Col. 77-80 | MBTI TYPE. Code in the letters, (ex., INFJ) |
CARD 13

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;13&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-27*</td>
<td>MBTI SCORES (Record assigned number for letter and the letter's accompanying preference score. Ex., E21 is coded as &quot;121&quot;)</td>
</tr>
<tr>
<td>Code</td>
<td></td>
</tr>
<tr>
<td>E = 1</td>
<td>I = 2</td>
</tr>
<tr>
<td>S = 3</td>
<td>N = 4</td>
</tr>
<tr>
<td>T = 5</td>
<td>F = 6</td>
</tr>
<tr>
<td>J = 7</td>
<td>P = 8</td>
</tr>
<tr>
<td>Col. 28-30</td>
<td>QTR. AND YEAR OVIS TAKEN</td>
</tr>
<tr>
<td>Col. 31-78*</td>
<td>OVIS SCORES (Code across the row of the score sheet allowing the following # of columns for each field:</td>
</tr>
<tr>
<td>Scale #--2 cols.</td>
<td></td>
</tr>
<tr>
<td>Scale Score-- 2 cols.</td>
<td></td>
</tr>
<tr>
<td>%ile Rank--2 cols.</td>
<td></td>
</tr>
<tr>
<td>Stanine--1 col.</td>
<td></td>
</tr>
<tr>
<td>Scale Clarity--1 col.</td>
<td></td>
</tr>
<tr>
<td>H = 1, F = 2, L = 3</td>
<td></td>
</tr>
<tr>
<td>For ex., 1st row</td>
<td></td>
</tr>
<tr>
<td>Score #--Col. 31-33</td>
<td></td>
</tr>
<tr>
<td>Scale Score--col. 34-35</td>
<td></td>
</tr>
<tr>
<td>%ile Rank--col. 36-37</td>
<td></td>
</tr>
<tr>
<td>Stanine--col. 38</td>
<td></td>
</tr>
<tr>
<td>Scale Clarity--col. 39)</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;14&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-79*</td>
<td>OVIS (cont.)</td>
</tr>
</tbody>
</table>

CARD 14
<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;15&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-79*</td>
<td>OVIS (cont.)</td>
</tr>
</tbody>
</table>
**CARD 16**

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;16&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-31*</td>
<td>OVIS (cont.)</td>
</tr>
</tbody>
</table>
## CARD 17

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;17&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-20</td>
<td>DATE GRE TAKEN. Use numbers for month and year and separate by hyphens. (ex., February, 1968 is coded &quot;02-68&quot;)</td>
</tr>
<tr>
<td>Col. 21-23*</td>
<td>GRE VERBAL RAW SCORE</td>
</tr>
<tr>
<td>Col. 24-26*</td>
<td>GRE VERBAL #ILE</td>
</tr>
<tr>
<td>Col. 27-29*</td>
<td>GRE QUANT. RAW SCORE</td>
</tr>
<tr>
<td>Col. 30-32*</td>
<td>GRE QUANT. #ILE</td>
</tr>
<tr>
<td>Col. 33</td>
<td>AREA OF ADVANCED TEST ON GRE (Enter &quot;E&quot; for Education, &quot;P&quot; for Psychology)</td>
</tr>
<tr>
<td>Col. 34-36*</td>
<td>GRE ADVANCED RAW SCORE</td>
</tr>
<tr>
<td>Col. 37-39*</td>
<td>GRE #ILE</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;OA&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file, $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-40</td>
<td>PERMANENT STREET ADDRESS—Leave one blank between natural demarcations (e.g. between street name and house, number, etc. See Table 9 for address abbreviations)</td>
</tr>
<tr>
<td>Col. 41-47</td>
<td>PERMANENT APARTMENT OR ROOM NUMBER (Ex., Apt. 17 or Rm 1233)</td>
</tr>
<tr>
<td>Col. 48-61</td>
<td>PERMANENT CITY</td>
</tr>
<tr>
<td>Col. 62-63</td>
<td>STATE (See Table 1)</td>
</tr>
<tr>
<td>Col. 64-68</td>
<td>PERMANENT ZIP CODE</td>
</tr>
<tr>
<td>Col. 69-71</td>
<td>PERMANENT COUNTRY (See Table 2. Leave blank if U.S.A.)</td>
</tr>
<tr>
<td>Col. 72-79</td>
<td>PERMANENT PHONE NUMBER</td>
</tr>
</tbody>
</table>
**CARD B**

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OB&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-40</td>
<td>CURRENT STREET ADDRESS--Leave one blank between natural demarcations (e.g. between street name and house number, etc. See Table 9 for address abbreviations)</td>
</tr>
<tr>
<td>Col. 41-47</td>
<td>CURRENT APARTMENT OR ROOM NUMBER (Ex., Apt 17 or Rm 1234)</td>
</tr>
<tr>
<td>Col. 48-61</td>
<td>CURRENT CITY</td>
</tr>
<tr>
<td>Col. 62-63</td>
<td>STATE (See Table 1)</td>
</tr>
<tr>
<td>Col. 64-68</td>
<td>CURRENT ZIP CODE</td>
</tr>
<tr>
<td>Col. 69-76</td>
<td>CURRENT PHONE NUMBER</td>
</tr>
</tbody>
</table>
### CARD C

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OC&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-17</td>
<td>STUDENT'S MARITAL STATUS (See Table 8 for coding)</td>
</tr>
<tr>
<td>Col. 18-19</td>
<td>AGE AT BEGINNING OF CURRENT MARITAL STATUS</td>
</tr>
<tr>
<td>Col. 20-21</td>
<td>PREVIOUS MARITAL STATUS, IF ANY. (for ex., a person currently remarried may have previously been divorced or widowed. See Table 8 for coding)</td>
</tr>
<tr>
<td>Col. 22-23</td>
<td>AGE AT BEGINNING OF PREVIOUS MARITAL STATUS</td>
</tr>
<tr>
<td>Col. 24-25*</td>
<td>NUMBER OF CHILDREN</td>
</tr>
<tr>
<td>Col. 26-32</td>
<td>SPOUSE'S CURRENT OCCUPATION (Use 6-digit DOT code, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 33-34</td>
<td>FULL OR PART-TIME ($F$=Full-time; $P$=Part-time)</td>
</tr>
<tr>
<td>Col. 35-38</td>
<td>EMPLOYED SINCE WHAT DATE (Ex., for December, 1970 code &quot;1270&quot; See Table 11)</td>
</tr>
<tr>
<td>Col. 39-53</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 54-63</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 64-65</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
<tr>
<td>Col. 66</td>
<td>SPOUSE'S EDUCATION (See Table 7 for coding)</td>
</tr>
<tr>
<td>Col. 67-68</td>
<td>AGE OF SPOUSE</td>
</tr>
<tr>
<td>Col. 69-70</td>
<td>AGE OF SPOUSE AT MARRIAGE</td>
</tr>
</tbody>
</table>
### CARD D

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OD&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-22</td>
<td>FIRST JOB HELD (Use DOT classification, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>FULL OR PART-TIME (F=Full-time; P=Part-time)</td>
</tr>
<tr>
<td>Col. 24-32</td>
<td>MONTH AND YEARS EMPLOYED (ex., December 1969 to April, 1971 is coded &quot;1269-0471&quot;)</td>
</tr>
<tr>
<td>Col. 33-47</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 48-57</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 58-59</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
</tbody>
</table>
### CARD E

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OE&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-22</td>
<td>SECOND JOB HELD (Use DOT classification, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>FULL OR PART-TIME (F=Full-time; P=Part-time)</td>
</tr>
<tr>
<td>Col. 24-32</td>
<td>MONTH AND YEARS EMPLOYED (ex., December, 1969 to April, 1971 is coded &quot;1269-0471&quot;)</td>
</tr>
<tr>
<td>Col. 33-47</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 48-57</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 58-59</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
</tbody>
</table>
## CARD F

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OF&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-22</td>
<td>THIRD JOB HELD (Use DOT classification, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>FULL OR PART-TIME (F=Full-time; P=Part-time)</td>
</tr>
<tr>
<td>Col. 24-32</td>
<td>MONTH AND YEARS EMPLOYED (Ex., December, 1969 to April 1971 is coded &quot;1269-0471&quot;)</td>
</tr>
<tr>
<td>Col. 33-47</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 48-57</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 58-59</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
</tbody>
</table>
CARD G

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OG&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-22</td>
<td>FOURTH JOB HELD (Use DOT classification, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>FULL OR PART TIME (F=Full-time; P=Part-time)</td>
</tr>
<tr>
<td>Col. 24-32</td>
<td>MONTH AND YEARS EMPLOYED (ex., December, 1969 to April, 1971 is coded &quot;1269-0471&quot;)</td>
</tr>
<tr>
<td>Col. 33-47</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 48-57</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 58-59</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;OH&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-22</td>
<td>FIFTH JOB HELD (Use DOT classification, ex., 091.228)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>FULL OR PART-TIME (F=Full-time; P=Part-time)</td>
</tr>
<tr>
<td>Col. 24-32</td>
<td>MONTH AND YEARS EMPLOYED (Ex., December, 1969 to April, 1971 is coded &quot;1269-0471&quot;)</td>
</tr>
<tr>
<td>Col. 33-47</td>
<td>EMPLOYER</td>
</tr>
<tr>
<td>Col. 48-57</td>
<td>CITY WHERE EMPLOYED</td>
</tr>
<tr>
<td>Col. 58-59</td>
<td>STATE WHERE EMPLOYED (See Table 1 for coding)</td>
</tr>
</tbody>
</table>
**CARD K**

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 1-2</td>
<td>&quot;OK&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16</td>
<td>DEGREE WORKING TOWARD (1=MA, 2=Ph.D.)</td>
</tr>
<tr>
<td>Col. 17</td>
<td>GRAD. TEST SEQUENCE COMPLETED (Enter if completed)</td>
</tr>
<tr>
<td>Col. 18-19</td>
<td>ADVISER (See Table 10) for MA</td>
</tr>
<tr>
<td>Col. 20-22</td>
<td>IF MA, QTR AND YEAR ADMITTED (Table 11)</td>
</tr>
<tr>
<td>Col. 23</td>
<td>IF MA, CODE PLAN A OR PLAN B (A or B)</td>
</tr>
<tr>
<td>Col. 24-26</td>
<td>IF MA PLAN A, QUARTER AND YEAR OF DEFENSE OF THESIS (Table 11)</td>
</tr>
<tr>
<td>Col. 27-29</td>
<td>IF MA PLAN B, QUARTER AND YEAR OF EXAM PASSED (Table 11)</td>
</tr>
<tr>
<td>Col. 30-32</td>
<td>FOR MA, QUARTER AND YEAR GRADUATED (Table 11)</td>
</tr>
<tr>
<td>Col. 33-35</td>
<td>IF Ph.D., QUARTER AND YEAR ADMITTED (Table 11)</td>
</tr>
<tr>
<td>Col. 36-37</td>
<td>FOR Ph.D., ADVISER (See Table 10)</td>
</tr>
<tr>
<td>Col. 38-40</td>
<td>QUARTER AND YEAR Ph.D. PROGRAM FILED (Table 11)</td>
</tr>
<tr>
<td>Col. 41-43</td>
<td>RELATED AREA (See Table 4)</td>
</tr>
<tr>
<td>Col. 44</td>
<td>IF IN EDUCATION AREA (See Table 6)</td>
</tr>
<tr>
<td>Col. 45-47</td>
<td>WRITTEN GENERALS PASSED - QTR. AND YEAR (See Table 11)</td>
</tr>
<tr>
<td>Col. 48-50</td>
<td>ORAL GENERALS PASSED - QTR AND YEAR (See Table 11)</td>
</tr>
<tr>
<td>Col. 51-55</td>
<td>GUIDANCE FACULTY ON COMMITTEE (First two letters are initials of chairman; do not separate initials. Use Table 10)</td>
</tr>
</tbody>
</table>
**CARD K (cont.)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Col. 56-58</td>
<td>QUARTER AND YEAR PASSED DISSERTATION DEFENSE</td>
</tr>
<tr>
<td>Col. 59-64</td>
<td>GUIDANCE FACULTY ON COMMITTEE (Same format as used with general committee)</td>
</tr>
<tr>
<td>Col. 65-67</td>
<td>QUARTER AND YEAR GRADUATED-Ph.D. (See Table 11)</td>
</tr>
<tr>
<td>Col. 68-70</td>
<td>QTR AND YEAR OF TRANSFER, DISMISSAL OR DROPOUT (See Table 11)</td>
</tr>
<tr>
<td>CARD N</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td></td>
</tr>
<tr>
<td><strong>Field</strong></td>
<td><strong>Contents</strong></td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;ON&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>QUARTER AND YEAR ENROLLED (See Table 11)</td>
</tr>
<tr>
<td>Col. 19</td>
<td>ENTER P IF ON PROBATION</td>
</tr>
<tr>
<td>Col. 20</td>
<td>DEGREE PURSUED: $M = MA; P = Ph.D.$</td>
</tr>
<tr>
<td>Col. 21-22</td>
<td>ADVISER (See Table 10)</td>
</tr>
<tr>
<td>Col. 23-24*</td>
<td>NUMBER OF COURSES TAKEN</td>
</tr>
<tr>
<td>Col. 25-26*</td>
<td>HOURS CREDIT RECEIVED</td>
</tr>
<tr>
<td>Col. 27-28*</td>
<td>HOURS CREDIT TAKEN FOR GRADE</td>
</tr>
<tr>
<td>Col. 29-30*</td>
<td>HOURS FAILED</td>
</tr>
<tr>
<td>Col. 31-32*</td>
<td>POINTS THIS QUARTER</td>
</tr>
<tr>
<td>Col. 33-50</td>
<td>FIRST COURSE DESCRIPTION (Obtained from section 3 of grade slips)</td>
</tr>
<tr>
<td>Col. 51-53</td>
<td>FIRST COURSE DEPARTMENT (See Table 4 for code)</td>
</tr>
<tr>
<td>Col. 54-59</td>
<td>FIRST COURSE NUMBER (Ex., 693.34)</td>
</tr>
<tr>
<td>Col. 60-61</td>
<td>FIRST COURSE CREDIT (Enter number of hours for credit, &quot;0&quot; for audit)</td>
</tr>
<tr>
<td>Col. 62</td>
<td>FIRST COURSE GRADE (Enter $A, B, C, D, E, S, U,$ or $I$)</td>
</tr>
<tr>
<td>Col. 63-64*</td>
<td>FIRST COURSE POINTS</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;00&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>QUARTER AND YEAR ENROLLED</td>
</tr>
<tr>
<td>Col. 19-36</td>
<td>SECOND COURSE DESCRIPTION</td>
</tr>
<tr>
<td>Col. 37-39</td>
<td>SECOND COURSE DEPARTMENT</td>
</tr>
<tr>
<td>Col. 40-45</td>
<td>SECOND COURSE NUMBER</td>
</tr>
<tr>
<td>Col. 46-47*</td>
<td>SECOND COURSE CREDIT</td>
</tr>
<tr>
<td>Col. 48</td>
<td>SECOND COURSE GRADE</td>
</tr>
<tr>
<td>Col. 49-50*</td>
<td>SECOND COURSE POINTS</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;OP&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>QUARTER AND YEAR ENROLLED</td>
</tr>
<tr>
<td>Col. 19-36</td>
<td>THIRD COURSE DESCRIPTION</td>
</tr>
<tr>
<td>Col. 37-39</td>
<td>THIRD COURSE DEPARTMENT</td>
</tr>
<tr>
<td>Col. 40-45</td>
<td>THIRD COURSE NUMBER</td>
</tr>
<tr>
<td>Col. 46-47*</td>
<td>THIRD COURSE CREDIT</td>
</tr>
<tr>
<td>Col. 48</td>
<td>THIRD COURSE GRADE</td>
</tr>
<tr>
<td>Col. 49-50*</td>
<td>THIRD COURSE POINTS</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;QQ&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>QUARTER AND YEAR ENROLLED</td>
</tr>
<tr>
<td>Col. 19-36</td>
<td>FOURTH COURSE DESCRIPTION</td>
</tr>
<tr>
<td>Col. 37-39</td>
<td>FOURTH COURSE DEPARTMENT</td>
</tr>
<tr>
<td>Col. 40-45</td>
<td>FOURTH COURSE NUMBER</td>
</tr>
<tr>
<td>Col. 46-47*</td>
<td>FOURTH COURSE CREDIT</td>
</tr>
<tr>
<td>Col. 48</td>
<td>FOURTH COURSE GRADE</td>
</tr>
<tr>
<td>Col. 49-50*</td>
<td>FOURTH COURSE POINTS</td>
</tr>
<tr>
<td>Field</td>
<td>Contents</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Col. 1-2</td>
<td>&quot;OR&quot;</td>
</tr>
<tr>
<td>Col. 3-4</td>
<td>$A$ for active file; $I$ for inactive file</td>
</tr>
<tr>
<td>Col. 5-15</td>
<td>SOCIAL SECURITY NUMBER</td>
</tr>
<tr>
<td>Col. 16-18</td>
<td>QUARTER AND YEAR ENROLLED</td>
</tr>
<tr>
<td>Col. 19-36</td>
<td>FIFTH COURSE DESCRIPTION</td>
</tr>
<tr>
<td>Col. 37-39</td>
<td>FIFTH COURSE DEPARTMENT</td>
</tr>
<tr>
<td>Col. 40-45</td>
<td>FIFTH COURSE NUMBER</td>
</tr>
<tr>
<td>Col. 46-47*</td>
<td>FIFTH COURSE CREDIT</td>
</tr>
<tr>
<td>Col. 48</td>
<td>FIFTH COURSE GRADE</td>
</tr>
<tr>
<td>Col. 49-50*</td>
<td>FIFTH COURSE POINTS</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1: Abbreviations of States
*Table 2: Code for Country
Table 3: Code for Race
*Table 4: Code for Departments
*Table 5: Code for Colleges and Universities
Table 6: Code for Areas in Education
Table 7: Code for Education Level
Table 8: Code for Marital Status
*Table 9: Address Abbreviations
Table 10: Code for Adviser
Table 11: Code for Quarters and Months

* Tables marked with an asterisk will be found in the Office of Counselor Education
TABLE 1

ABBREVIATIONS OF STATES

<table>
<thead>
<tr>
<th>State</th>
<th>Abbreviation</th>
<th>State</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>AL</td>
<td>Missouri</td>
<td>MO</td>
</tr>
<tr>
<td>Alaska</td>
<td>AK</td>
<td>Montana</td>
<td>MT</td>
</tr>
<tr>
<td>Arizona</td>
<td>AZ</td>
<td>Nebraska</td>
<td>NB</td>
</tr>
<tr>
<td>Arkansas</td>
<td>AR</td>
<td>Nevada</td>
<td>NV</td>
</tr>
<tr>
<td>California</td>
<td>CA</td>
<td>New Hampshire</td>
<td>NH</td>
</tr>
<tr>
<td>Colorado</td>
<td>CO</td>
<td>New Jersey</td>
<td>NJ</td>
</tr>
<tr>
<td>Connecticut</td>
<td>CT</td>
<td>New Mexico</td>
<td>NM</td>
</tr>
<tr>
<td>Delaware</td>
<td>DE</td>
<td>New York</td>
<td>NY</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>DC</td>
<td>North Carolina</td>
<td>NC</td>
</tr>
<tr>
<td>Florida</td>
<td>FL</td>
<td>North Dakota</td>
<td>ND</td>
</tr>
<tr>
<td>Georgia</td>
<td>GA</td>
<td>Ohio</td>
<td>OH</td>
</tr>
<tr>
<td>Hawaii</td>
<td>HI</td>
<td>Oklahoma</td>
<td>OK</td>
</tr>
<tr>
<td>Idaho</td>
<td>ID</td>
<td>Oregon</td>
<td>OR</td>
</tr>
<tr>
<td>Illinois</td>
<td>IL</td>
<td>Pennsylvania</td>
<td>PA</td>
</tr>
<tr>
<td>Indiana</td>
<td>IN</td>
<td>Rhode Island</td>
<td>RI</td>
</tr>
<tr>
<td>Iowa</td>
<td>IA</td>
<td>South Carolina</td>
<td>SC</td>
</tr>
<tr>
<td>Kansas</td>
<td>KS</td>
<td>South Dakota</td>
<td>SD</td>
</tr>
<tr>
<td>Kentucky</td>
<td>KY</td>
<td>Tennessee</td>
<td>TN</td>
</tr>
<tr>
<td>Louisiana</td>
<td>LA</td>
<td>Texas</td>
<td>TX</td>
</tr>
<tr>
<td>Maine</td>
<td>ME</td>
<td>Utah</td>
<td>UT</td>
</tr>
<tr>
<td>Maryland</td>
<td>MD</td>
<td>Vermont</td>
<td>VT</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>MA</td>
<td>Virginia</td>
<td>VA</td>
</tr>
<tr>
<td>Michigan</td>
<td>MI</td>
<td>Washington</td>
<td>WA</td>
</tr>
<tr>
<td>Minnesota</td>
<td>MN</td>
<td>West Virginia</td>
<td>WV</td>
</tr>
<tr>
<td>Mississippi</td>
<td>MS</td>
<td>Wisconsin</td>
<td>WI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wyoming</td>
<td>WY</td>
</tr>
</tbody>
</table>
TABLE 3

CODE FOR RACE

<table>
<thead>
<tr>
<th>Code</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>1N</td>
<td>Negro</td>
</tr>
<tr>
<td>20</td>
<td>Oriental</td>
</tr>
<tr>
<td>3S</td>
<td>Spanish</td>
</tr>
<tr>
<td>4I</td>
<td>Indian</td>
</tr>
<tr>
<td>5C</td>
<td>Caucasian</td>
</tr>
<tr>
<td>6D</td>
<td>Don't Know</td>
</tr>
</tbody>
</table>
TABLE 6

CODE FOR AREAS IN EDUCATION

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Curriculum and Foundations</td>
</tr>
<tr>
<td>B</td>
<td>Early and Middle Childhood</td>
</tr>
<tr>
<td>C</td>
<td>Educational Administration</td>
</tr>
<tr>
<td>D</td>
<td>Educational Development</td>
</tr>
<tr>
<td>E</td>
<td>Exceptional Children</td>
</tr>
<tr>
<td>F</td>
<td>English Education</td>
</tr>
<tr>
<td>G</td>
<td>Foreign Language Education</td>
</tr>
<tr>
<td>H</td>
<td>Social Studies Education</td>
</tr>
<tr>
<td>I</td>
<td>Speech Education</td>
</tr>
<tr>
<td>J</td>
<td>Industrial Technology Education</td>
</tr>
<tr>
<td>K</td>
<td>Science and Mathematics Education</td>
</tr>
<tr>
<td>L</td>
<td>Adult Education</td>
</tr>
<tr>
<td>M</td>
<td>Guidance</td>
</tr>
<tr>
<td>N</td>
<td>Student Personnel Work</td>
</tr>
<tr>
<td>O</td>
<td>Business and Office Education</td>
</tr>
<tr>
<td>P</td>
<td>Distributive Education</td>
</tr>
<tr>
<td>Q</td>
<td>Trade and Industrial Education</td>
</tr>
<tr>
<td>R</td>
<td>Art Education</td>
</tr>
<tr>
<td>S</td>
<td>Music Education</td>
</tr>
<tr>
<td>T</td>
<td>Reading Education</td>
</tr>
<tr>
<td>U</td>
<td>Agricultural Education</td>
</tr>
<tr>
<td>V</td>
<td>Educational Psychology</td>
</tr>
<tr>
<td>W</td>
<td>Home Economics Education</td>
</tr>
<tr>
<td>X</td>
<td>Physical Education</td>
</tr>
</tbody>
</table>
### TABLE 7

**CODE FOR EDUCATION LEVEL**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grammar School</td>
</tr>
<tr>
<td>2</td>
<td>High School</td>
</tr>
<tr>
<td>3</td>
<td>Two Years of College</td>
</tr>
<tr>
<td>4</td>
<td>College Graduate</td>
</tr>
<tr>
<td>5</td>
<td>M.A. or Equivalent</td>
</tr>
<tr>
<td>6</td>
<td>Ph.D. or Equivalent</td>
</tr>
<tr>
<td>7</td>
<td>Professional Degree (e.g., M.D. or D.D.S.)</td>
</tr>
<tr>
<td>Code</td>
<td>Marital Status</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
</tr>
<tr>
<td>1M</td>
<td>Married</td>
</tr>
<tr>
<td>2D</td>
<td>Divorced</td>
</tr>
<tr>
<td>3S</td>
<td>Separated</td>
</tr>
<tr>
<td>4R</td>
<td>Remarried</td>
</tr>
<tr>
<td>5W</td>
<td>Widowed</td>
</tr>
<tr>
<td>6I</td>
<td>Single</td>
</tr>
<tr>
<td>Code</td>
<td>Advisor</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>GK</td>
<td>Gratton Kemp</td>
</tr>
<tr>
<td>RK</td>
<td>Richard Kelsey</td>
</tr>
<tr>
<td>HP</td>
<td>Herman Peters</td>
</tr>
<tr>
<td>JQ</td>
<td>Joseph Quaranta</td>
</tr>
<tr>
<td>HR</td>
<td>Harold Reynard</td>
</tr>
<tr>
<td>AR</td>
<td>Anthony Riccio</td>
</tr>
<tr>
<td>DT</td>
<td>Donald Tosi</td>
</tr>
<tr>
<td>JW</td>
<td>James Wigtil</td>
</tr>
<tr>
<td>Months</td>
<td>Quarters</td>
</tr>
<tr>
<td>----------</td>
<td>------------</td>
</tr>
<tr>
<td>01 -- January</td>
<td>1 -- Summer</td>
</tr>
<tr>
<td>02 -- February</td>
<td>2 -- Autumn</td>
</tr>
<tr>
<td>03 -- March</td>
<td>3 -- Winter</td>
</tr>
<tr>
<td>04 -- April</td>
<td>4 -- Spring</td>
</tr>
<tr>
<td>05 -- May</td>
<td></td>
</tr>
<tr>
<td>06 -- June</td>
<td></td>
</tr>
<tr>
<td>07 -- July</td>
<td></td>
</tr>
<tr>
<td>08 -- August</td>
<td></td>
</tr>
<tr>
<td>09 -- September</td>
<td></td>
</tr>
<tr>
<td>10 -- October</td>
<td></td>
</tr>
<tr>
<td>11 -- November</td>
<td></td>
</tr>
<tr>
<td>12 -- December</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

OPERATING MANUAL
The Operating Manual is a set of instructions that must be followed so that the information system can function successfully. As improvements are made in the system, the appropriate changes must be made in the Operating Manual. The outline of this report is as follows:

- Description of the Data Base Maintenance Program
- Features of the Data Base Maintenance Program
- Instructions for Data Base Upkeep

The discussion of the features of the Data Base Maintenance Program and the program itself are solely the work of Mr. Richard O. Shafer.
Description of the Data Base Maintenance Program

The data base maintenance program, entitled MAINTAIN, performs two basic functions: (1) creating a data base and (2) maintaining the base once it is in storage.

Both functions are performed on a temporary disk data set even though the information is stored on cards and tapes. While each uses the same object deck (MAINTAIN), they operate somewhat differently.

The creation of the data-base has three steps:

Card-to-Disk
Creation
Disk-to-Tape

The first and last are accomplished through support programs always up on the system. The second step is accomplished through the Object Program Deck (MAINTAIN) and the Create Commands.

The maintenance of the data base also has three steps:

Tape-to-Disk
Maintenance
Sort from Disk-to-Tape

The movement from tape-to-disk and back to tape is accomplished through support programs always up on the system. The second step is carried out through the Object Program Deck (MAINTAIN) and one or more of the seven maintenance commands. The sort in the last step is another support program that is run whenever the maintenance program is used. It sorts the files first by social security numbers
and within files by the number of letters of each card. Since neither Active nor Inactive Files are sorted alphabetically, the department should keep an updated sequential list of social security numbers followed by the appropriate names.

JCL cards needed for creation and for maintenance are included on pp. 179-183. All necessary control cards and data cards must always be submitted with the JCL deck.

The maintenance program allows for four sequential files:

- ACTIVE1--Cards 1-17 of the Active File
- ACTIVE2--Cards A-M, S of the Active File
- ACTIVE3--Cards N-R of the Active File
- INACTIVE--The Inactive File

Before the system can be created the tape will have to be slotted at Baker Systems Engineering. This is done by taking the tape to Room 812 and filling out a "Tape Reserve Card." Each time the tape is used a "Tape Call Card" must be completed.

Until the information can be stored permanently on disk, all cards should be retained as a back-up system. This is to prevent losing data if the tape should inadvertently be erased.
Features of the Data Base Maintenance System

The program has eight basic control functions to act upon the sequential files:

- **CREATE, ADD, UPDATE, DELETE, SKIP, PTPNCH, RECREATE, and END.**

The **CREATE, ADD, and UPDATE** functions accept data cards from the input stream to perform their functions. Data to be created, added, or updated should follow the above control cards and need only be delimited by another control card, a **END** card, or a "\*\*\*".

<table>
<thead>
<tr>
<th><strong>CREATE</strong></th>
<th>(File name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>col. 1-10</td>
<td>col. 12-19</td>
</tr>
</tbody>
</table>

The **CREATE** function should only be used to create a file from scratch. Cards follow the function control card.

<table>
<thead>
<tr>
<th><strong>ADD</strong></th>
<th>(File name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>col. 1-10</td>
<td>col. 12-19</td>
</tr>
</tbody>
</table>

The **ADD** function adds the cards-following to the end of the file.

<table>
<thead>
<tr>
<th><strong>UPDATE</strong></th>
<th>(file name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>col. 1-10</td>
<td>col. 12-19</td>
</tr>
</tbody>
</table>

The cards to be updated should follow behind the **UPDATE** control card and be in the same sequence as the cards to be updated in the file. The update function expects only one each of type 1-17 and A-M, S cards per given student, yet is fully capable of updating the multiple N, O, P, Q and R cards for the same student. The update function matches the input-stream card with its respective "old-master" student card on disk. The "old" card is replaced by the new one.

The **DELETE, SKIP, PTPNCH, RECREATE, and END** control cards are single-function. They are located by themselves and perform their functions with specifications in the control fields.
The **DELETE function flags all records with the student number given within the specified file with asterisks in columns 5-13. Therefore, these records should be punched prior to being deleted as they are effectively illegal. Printing of these flagged records after deletion is impossible.

The **PTPNCH control function prints and/or punches a single file or all of the specified file. As usual, the file name must be provided. If a student's number is provided, only those records will be printed and/or punched. If column 33 is left blank, cards will also be punched from the file. Any non-blank character will suppress card punching.

The **SKIP control function merely controls page skipping of MAINTAIN's output. The primary purpose of **SKIP would be to place on separate pages of output a particular listing. In this manner one might use the **PTPNCH function to list a student's record on a single page. This page-control function thus gives the maintenance utility function a somewhat limited report capacity.

The **RECREATE control function compresses flagged (deleted) records from a given file. The function merely re-copies itself excluding earlier flagged records. This function should be used perhaps once a quarter to save excessive space dedicated to deleted records. Not using **RECREATE following each deletion allows a mistake to be made and still have the capability of recovering flagged records. A simple **PTPNCH function with a student number of "**********" will suffice to print and/or punch the deleted records.
The \texttt{***END} function ends the program and all further control functions. This function may be excluded and not effect normal ending of the program when the last data card or control function is read. This function will not be printed on the listing.

The appropriate control cards and data cards mentioned above must be submitted with the JCL deck for either creation or maintenance printed on the next page.

\textbf{Instructions for Data Base Upkeep}

This section contains the suggested procedure for maintaining the data base. The times given are based on when the information will be available. Adding the non-test personal information has not been provided for in this scheme. It can be included when the data sheet has received final approval. These instructions are an expansion of Figure 1, "Systems Flow Chart for Operations Occurring at Fixed Times," and Figure 2, "Systems Flow Chart for Operations Occurring at Random Times."

There are two manual steps not included in the upkeep design. When the system is on permanent disk storage, these manual steps will be eliminated.

Four manual files should be established.

a. An alphabetical list by last name of all active students with their social security number and degree pursued.

b. A numerical list in ascending order of the social security numbers of all active students with their names and degree sought.
Data Base Creation

// (4000, 1000), CLASS=E, TYPE=SETI
// LINK EXEC PGM=IEPL, TIME=(30)
// SYSLR DSN=SYSLFORTL1, DISP=SHR
// SYSLR DSN=SYS1.L, UNIT=SYSL2, SPACE=(CYL, (1,1,1)),
// DCB=(RECF= , LKSIZE=3072), DISP=(NEW, PASS)
// SYSLR DSN=SYS1.FOR, UNIT=SYSL1, SPACE=(CYL, (1,1,1))
// SYSLR DSN=SYS1.L, SPACE=(CYL, (2,1))

OBJECT PROGRAM DECK (MAINTAIN)

// G1 EXEC PGM=IEPL, DISP=SYSLFORTL1, TIME=2
// SYSLR DSN=SYSLFORTL1, DISP=SHR
// PCH DD SYSLFORTL1
// SYSLR DSN=SYS1.L, UNIT=SYSL2, SPACE=(CYL, (3,3)), DCB=(RECF= , LKSIZE=600)
// SPACE=(CYL, (10,5)), DISP=(NEW, PASS),
// SPACE=(CYL, (10,5))
// SYSLR DSN=SYS1.FOR, UNIT=SYSL1, SPACE=(CYL, (1,1,1)), DCB=( , TE=POD)
// SPACE=(CYL, (1,1,1)), DCB=( , TE=POD)
// SPACE=(CYL, (10,5))
// SYSLR DSN=SYS1.L, UNIT=SYSL2, SPACE=(CYL, (10,5)), DCB=( , TE=POD)
// SPACE=(CYL, (10,5))
// SYSLR DSN=SYS1.FOR, UNIT=SYSL1, SPACE=(CYL, (1,1,1)), DCB=( , TE=POD)
// SPACE=(CYL, (10,5))
// SYSLR DSN=SYS1.L, UNIT=SYSL2, SPACE=(CYL, (10,5)), DCB=( , TE=POD)
// SPACE=(CYL, (10,5))

$**CREATE ACTIVE1
$**CREATE ACTIVE2
$**CREATE ACTIVE3
$**CREATE INACTIVE

DATA CARDS FOR EACH FILE
FOLLOW CONTROL FUNCTIONS
/*
//COPY EXEC PG=UPDATE,TIME=(2,30)
//STEP1 DD NS=PGA950,LOAD=NO,DISP=SHR
//SYSOUT=A
//DD1 DD NS=ACTIVE1,DISP=(OLD,DELETE)
//DD2 DD NS=ACTIVE2,DISP=(OLD,DELETE)
//DD3 DD NS=ACTIVE3,DISP=(OLD,DELETE)
//DD4 DD NS=ACTIVE4,DISP=(OLD,DELETE)
//TP1 DD NS=A1,UNIT=2400,LABEL=(1,SL),DISP=(NEW,PASS),
// VCL=(PRIVATE,PETAIN,SUP=
// T2 DD NS=A2,LABEL=(2,SL),DISP=(NEW,PASS),
// T3 DD NS=A3,LABEL=(3,SL),DISP=(NEW,PASS),
// T4 DD NS=I, LABEL=(4,SL),DISP=(NEW,KEEP),
// VCL=REF=*,TP1,DCR=*,TP1
//SYSIN *
* COPY F10 =D1,T0=TP1,USE0
* COPY F20 =D2,T0=TP2,USE0
* COPY F30 =D3,T0=TP3,USE0
* COPY F40 =D4,T0=TP4,USE0
*/
All Maintenance and Sorting

```
// (5000,1000), CLASS=II, TYP=ON=SETUP
// TPTOK EXEC PGF=UPDATE, TIME=2
// STEPLIB DD DS=FGA950, LOA=PLC, DISP=SHR
// SYSPRINT DD SYSPOUT=A
// TP1 DD DS=A1, UNIT=2400, LABEL=(1,SL), DISP=(ULD,PASS),
// VOL=(PRIVATE,RDTL=,SER=_______)
// TP2 DD DS=A2, LABEL=(2,SL), DISP=(ULD,PASS), VOL=REF=*, TP1
// TP3 DD DS=A3, LABEL=(3,SL), DISP=(ULD,PASS), VOL=REF=*, TP1
// TP4 DD DS=A4, LABEL=(4,SL), DISP=(ULD,PASS), VOL=REF=*, TP1
// D01 DD DS=ACTIVE1, UNIT=SYSDA, DISP=(PUR, PASS), SPACE=(CYL, (10, 5)),
// DCR=(RECF=FR, RRECL=80), BSIZ=500
// D02 DD DS=ACTIVE2, UNIT=SYSDA, DISP=(PUR, PASS), SPACE=(CYL, (10, 5)),
// DCR=*, D01
// D03 DD DS=ACTIVE3, UNIT=SYSDA, DISP=(PUR, PASS), SPACE=(CYL, (10, 5)),
// DCR=*, D01
// D04 DD DS=ACTIVE4, UNIT=SYSDA, DISP=(PUR, PASS), SPACE=(CYL, (10, 5)),
// DCR=*, D01
// SYSD DD *
// COPY FROM=TP1, TO=D01, NOSRE
// COPY FROM=TP2, TO=D02, NOSRE
// COPY FROM=TP3, TO=D03, NOSRE
// COPY FROM=TP4, TO=D04, NOSRE
// ENDUP
```
All Maintenance and Sorting (cont.)

/*
    // LINK EXEC PG = FLSL, TLCE = (1, 30)
    // SYSLIN DD, DISV = SYSL, FMTL = SYSL, DISP = SHR
    // SYSLIN DD, DISV = SYSL, FMTL = SYSL, SPACE = CYL, (1, 1, 1)
    // DCB = (DECF, =1, HLSIZE = 3072), DIS = (PM, PASS)
    // SYSPRINT DD, SYSPUT = F, DCB = (DCB), REC = (R), LRECL = 121, VLSIZE = 605
    // SYSPUT DD, UNIT = SYSL, SPACE = CYL, (2, 1)
    // SYSLINK DD *

OBJECT DECK (MAINTAIN)

/*
    //GO EXEC PG = * , LINK, SYSL, TLCE = (2, 30)
    // SYSPRINT DD, SYSPUT = *
    // PUNCH DD, SYSPUT = *
    // TELDD DD, PS = LTER, UNIT = SYSL, DISP = (APE, DELETE),
    // SPACE = CYL, (3, 3), DCB = * , TPTOK, DD
    // ACTIVE1 DD, PS = &ACTIVE1, DISP = (OL, PASS)
    // ACTIVE2 DD, PS = &ACTIVE2, DISP = (OL, PASS)
    // ACTIVE3 DD, PS = &ACTIVE3, DISP = (OL, PASS)
    // INACTIVE DD, PS = &INACTIVE, DISP = (OL, PASS)
    // SYSLINK DD *

ALL MAINTENANCE FUNCTIONS OTHER THAN
$** CREATE
All Maintenance and Sorting (cont.)

``` BATCH
//SRT1 EXEC PROC=SORTA,CYL=1,TIME,S=(1,15)
//S.SORTIN DD DSM=ACTIVE1,DISP=(OLD,DELETE)
//S.SORTOUT DD DSM=A1,DISP=(OLD,PASS),VOL=REF=*TP,TP1,LABEL=(1,SL)
//S.SYSIN DD *
  SORT FIELDS=(5,11,A,1,2,A),FORMAT=CH
END

//SRT2 EXEC PROC=SORTB,CYL=1,TIME,S=(1,15)
//S.SORTIN DD DSM=ACTIVE2,DISP=(OLD,DELETE)
//S.SORTOUT DD DSM=A2,DISP=(OLD,PASS),VOL=REF=*TP,TP1,TP1,LABEL=(2,SL)
//S.SYSIN DD *
  SORT FIELDS=(5,11,A,1,2,A),FORMAT=CH
END

//SRT3 EXEC PROC=SORTB,CYL=1,TIME,S=(1,15)
//S.SORTIN DD DSM=ACTIVE3,DISP=(OLD,DELETE)
//S.SORTOUT DD DSM=A3,DISP=(OLD,PASS),VOL=REF=*TP,TP1,TP1,LABEL=(3,SL)
//S.SYSIN DD *
  SORT FIELDS=(5,11,A,16,3,A,1,2,A),FORMAT=CH
END

//SRT4 EXEC PROC=SORTB,CYL=1,TIME,S=(1,15)
//S.SORTIN DD DSM=ACTIVE4,DISP=(OLD,DELETE)
//S.SORTOUT DD DSM=A4,DISP=(OLD,KEEP),VOL=REF=*TP,TP1,TP1
//  LABEL=(4,SL)
//S.SYSIN DD *
  SORT FIELDS=(5,11,A,16,3,A,1,2,A),FORMAT=CH
END

//
```

c. An alphabetical list by last name of all inactive students with their social security number and, for graduates, the alumni number is also added.

d. A numerical list in ascending order of the social security numbers of all inactive students with their name and alumni number for graduates.

Files should be updated quarterly as changes occur.

The cards for each student should be retained as a back-up system. At least twice a quarter the cards of new students should be added and updated cards inserted in place of outdated cards.

Since the information from the cards is in storage on tape by social security number, the cards should be filed by social security number.

1. Week 1

(a1) The list of newly admitted M.A. and Ph.D. students from the previous quarter should be obtained from the graduate office of education.

(a2) For M.A. students and Ph.D. students who did not receive an M.A. in guidance from O.S.U. the information on cards 1, 2, 17 and K should be coded based on the data contained in the students' folders.

(a3) After (a1) and (a2) have been completed submit the coding sheets for keypunching.

(a4) After the keypunching has been completed arrange the cards for each student in sequence and then for all students in order by social security number.

(a5) After (a4) has been completed the cards must be added to the Active File. The following control cards and data decks must be submitted with the JCL deck for the MAINTAIN program:
(b1) The lists of:

Ph.D. students who passed general exams the previous quarter.

M.A. and Ph.D. students who have taken the graduate school test sequence the previous quarter.

M.A. and Ph.D. students who have graduated.

should be obtained from the graduate office of education.

(b2) Based on the information in students' folder, changes on K cards should be coded for all students in (b1) and for newly admitted Ph.D. students who receive an M.A. in guidance from O.S.U. should be coded.

(b3) ACTIVE2 files for students in (b2) must be printpunched with a blank in col. 33 so that cards will be punched. With the JCL deck for MAINTAIN, a control card for each student, listing his social security number, will be needed. The following example would be for two students.

(b4) The K cards should be pulled and submitted for keypunching along with the coded sheets indicating additions for each K card.

(b5) After the keypunching in (b4) has been completed, the K card must be arranged in ascending sequence by social security number. The cards must be submitted with the JCL deck for the MAINTAIN program after the following control card:

```
col. 1-10  col. 12-19
$**ADD ACTIVE1
followed by cards 1, 2 and 17 for each student
$**ADD ACTIVE2
followed by card K for each student

(b1) The lists of:
Ph.D. students who passed general exams the previous quarter.

M.A. and Ph.D. students who have taken the graduate school test sequence the previous quarter.

M.A. and Ph.D. students who have graduated.

should be obtained from the graduate office of education.

(b2) Based on the information in students' folder, changes on K cards should be coded for all students in (b1) and for newly admitted Ph.D. students who receive an M.A. in guidance from O.S.U. should be coded.

(b3) ACTIVE2 files for students in (b2) must be printpunched with a blank in col. 33 so that cards will be punched. With the JCL deck for MAINTAIN, a control card for each student, listing his social security number, will be needed. The following example would be for two students.

(b4) The K cards should be pulled and submitted for keypunching along with the coded sheets indicating additions for each K card.

(b5) After the keypunching in (b4) has been completed, the K card must be arranged in ascending sequence by social security number. The cards must be submitted with the JCL deck for the MAINTAIN program after the following control card:

```
col. 1-10  col. 12-19
$**ADD ACTIVE1
followed by cards 1, 2 and 17 for each student
$**ADD ACTIVE2
followed by card K for each student

(b1) The lists of:
Ph.D. students who passed general exams the previous quarter.

M.A. and Ph.D. students who have taken the graduate school test sequence the previous quarter.

M.A. and Ph.D. students who have graduated.

should be obtained from the graduate office of education.

(b2) Based on the information in students' folder, changes on K cards should be coded for all students in (b1) and for newly admitted Ph.D. students who receive an M.A. in guidance from O.S.U. should be coded.

(b3) ACTIVE2 files for students in (b2) must be printpunched with a blank in col. 33 so that cards will be punched. With the JCL deck for MAINTAIN, a control card for each student, listing his social security number, will be needed. The following example would be for two students.

(b4) The K cards should be pulled and submitted for keypunching along with the coded sheets indicating additions for each K card.

(b5) After the keypunching in (b4) has been completed, the K card must be arranged in ascending sequence by social security number. The cards must be submitted with the JCL deck for the MAINTAIN program after the following control card:

```
col. 1-10  col. 12-19
$**ADD ACTIVE1
followed by cards 1, 2 and 17 for each student
$**ADD ACTIVE2
followed by card K for each student

(b1) The lists of:
Ph.D. students who passed general exams the previous quarter.

M.A. and Ph.D. students who have taken the graduate school test sequence the previous quarter.

M.A. and Ph.D. students who have graduated.

should be obtained from the graduate office of education.

(b2) Based on the information in students' folder, changes on K cards should be coded for all students in (b1) and for newly admitted Ph.D. students who receive an M.A. in guidance from O.S.U. should be coded.

(b3) ACTIVE2 files for students in (b2) must be printpunched with a blank in col. 33 so that cards will be punched. With the JCL deck for MAINTAIN, a control card for each student, listing his social security number, will be needed. The following example would be for two students.

(b4) The K cards should be pulled and submitted for keypunching along with the coded sheets indicating additions for each K card.

(b5) After the keypunching in (b4) has been completed, the K card must be arranged in ascending sequence by social security number. The cards must be submitted with the JCL deck for the MAINTAIN program after the following control card:
2. Week 5

(a1) The Active File must be printpunched to obtain a listing of the contents of the S cards and a copy of the cards to be updated. This is accomplished by printpunching the entire ACTIVE2 File and checking the S cards. The ACTIVE2 File will be printpunched by submitting the following control card with the JCL deck for the MAINTAIN program:

```
col. 1-10   col. 12-19
***PTPNCH   ACTIVE2
```

(a2) The grade slips from the previous quarter for every student in guidance must be obtained from the graduate office of education. Using the manual alphabetic files of active students the correct grade slips can be pulled.

(a3) All the N, O, P, Q cards must be coded. S cards must also be coded by adding the quarter hours and points to the listing obtained in (a1).

(a4) After (a3) has been completed, the coding sheets must be submitted for keypunching.

(a5) After (a4) has been completed, the grade cards for students in the Active File must be submitted for updating. The following cards must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10   col. 12-19
***UPDATE   ACTIVE2
```
followed by all S cards in order by social security number.

```
col. 1-10   col. 12-19
***UPDATE   ACTIVE3
```
followed by all N, O, P, Q and R for each student in order by social security number.
(b1) When a previously enrolled student has his schedule cards signed, his adviser or the secretary will have him complete a quarterly update sheet.

(b2) Those students presently in the Inactive File must be moved to the Active File. The procedure for doing this for one student is illustrated below. The following control cards must be submitted with the JCL deck for the MAINTAIN program:

<table>
<thead>
<tr>
<th>col. 1-10</th>
<th>col. 12-19</th>
<th>col. 21-31</th>
<th>col. 33</th>
</tr>
</thead>
<tbody>
<tr>
<td>***PTPNCH</td>
<td>INACTIVE</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>INACTIVE</td>
<td>999-99-9999</td>
<td></td>
</tr>
</tbody>
</table>

(Note that all ***PTPNCH cards must precede the ***DELETE cards so that the records will be printpunched before being deleted.)

(b3) Cols. 3-4 on all cards from the printpunch command should be changed from "$I" to "$A."

(b4) The cards from the printpunch command should be submitted for addition to the Active File. The procedure for accomplishing this is illustrated below. The following control cards must be submitted with the JCL deck for the MAINTAIN program:

<table>
<thead>
<tr>
<th>col. 1-10</th>
<th>col. 12-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>***ADD</td>
<td>ACTIVE1</td>
</tr>
<tr>
<td>followed by cards 1-17</td>
<td></td>
</tr>
<tr>
<td>***ADD</td>
<td>ACTIVE2</td>
</tr>
<tr>
<td>followed by cards A-M and S</td>
<td></td>
</tr>
<tr>
<td>***ADD</td>
<td>ACTIVE3</td>
</tr>
<tr>
<td>followed by all sets of N,O,P,Q,R cards</td>
<td></td>
</tr>
</tbody>
</table>

(b5) Printpunch the contents of ACTIVE2 File for all students who have changes on Quarterly Update Sheets. The following control card must be submitted for each student listing his social security number in col. 21-31. The JCL deck for the MAINTAIN program must be submitted with the control cards. The following is an example for three students:

<table>
<thead>
<tr>
<th>col. 1-10</th>
<th>col. 12-19</th>
<th>col. 21-31</th>
<th>col. 33</th>
</tr>
</thead>
<tbody>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td>123-45-6789</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td>111-11-1167</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td>111-11-1136</td>
<td></td>
</tr>
</tbody>
</table>
(b6) Code changes from Quarterly Update Sheets for cards A-H.

(b7) Submit coded sheets for key punching with cards to be changed.

(b8) After (b7) has been completed, the following cards must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10  col. 12-19
**UPDATE  ACTIVE2
```
followed by the students' revised A-H cards.

3. Week 9

(a1) Collect test results from counselor education office for OVIS, SVIB, EPPS, and MBTI.

(a2) Code cards 8,9,10,11,12,13,14,15,16

(a3) Submit coded sheets for key punching

(a4) After (a3) has been completed submit the following cards with the JCL deck for the MAINTAIN program:

```
col. 1-10  col. 12-19
**ADD   ACTIVE2
```
followed by cards 8,9,10,11,12,13,14,15,16

(b1) Collect work histories completed in Education 879. They should have D.O.T. codes on them.

(b2) Code information for cards D-H.

(b3) Submit coded sheets for key punching.

(b4) After (a3) has been completed, submit the following cards with the JCL deck for the MAINTAIN program:

```
col. 1-10  col. 12-19
**ADD   ACTIVE2
```
followed by cards D-H.
Between Quarters

(a1) The Active File must be queried to find those students who have not enrolled for four consecutive quarters, who have graduated, or who have left the department. This is accomplished by printing the ACTIVE2 and ACTIVE3 file. Then check cards K and last N card. The ACTIVE1 and ACTIVE2 Files will be printed by submitting the following JCL deck for the MAINTAIN program:

<table>
<thead>
<tr>
<th>col. 1-10</th>
<th>col. 12-19</th>
<th>col. 21-31</th>
<th>col. 33</th>
</tr>
</thead>
<tbody>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a2) After (a1) has been completed, the records of those students who have not enrolled for four consecutive quarters, who have graduated, or who have left the department must be printpunched and deleted from the Active File. (Example: If the students whose numbers are 222-22-2222 and 999-99-9999 have not enrolled for four consecutive quarters, the following control cards must be submitted with the JCL deck for the MAINTAIN program:

<table>
<thead>
<tr>
<th>col. 1-10</th>
<th>col. 12-19</th>
<th>col. 21-31</th>
<th>col. 33</th>
</tr>
</thead>
<tbody>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE1</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE3</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE1</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE2</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***PTPNCH</td>
<td>ACTIVE3</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE1</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE2</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE3</td>
<td>222-22-2222</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE1</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE2</td>
<td>999-99-9999</td>
<td></td>
</tr>
<tr>
<td>***DELETE</td>
<td>ACTIVE3</td>
<td>999-99-9999</td>
<td></td>
</tr>
</tbody>
</table>

(Note that all ***PTPNCH cards must precede the ***DELETE cards so that the records will be printpunched before being deleted.)

(a3) After (a2) has been completed col. 3-4 on each card must be changed from $A to $I.
For students who have graduated, the alumni number must be added on card 1: col. 16-23.

After (a3) and (a4) have been completed, these cards must be added to the Inactive File. (Example: If there are two students who have not enrolled for four consecutive quarters, the following control and data cards must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10       col. 12-19
$**ADD INACTIVE
```
followed by all of the cards for both students.)

The files must be recreated after (a) has been completed. This step also eliminates any records flagged during the quarter by the delete command. The following control cards must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10       col. 12-19
***RECREATE ACTIVE1
***RECREATE ACTIVE2
***RECREATE ACTIVE3
***RECREATE INACTIVE
```

5. Random Times

When a Ph.D. student passes the defense of the dissertation, the adviser gives a copy of the form indicating date exam passed and members of the committee to the person maintaining the system.

The ACTIVE2 File for the student is printpunched to obtain the K card. The following control card including the student's social security number must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10       col. 12-19       col. 21-31       col. 33
***PTPUNCH ACTIVE2     999-99-9999
```

After (a2) is completed the information can be added to card K: col. 56-64.
(a4) The revised Card K should be submitted to update the ACTIVE2 File. The following control card and data card must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10   col. 12-19
$**UPDATE ACTIVE2
```
followed by the K card.

(b1) When a Ph.D. student files his program, the adviser gives a copy of the program to the person maintaining the system.

(b2) The ACTIVE2 File is printpunched to obtain the K card. The following control card including the student's social security number must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10   col. 12-19   col. 21-31   col. 33
***PTPUNCH ACTIVE2 999-99-9999
```

(b3) After (b2) is completed the information can be added to Card K: col. 38-44.

(b4) The revised Card K should be submitted to update the ACTIVE2 File. The following control card and data card must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10   col. 12-19
$**UPDATE ACTIVE2
```
followed by the K card.

(c1) When an adviser receives notice that a student is transferring out of the department, he gives a copy of it to the person maintaining the system.

(c2) The ACTIVE2 File for the student is printpunched to obtain the K card. The following control card including the student's social security number must be submitted with the MAINTAIN program:

```
col. 1-10   col. 12-19   col. 21-31   col. 33
***PTPUNCH ACTIVE2 999-99-9999
```
(c3) After (c2) is completed the information can be added to card K: col. 68-70.

(c4) The revised Card K should be submitted to update the ACTIVE2 File. The following control card and data card must be submitted with the JCL deck for the MAINTAIN program:

```
col. 1-10    col. 12-19
$**UPDATE   ACTIVE2
```
followed by the K card.
APPENDIX C

PROPOSED DATA SHEETS
PROPOSED QUARTERLY UPDATE FORM

Name_____________________________ Date______________

Social Security Number________________ Last Quarter Enrolled________________

Please respond to the following questions only if there have been changes since the last time you completed a quarterly update form.

Current Street Address______________________________

City______________ State________ Zip_________ Phone________

Permanent Street Address______________________________

City______________ State________ Zip_________ Phone________

Marital Status________ Number of Children________

Draft Status________

Current Occupation________________ Where Employed________________

Full or Part-time________ Since what Date______________

City and State of Employment______________________________

Spouse's Education: Check Highest Level Completed

Grammar School________ M.A. or Equivalent

High School________ Ph.D.

Two Years College________ Professional Degree

(M.D., D.D.S. etc.)

If married, spouse's current occupation______________________________

Full or Part-time________ Since what Date______________

Employer________________ City, State of Employment________________

If no changes, check here
The information requested on the data sheet is to be used primarily in a longitudinal research study. The study is examining characteristics of counselors-in-training and, eventually, counselors in the field. The information may also be helpful to your adviser as he counsels with you concerning your professional goals.

The information you supply will not be used for evaluation purposes. It will also not be given to anyone other than you or your adviser in a form that would allow identification of you.

At any time you have the right to examine the contents of your file and make corrections or deletions.

Name________________________________ Date__________________
Social Security Number____________________
Current Street Address_________________ City_________________
State_________________ Zip________ Phone__________________
Current Occupation___________________ Full or Part-time_________
Since What Date_________ Employer____________________________
City and State of Employment_________________________________
Marital History

Indicate your age at start of any change(s) of marital status:

____ Single  _____ Married  _____ Divorced  _____ Separated

____ Widow  _____ Remarried

Number of Children

Spouse's Current Occupation ________________________________

Full or Part-time_______ Employer___________________________

Since What Date_______ City, State of Employment_______________

Spouse's Education: Check Highest Level Completed

____ Grammar School  ___ M.A. or Equivalent

____ High School  ___ Ph.D.

____ Two Years College  ___ Professional Degree

(M.D., D.D.S., etc.)

____ College Graduate

Age of Spouse_______ Age of Spouse at Marriage______________

Outside Activities

Indicate Strength of Interest in Following Activities: (Place an X after each entry to indicate present interest. Then for those activities for which you have indicated some degree of interest, enter the approximate number of years this interest has persisted, and whether or not you are currently pursuing it.)
<table>
<thead>
<tr>
<th></th>
<th>Sports, participant</th>
<th></th>
<th></th>
<th></th>
<th>Persisted Years</th>
<th>Active Now</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intensity of Interest</td>
<td>Very Strong</td>
<td>Strong</td>
<td>Moderate</td>
<td>Mild</td>
<td>None</td>
</tr>
<tr>
<td>1.</td>
<td>Sports, participant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Sports, spectator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Other outdoor activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Club activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Social dating and gatherings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Games, bridge, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Music, perform</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Music, listen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Art, produce</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Art, observe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Dramatics, perform</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Drama (Theatre, movie, television)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Construction (gadgets, cars, carpentry)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Collecting (stamps, coins)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Travel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Photography</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Religious activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Reading, serious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Reading, light</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Handicrafts (Sewing, knitting, wood)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Others (write in)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(This question is designed to be exploratory so that categories can be established on later data sheets.)

Indicate non-salaried and non-academic life experiences you have had that you feel either aided in your decision to become a counselor or will add to your effectiveness as a counselor. They could include volunteer work in community agencies, experiences you had as a child in a particular neighborhood, travel, church related activities, summer work projects, and clubs in which you have participated as a leader or member.

Place these experiences in one of the following time divisions:

Pre-Elementary School and Elementary School Years

High School Years

College Years

Post-College Years

List the professional organizations of which you are a member:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
PROPOSED FORM FOR COLLECTING WORK HISTORY

Name

Begin by indicating your first job and move forward chronologically. Be certain to include the six-digit Dictionary of Occupational Titles for each job.

<table>
<thead>
<tr>
<th>Dates Employed</th>
<th>Full or Part-time</th>
<th>Job Description and Employer</th>
<th>City and State</th>
<th>DOT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


Association for educational data systems. AEDS Bulletin, 1963, 1, 1.


Brouch, R. F. Educational research and the confidentiality of data. 1969, No.-ACE-RR-Vol-4-No-4-69, American Council of Education.

Bunderson, C. W. Computer-assisted instruction at the University of Texas. Automated Education Letter, 1966, 12, 5-16.


Callis, R., & Prediger, D. J. Predictors of achievement in counseling and guidance graduate study. Counselor Education and Supervision, 1964, 2, 63-69.


Ihrig, W. E. *Student information system and comprehensive registration and information system*. Columbus, Ohio: Ohio State University Office of the Registrar, 1966.

Impellitteri, J. T. *Computer-assisted occupational guidance (CAOG) the development and evaluation of a pilot computer-assisted occupational guidance program*. University Park, Pennsylvania: Vocational Education Department of Pennsylvania State University, 1968.


McQuary, J. P. Preferred counselor characteristics. 


Mendelsohn, C. A. & Geller, M. H. Effects of counselor-client similarity on the outcome of counseling. 
*Journal of Counseling Psychology*, 1963, 10, 71-77.


Milliken, R. L. & Patterson, J. J. Relationship of dogmatism and prejudice to counseling effectiveness. 
*Counselor Education and Supervision*, 1967, 6, 125-129.


Moredock, J. B. & Patterson, C. H. Personality characteristics of counseling students at various levels of training. 

Myers, I. B. The Myers-Briggs type indicator. 


Patterson, C. H. (The selection of counselors) In J. M. Whiteley, Research in counseling. Columbus, Ohio: Charles E. Merrill, 1967(b).


Tosi, D. J. The counseling relationship as perceived by the client following the initial encounter as a function of dogmatism within the counselor-client dyad. Unpublished doctoral dissertation, Kent State University, 1968.


