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IDENTIFIERS DISCOVER

ABSTRACT

Activities of the Project DISCOVER team during the ten-month period from September 1, 1975 through June 30, 1976 are summarized in this report. (DISCOVER is a computer-based career guidance system under development since September 1972.) The major section reviews progress in meeting each of the following four objectives during the funding period, and where appropriate, discusses the problems encountered and relates future plans: (1) to complete the programming of all remaining modules of the grades 7-12 system, including all administrative and counselor-support functions, (2) to field test the total grades 7-12 guidance system in two sites in Maryland, (3) to revise the system in design, scripting, and/or programming as needed as a result of the findings of the field trial, and (4) to develop and implement a dissemination strategy, including description of the formation of the DISCOVER Foundation, Inc. Appendixes, comprising the major portion of the document, contain the following materials: design of counselor-administrative support system, documents related to the field trial, documents related to formation of the DISCOVER Foundation, Inc., and publicity materials. (TA)

A Computer-Based Career Guidance & Counselor-Administrative Support System

Final Report

1 September 1976 - 30 June 1977

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I. INTRODUCTION

Historical Perspective

The DISCOVER system is a computer-based career guidance system which has been under development since September, 1972. As an outgrowth of former work done by the developers on the Computerized Vocational Information System (CVIS), the State of Illinois Division of Vocational and Technical Education and the IBM Corporation provided funds in the 1972-1973 school year to support a six-person team at Willowbrook High School in Villa Park, Illinois. This team, making use of its combined knowledge and experience with career guidance and computer technology, developed the overall design for a computer-based career guidance system. This system was conceived at three distinct age levels: grades 4-6; grades 7-12; and college/adult. The end product of this year of work and funding was a two-volume report, one guidance and one technical, which described the total system in detail.

Implementation of the proposed grades 7-12 career guidance system began on a very small budget and staff in the fall of 1973 with funding from the Illinois Division of Vocational and Technical Education. A much larger grant from the United States Office of Education (Vocational Education, Part C) for the period from 1 July 1974 through 31 August 1975 launched the project into full-scale implementation. This report is written in order to summarize the work completed under the latest grant from the United States Office of Education (also Vocational Education, Part C). This grant allowed the completion of DISCOVER as a career guidance system for use with grades 7-12. Both of the grants from the

from the United States Office of Education were complemented by significant contracts with the IBM Corporation which provided computer support for development, liaison staff, and terminal equipment for field trial.

Organization of this Report

The purpose of this report is to summarize the activities of the DISCOVER team during the ten-month period from 1 September 1975 through 30 June 1976 in direct relationship to the proposal document and budget, entitled, "Project DISCOVER: A Computer-Based Career Guidance and Counselor-Administrative Support System, Revised Scope of Work and Budget, April 19, 1975." This document proposed specific activities to be accomplished under four objectives. Part II of this report will review the degree to which each of these objectives was accomplished during the funding period, and, where appropriate, discuss the problems encountered and future plans related. Fairly brief treatment is given to objective 2, the field test of DISCOVER, since another complete document has been devoted to this topic. This final report should, therefore, be considered as one of two documents which summarize the accomplishments of the ten-month funding period.

II. PROGRESS RELATED TO OBJECTIVES

Objective 1: to complete the programming of all remaining modules of the grades 7-12 system, including all administrative and counselor-support functions.

Present Status

The completion of this objective lay principally with the technical side of the DISCOVER team which consisted of two full-time programmer/analysts and a technical director with 60% time commitment. The time estimates which were made by the technical director proved to be inaccurate, due both to the very large amount of programming work remaining in order to complete the system and to the unanticipated heavy demand on technical staff time imposed by the field trial activity. As of 30 June 1976 the status of the programming of DISCOVER 7-12 is as follows:

--Student career guidance system: of the 21 modules designed, 18 are programmed and operational. Those which are not currently operational are:

Playing a Values Game (Module 1B) totally developed, 50% programmed
Local Jobs (Module 8A) not scripted, not programmed
Graduate and Professional Schools Search (Module 8F) data file needed
alternate version of Reviewing My Interests and Strengths (Module 4) scripted, not programmed

--Counselor-support system (quick access to student records and to all system data files; capability to monitor the student use of the system)

This system has been designed. Some programming has been done; however, the system is not yet operational.

--Administrative-support system (student record building, retrieval, updating; on-line scheduling and schedule-changing, etc.)

This system has been designed with input from an advisory board of individuals from various school districts. Programming has not yet begun. Documents which describe the design of this system are included as Appendix A.

Plans for Completion

As of 1 July 1976 the DISCOVER Foundation, Inc., (see objective 4, page 14ff, for details) became operational. With the staff which is supported under that operation, all of the unfinished work will be completed during the 1976-1977 fiscal year. Users of the system for the school year 1976-1977 have been accurately informed about the parts of DISCOVER which are not currently operational. As these parts are completed and tested, they will be distributed to DISCOVER users by means of update tapes which will be provided on a quarterly basis during the first year of dissemination.

Objective 2: to field test the total grades 7-12 guidance system in two sites in Maryland.

This objective was met at the highest level possible within the constraints imposed by the field test environment. As indicated in the Introduction, the full field trial report is covered in a separate document, which accompanies this report; therefore, only a partial summary is included here.

Selection of field test site

Since the budget for this ten-month period was not adequate to cover any computer costs, it was necessary--as indicated in the revised proposal--to find school districts which already had third-generation (370) IBM equipment with software packages appropriate for DISCOVER. Four school districts were identified as having the appropriate hardware and software configurations: 1) Baltimore City School District; 2) Montgomery County School District; 3) Prince Georges County School District; and 4) Anne Arundel County School District. After identification of these systems, the following steps were followed:

1. The Project Director and Associate Director made an appointment with appropriate persons in each district in order to present a full-scale description of DISCOVER, field trial needs, and an offer to provide two lease-free years of product use in return for computer time and opportunity for conducting the proposed evaluative research. These preliminary meetings were held in May 1975.
2. Sites were invited to consider the opportunity and to schedule a second meeting if they had further interest. Three of the four sites visited the DISCOVER offices during the month of July. At these meetings, more detail was provided in writing about the evaluation design, the types of samples needed, the hardware requirements, the amount of time needed from experimental subjects, etc. An on-site demonstration of the DISCOVER system was also provided. At this time one school district withdrew upon discovery that its computer software would not be compatible with that of DISCOVER.
3. Based upon the responses given by the remaining two school districts, the Baltimore City School System was selected by the DISCOVER team. Offer and acceptance of offer were exchanged in writing in September.
4. In December the Baltimore City School System, through its appointed representative, Dr. Robert Lloyd, selected two schools in Baltimore to serve as experimental sites. After careful scrutiny of the data about the population of those schools, the Project Director requested reconsideration of sites due to the fact that the available population was not representative of the total secondary-level population of the nation. Dr. Lloyd provided maximum cooperation in selecting an alternate senior high site. The selected field test sites were Garrison Junior High School and Poly/Western High Schools. Garrison is an all-

black junior high school, grades seven through nine, with almost all students in the lower one-half of the national distribution on reading achievement as measured by the Iowa Tests of Basic Skills Reading Scale. Baltimore Polytechnic Institute and Western High School are boys' and girls' high schools respectively, which accept students from the entire city of Baltimore on a somewhat selective, by-application basis. These two schools share a common campus, have an approximate sixty-forty white/black distribution, and have students which form a fairly even distribution over the four quartiles of reading achievement as measured by the schools' last administration of the Iowa Tests of Basic Skills Reading Scale.

Preparation for Field Trial

The following steps were taken in preparation for the field trial:

1. Orientation meetings were held in January with the following persons: Director of Data Processing and appointed staff members; principals of the selected schools; directors of guidance of the selected schools; Associate Superintendent for Pupil Personnel Services and appointed staff members; IBM representatives to the Baltimore Public Schools; and DISCOVER staff. During these meetings a full explanation was given of DISCOVER (both guidance and technical information), the proposed plan for field trial and evaluation, and the requirements of the field test sites.
2. Orientation meetings were also held with the total guidance staffs of the two field test sites, reviewing all of the information which was presented to the group in step one above. Definite plans were made for the beginning of the field trial, the selection of the

experimental and control subjects, the informing of students and parents, the location of terminals, the collection of student record data, the planning for inservice training of guidance staff, and the evaluation design.

3. Equipment (phone lines, modems, computer terminals, printers, control units) was installed in January. DISCOVER was assigned a special room in each site. Two terminals and one printer were installed in the junior high school; four terminals and one printer were installed in one large room at Poly which would serve both the Poly boys and the Western girls.
4. The DISCOVER inservice training program (designed for approximately four days) was condensed to a one-day inservice training session for all counselors in the three participating schools. Very positive feedback was received from this session, as indicated by the summary of evaluation of inservice training provided in Appendix B.

Time Schedule

The field trial was scheduled to begin on 1 February. For the following reasons, the actual starting date was approximately 1 March.

1. Baltimore Public Schools computer center was not ready for installation of DISCOVER in December as planned. CICS, an essential piece of software, was not installed or ready for operation; DISCOVER could not be installed without it.
2. Newly installed phone lines, computer terminals, modems, and/or control units were not cleanly operational on schedule. This equipment could not be adequately tested until the computer center installation was completed. Further, once problems

were identified, it was extremely difficult to get the computer vendor and the telephone company to work together consistently to find out where the problems were.

3. Due to the Project Director's request for selection of an alternate high school site, Polytechnic and Western were not selected until late January, and the site could not be made fully operational until approximately 1 March.

Since the initial field trial question was, "Is DISCOVER ready for operation?" it was decided to view the field trial in two distinct stages. Phase I was a six-week period from 1 March to approximately 15 April. During this stage, the primary objectives were to a) assess the technical operation of DISCOVER in a "real-life" environment, b) observe first student reaction to content, c) assess appropriateness of reading level and content level, d) assess clarity and directions to students, and e) find program bugs. Phase II was a six-week period from approximately 15 April to 30 May. The primary objective of this stage was to find some answers to the question, "What effects does use of DISCOVER have on students?"

Sample Selection

Sample sizes were not as large as hoped for or as desired for good research. Reasons for this are:

1. The field trial was three months in duration instead of four, for reasons stated above.
2. Computer operation was possible only four periods per day instead of seven as planned. The addition of DISCOVER programs to a computer system which was already quite heavily loaded caused very

intolerable response times during the middle part of the day when simultaneous batch-processing operations were at their peak. Because of this situation, the Project Director made the decision to reduce the hours of daily operation in order to achieve reasonably good operation.

3. A high rate of absenteeism was encountered at Garrison Junior High. A stratified random sampling technique was used for selection of experimental and control groups for Phase I and Phase II. Selection criteria were grade level, quartile in reading achievement as measured by the latest score on the Iowa Tests of Basic Skills Reading Scale, and sex. The samples were randomly selected by a computer program from among all eligible members of the total population of the three schools. The sample sizes were as follows:

Phase I trial (1 March - 15 April)

Garrison Junior High

	Quartile on ITBS	1	2	3	4
Grade	7	4		1	
	8		2	1	2
	9		2	2	2

Total N = 16. 8 males and 8 females

Poly/Western High Schools

	Quartile on ITBS	1	2	3	4
Grade	9	2	2	2	2
	10	2	2	2	2
	11	2	2	2	2
	12	2	2	2	2

Total N = 32. 16 males and 16 females

Phase II trial (15 April - 30 May)

Garrison Junior High

Quartile on ITBS	1	2	3	4
Grade 7	1	1	1	1
8	1	1	1	1
9	1	1	1	1

Total N = 12. 6 males and 6 females

Poly/Western High School

Quartile on ITBS	1	2	3	4
Grade 9	2	2	2	2
10	2	2	2	2
11	2	2	2	2
12	2	2	2	2

Total N = 32. 16 males and 16 females

Each of these experimental samples was matched by a randomly selected control group of the same number and characteristics.

Treatment

Students in the control groups were not provided with any treatment beyond that which is normally available through the guidance program of the field test schools. The experimental samples were scheduled to use DISCOVER in systematic order (i.e., Entry module, followed by modules 1A, 1B, 2A, 2B, 3A, 3B, 4, 5, 6, 7, etc.) approximately twice per week, or a total of ten-fifteen class periods. There was a wide variation in attendance patterns, as well as speed with which students used the system. A few students were in school for only one or two sessions at the terminal; others were present for every appointment. Some students completed at least one module per class period, while

others spent three periods in one module. For these reasons, the treatment varied from individual to individual although all students were scheduled an equal number of times.

Evaluative Questions and Responses for Phase I

Question 1: Is DISCOVER technically ready for operation in a real-life environment?

Finding: Yes, DISCOVER is technically ready for operation in a real-life environment. DISCOVER documentation is sufficiently clear that the system can be installed with minimum effort (four hours in Baltimore) by the DISCOVER technical staff or two to three days' effort (tested at College of DuPage, Glen Ellyn, Illinois) without the DISCOVER staff. DISCOVER is, however, a significantly large program with heavy data file requirements. Therefore the system does require a medium to large third-generation computer system of the magnitude of an IBM 370-135 or larger if other data processing operations are to be run simultaneously. In a heavily loaded computer system like Baltimore's, priorities and limits must be set in order to have satisfactory operation for students; satisfactory operation is defined as a response time of twenty seconds or less at the terminal. This may mean that a local site has to schedule its batch-processing operations after 2:30 in the day when students are no longer using the system heavily. In the Baltimore test site, two other on-line operations ran simultaneously and efficiently with DISCOVER; heavy batch-processing loads, especially those which made use of the same disk file as DISCOVER, caused severe degradation of response time.

Question 2: How do students respond to DISCOVER?

Finding: Students respond very favorably and consistently to

DISCOVER when response time is tolerable (under twenty seconds). Degradation of response time or of computer operation is accompanied by degradation of enthusiasm; however, in spite of some very poor technical functioning, the general response to DISCOVER was extremely positive.

Question 3: Are the directions in DISCOVER sufficiently clear so that the student can use the system without assistance?

Finding: Students can use the system easily without assistance. The DISCOVER Entry Module is effective in teaching students both how to use the equipment and how to use the content of the system.

Question 4: Is the content of DISCOVER appropriate?

Finding: Yes, on the whole. Students gave a lot of feedback about modules 1 through 3 which indicated that the computer-assisted instructional material could be shortened and streamlined. Suggestions referred to providing less drill-and-practice exercises, less examples, and in general "getting on with it." Many such modifications have now been made. Students seemed to get much more personally involved with modules 4 through 8 and found them to be more straight-forward in nature and more personally relevant.

Question 5: Is the reading and concept level appropriate for the target populations?

Finding: With the exception of some words which were identified in the field trial, the reading level for DISCOVER appeared to be appropriate. Students in the third and fourth quartile of reading achievement had difficulty with the concepts being presented in some places. Modifications have been made to correct this problem.

During the Phase II field trial period (15 April - 30 May) a great deal of data was collected and analyzed. Since this material is so

extensive, the reader is asked to read the Report of Field Trial for complete information about the research design, questions, and findings of Phase II.

Objective 3: to revise the system in design, scripting, and/or programming as needed as a result of the findings of the field trial.

This activity consumed a great deal of staff time, both guidance and technical, throughout the field trial and especially throughout the month of June. Since DISCOVER is a dynamic system which allows the modification of both text and program from the computer terminal, the system underwent constant improvement. Two of the three members of the guidance team were at the field test sites during all hours of operation; assignments were made on a rotating basis so that all three members had considerable observational experience at each site. Based upon student verbal feedback, questionnaires, and staff observation, each staff member wrote an extensive list of suggestions for improvements in each module. These lists were given to the original author of the module, the person responsible for its execution. That person made all of the modifications agreed upon by working through the material at the terminal in the DISCOVER offices and by coordinating with the Illinois team on technical changes. Modifications included rewriting some parts in which the concept level was too difficult; shortening some exercises which students found too long; adding or rewriting some directions which students did not clearly understand; finding and implementing shortcuts which would allow students to move to various parts of the system more easily; and upgrading the quality of a vast amount of displays through improvement of graphic designs,

better use of highlighting, and addition of designs to make the displays more pleasing to the eye. This work also included extensive program checking and debugging in areas where students experienced "program checks" or where the list of options which was produced due to a search strategy looked suspicious. Much time was spent in writing pieces of the occupational data file which were not completed by the subcontractor, as revealed by a final edit of the occupational file.

In summary, this objective was completed at the highest level possible within the constraints of available computer time and clock time. All staff members worked unreasonable work hours during this period, including nights until 11:00 p.m., since computer time was provided daily from 9:00 to 11:00 a.m. and from 5:00 to 11:00 p.m.

Since the improvement and updating of computer-based systems never ends, this function, accomplished by the DISCOVER Foundation staff, will be a continuing one throughout the life of the DISCOVER product. A continuing sequence of update tapes will be provided to DISCOVER users; these update tapes will effect continuing improvement of the system.

Objective 4: to develop and implement a dissemination strategy.

One of the early decisions related to Objective 4 was a definition of what would constitute the DISCOVER "package." That package has now been defined as:

- a magnetic computer tape which contains all DISCOVER text (7000 displays), data files, and support programs
- one set of three technical documentation manuals
- one copy, with permission to reproduce, of the Student Resource Guide (contains the lists of occupations, four-year colleges, two-year colleges, technical/specialized schools, and military programs in the DISCOVER file)

-three copies of the Professional Manual, an extensive 225-page manual for the counselor or related professional which describes the DISCOVER system in detail, reviews all of its theoretical bases, and provides suggestions for ways to incorporate DISCOVER into an ongoing career guidance program

-one copy of the Inservice Training Manual, a detailed curriculum (complete with handouts and visual aids) for providing staff inservice training

-two sets of posters (one describing the total system; one graphically depicting the Career Decision Tree)

-one tape-slide program for use in orientation of groups of students

-500 student handout leaflets

-ten copies of the DISCOVER brochure

-one set of ten slides for professional use in explaining the system to groups such as faculty, parents, visitors, etc.

One complete set of materials, with exception of the computer tape and the audio-visual materials, is submitted with this report. If additional materials are needed by the United States Office of Education, these will be provided upon request.

Plans for Dissemination

The DISCOVER Project staff considered three possible alternatives to provide a vehicle for dissemination of the DISCOVER system: 1) the public domain route; 2) the alternative of returning the product to USOE for release to a selected software vendor, with returning royalties to USOE; and 3) the formation of a not-for-profit research and development foundation for the continuing dissemination, maintenance, and further development of DISCOVER, with royalty to USOE.

The first alternative was rejected due to a) the complexities of reproducing, storing, and shipping a package the size of that listed

on the previous pages; b) the very critical need for having a staff to continuously maintain and update the product; c) the very critical need to have a staff to provide support to users of the product in terms of inservice training, technical installation, assistance with technical conversions, and answering a multitude of questions. The second alternative was not preferred because a) the software vendor would have to become as thoroughly knowledgeable of the complex program as our own technical staff; and b) it would be highly unlikely that a software vendor could provide the guidance support that the product needs. For these reasons, the Project Director strongly preferred the third alternative and sought to convince Mr. Morton Bachrach of the desirability of this plan. As a result, permission was granted, on a three-year basis, for two significant steps:

1. The formation of a not-for-profit research and development foundation, called the DISCOVER Foundation, Inc., effective 1 July 1976. This Foundation now serves the following functions:

   a. to disseminate the grades 7-12 DISCOVER guidance system and other DISCOVER products as they may become available (scope is limited to development of on-line computerized guidance and instructional materials)

   b. to maintain the DISCOVER products, i.e., text, programs, and data files

   c. to provide technical and guidance assistance and training to DISCOVER users

   d. to continue development in the area of on-line, computer-based guidance and instruction by improving present products and by developing new ones

   e. to evaluate its products and to make such evaluative data known to users of its products

2. The copyright of DISCOVER grades 7-12 computer programs and the supporting documentation and the permission to hold that copyright

during the three-year period, renewable by agreement of USOE and the DISCOVER Foundation, Inc.

All legal steps necessary for the accomplishment of steps one and two have been taken. Relevant documentation, including the official contract between the DISCOVER Foundation and the United States Office of Education, is inoluded in Appendix C.

Publicity Materials and Appearances

In order to begin publicity and dissemination effort, the DISCOVER staff has developed five pieces of literature during this funding period. They are

1. The DISCOVER brochure, entitled, "A Computer-Based Career Guidance and Counselor-Administrative Support System: The Career Guidance System" This brochure is envisioned as one of three which will eventually go together in a folder of materials. The other two brochures in the series will describe the college/adult version now under development (see Section III of this report) and the Counselor-Administrative Support System to be developed by the Foundation during 1976-1977.
2. A one-page explanation of the DISCOVER Foundation, incluaing the price list for its product and services.
3. A manual providing information beyond that included in the brochure called, "An Informational Manual for Decision Makers."
4. A contract for lease of the DISCOVER software.
5. A DISCOVER newsletter, to be mailed on a quarterly basis, to the present mailing list of approximately 200 persons, The purpose of the newsletter is to keep DISCOVER users and other interested parties informed about latest developments.

Copes of these items are included as Appendix D.

The Project team, in consultation with IBM representatives, decided that the two primary target audiences for this first year of publicity and dissemination effort should be attendees at the American Personnel

and Guidance Association Convention (Chicago, April 11-14) and the American Educational Data Systems Convention (Phoenix, May 3-7). With substantial support from IBM, a demonstration of DISCOVER was provided in the exhibit area throughout the APGA convention. This event was well covered in newspaper publicity by the Chicago Daily News. Also, the DISCOVER team presented a 1½-hour program at the APGA convention. No demonstration was provided at the AEDS Convention in Phoenix, but members of the Project staff had a 1½-hour slot on the program. Both presentations and the demonstration were very well attended, and the product was accepted with enthusiasm.

In addition to these major kinds of dissemination thrusts, there have been many other activities during this funding period: 1) answering an increasing number of letters; 2) responding to an increasing number of phone calls; 3) making an increasing number of appearances at professional meetings; and 4) conducting a one-week workshop for graduate credit at Western Maryland College in the use of the computer in guidance, including detailed information and exposure to both CVIS and DISCOVER.

In order to provide possible system users with the opportunity to see a demonstration of DISCOVER, three plans have been put in place. First, a demonstration version of DISCOVER has been developed by IBM personnel and placed in IBM's "DEMO '76" program, a facility provided by that company to all its salespersons. DISCOVER and many other applications of the computer to all areas of life are stored in a central computer. Salespersons from various areas of the United States have the ability to "dial up" this system and to demonstrate these various computer applications to their customers. In addition, Orange

Coast Community College (California) has requested and been granted permission to act as a demonstration center for the West Coast. A similar arrangement has been made with College of DuPage, which will act as the Midwest demonstration center. It is hoped that funds will be available in the Foundation's budget to provide equipment for demonstration of DISCOVER at Western Maryland College also, thus offering an East Coast demonstration facility.

III. SUMMARY OF PRESENT STATUS AND EMERGING PLANS

At the time of this writing, the DISCOVER grades 7-12 career guidance system is substantially completed and ready for distribution. The modules which have been listed as incomplete under Objective I, the counselor-support system, and the administrative-support system will be completed during the 1976-1977 fiscal year and will be distributed to users via computer update tapes.

The Project team has been successful in getting funding from the Exxon Foundation for approximately $132,000 for the development of a college and adult version of DISCOVER. This grant extends from 1 March 1976 through 30 June 1978. The work began in March by field testing the grades 7-12 version of DISCOVER with approximately one hundred students at Western Maryland College (private, selective, liberal arts orientation) and with a like number of students at College of DuPage in Illinois (large, comprehensive, adult-oriented, community college). The purpose of this field trial was to find out which parts of DISCOVER are usable as they are with these populations, which parts need to be modified or deleted, and what new parts may need to be developed. Based upon this experience, development is now beginning on the college/adult version. Development will move into field trial by fall, 1977, and result in a new product for dissemination in spring, 1978. Three members of the former USOE-funded DISCOVER development team are now devoted full-time to this new work.

The DISCOVER Foundation, Inc., has been legally formed as a tax-exempt, not-for-profit corporation in the State of Maryland. The

Foundation is now beginning to perform its proposed functions. A technical team of one-and-one-half persons is committed to support of users of the product and to continuing technical improvement. This team is also supplying information and support to four conversion efforts which are already underway to make DISCOVER usable on non-IBM computers or under different software configurations. The technical team will remain at College of DuPage, which is providing computer support for development since the end of the IBM contract on 30 June. The master computer tape for DISCOVER, from which distribution copies will be made, is now resident in the College of DuPage computer. The guidance team, related to the DISCOVER Foundation, now consists solely of JoAnn Bowlsbey, the Foundation President.

The capability of the Foundation to perform its proposed functions and to maintain its current staff is totally dependent upon the lease of the DISCOVER package. Based upon a three-year project budget and market, and with permission from USOE, the product is being made available at an annual lease fee of $8,250 per driving computer center. This center may serve many terminals in many schools which are connected by phone lines. This fee includes maintenance of text, data files, and programs; it also includes royalty payments on the copyrighted test instruments which are in the system. At the time of this writing, the Foundation has five contracts for 1976-1977 and needs an additional eight to ten.

APPENDIX A

Design of Counselor-Administrative Support System

Advisory Board

PROJECT DISCOVER

Administrative and Counselor Support Subsystems

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TO: DISCOVER Administrative Advisory Board

FROM: Jim Boyd

SUBJECT: DISCOVER Administrative System DATE: February 25, 1976

I would like to express my gratitude for your continued interest in and valuable contribution to the development of the DISCOVER Administrative System. I am especially grateful for your willingness to attend this meeting and react to the current status of the system.

Included in this package is the detailed design of the data bases and the general identification of functions to manage these data bases.

The objectives which I hope to achieve during this meeting are the following:

1. Evaluation of the current design of data bases especially as to the adequacy of elements of these data bases.

2. Evaluation of the proposed functions of the administrative system including recommendations of any additional functions.

3. Recommendations concerning the interface between DISCOVER and existing data base management systems.

    a. Do most installations in this category have administrative systems?

    b. Should DISCOVER administrative functions be written for these environments? If so, how?

4. Recommendations concerning the use of existing administrative systems.

    a. Niles High School system

    b. Harper Registration system

DISCOVER ADMINISTRATIVE APPLICATIONS

Contents

General Design Considerations

DISCOVER Data Base Techniques

DISCOVER Data Base Design
- Introduction
- Physical Data Bases
- Student Data Base
- Family/Census/Contact/Residence Data Base
- Course Data Base
- Master Schedule/Class/Section Data Base
- Facilities/Room Data Base
- Instructor Data Base
- Comments For Publications/Catalogs/Schedules Data Base
- Class/Section Enrollment/Waiting List Data Base
- Student Enrollment/Withdrawal Log Data Base

Tables of Codes

Functions

Transactions
- Student Data Base Oriented
- Family Data Base Oriented
- Course and Master Schedule Data Base Oriented
- Facilities/Room Data Base Oriented
- Instructor Data Base Oriented
- Logically Data Base Independent

Implementation Procedures

DISCOVER ADMINISTRATIVE AND COUNSELOR SUPPORT SYSTEM

Herein called Generalized Educational Resource Inquiry (GERI)

Thoughts Relative to General Design Criteria

I. Target environments - It seems reasonable to plan Discover for three types of environments.
   A. Installations currently using CVIS
   B. Installations currently having on-line applications supported by batch processing programs
   C. Installations without on-line applications

The general design of GERI should be as compatable as possible with each type of target environment.

II. Design considerations relating to target environments
   A. Installations currently using CVIS
      1. For those under CICS, Discover could run as a separate task
      2. For those not under CICS, GERI should be easily modifiable to either a) drive CVIS or
         b) be driven by CVIS
      3. For those under other systems, modification procedures should be developed
   B. Installations currently having on-line applications
      1. GERI should be complementary to the existing system.
         a. It should not require redesign of existing data bases. It should be compatable with DL/1 ENTRY and other organizational methods
         b. It should not require duplication of data bases
         c. It should not disrupt existing procedures or programs
         d. It should be relatively easy to install
         e. It should be easily modifiable
         f. It should provide a package of services not currently available
      2. GERI should provide a base for expansion of applications
   C. Installations without on-line applications
      1. GERI should not restrict the local decisions regarding system configuration, i. e. it should allow these decisions to be made independent of the decision to install Discover.
      2. GERI should be compatable with the use of packaged software such as SOCRATES, FASTER, etc.
      3. GERI should provide on-line facilities for management of a variety of data bases.

4. GERI should permit the local design of data bases while including a default design of such primary data bases as

STUDENT
COURSE
INSTRUCTOR

III. Specific applications. While GERI cannot include every conceivable application, as a minimum it should include the following specific applications. (Please list in order of priority.)

DISCOVER Administrative Applications

Advisory Board Meeting

June 24, 1975

The meeting of the Advisory Board of DISCOVER Administrative Applications was attended by nine of the thirteen members. The following general decisions were made:

1. The DISCOVER Administrative and Counselor Support System should be designed as general as possible to make it compatible with existing systems and expandable to new applications.

2. The immediate development should be concentrated in the area of an instructional support system with possible future expansion into the areas of personnel, budget, inventory, etc.

3. The design should continue to seek to establish software independence.

4. The DISCOVER Administrative and Counselor Support System should be primarily an on-line system rather than batch processing and reporting.

The meeting resulted in identifying and prioritizing nine specific administrative functions to be developed. These are listed below in priority order. It was generally felt that the first five would be target tasks for the September 1975 - June 1976 funding period.

1. On-line access of Student Data Base including the ability to retrieve, update, add, and delete both records and fields within records.

2. On-line changing of schedules including adding and dropping of courses. This should be designed with current emphasis on individualized instruction in mind.

3. Master schedule maintenance.

4. Grade changes including updating and adding grades.

5. Limited on-line query capabilities on Student Data Bases and DISCOVER-related Data Bases.

6. Statistical reports on specified elements of the Data Bases.

7. On-line attendance control.

8. On-line test scoring capability.

9. On-line entry of course requests.

DISCOVER Data Base Techniques

Introduction

DISCOVER data base management techniques are designed to provide the user with a flexible, expandable approach to implementing the DISCOVER Administrative System. Specifically, the DISCOVER data base management system provides:

1. Data Independence -- Application programs are independent of the physical organization of data. This is accomplished by use of a data base mapping technique. Application programs request data by use of a DISCOVER data base map. The data base management program is responsible for retrieving records and extracting fields according to the specifications of the data base map.

2. Data Expansion -- DISCOVER data base techniques provide for the expansion of data fields as applications are implemented. Data fields may be added to records within defined limits without re-organizing the records or re-writing existing application programs. Data base fields may optionally exist on any given record or be added to or deleted from existing records. Thus, data may be placed on records at the time it becomes available and is needed.

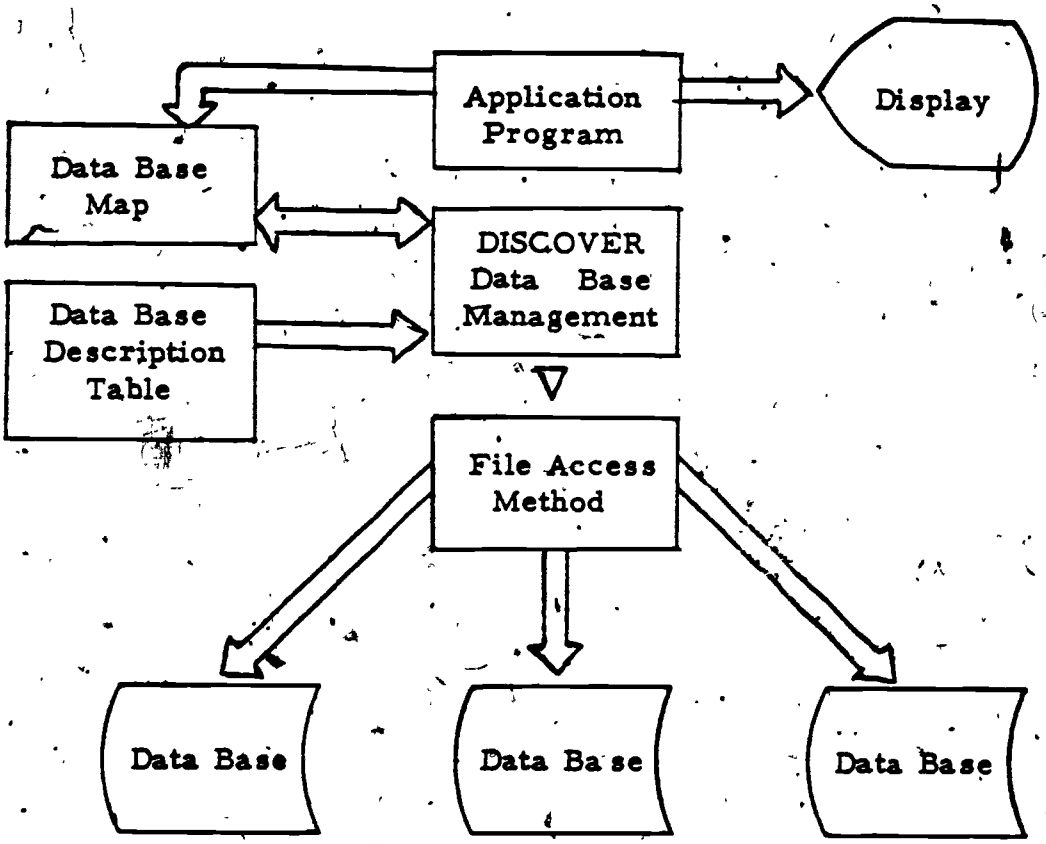
3. Physical Storage Independence -- Within the framework of the restrictions below, DISCOVER data base management techniques are independent of the physical organization of data files. This is accomplished by the user providing a description of the records in a data base through a Data Base Description Table and File Organization Description to CICS or other on-line monitor.

Data Base Description Table (DBDT) --
Data Bases are described to the DISCOVER data base management program through a Data Base Description Table. This table contains an entry for each field in the data base indicating field-names, segment identification, relative position of the field on the record, and field length. An example of a DBDT is given on the following pages.

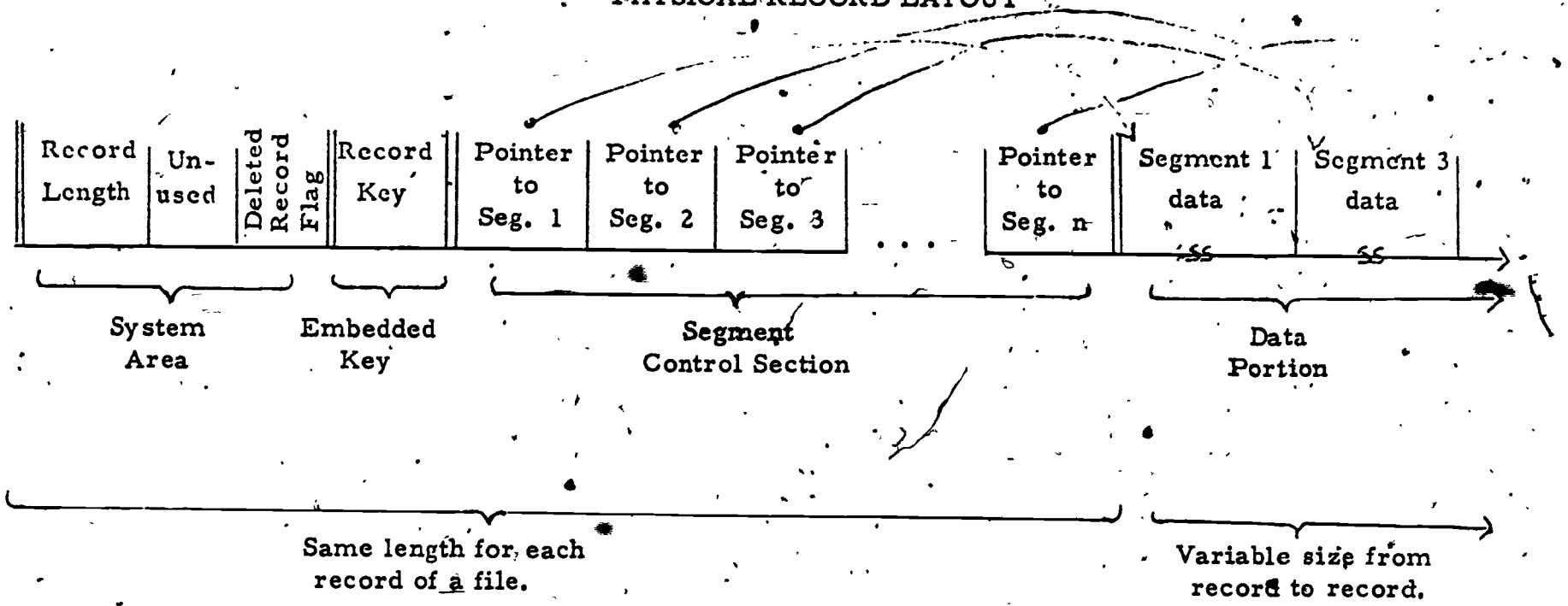
File Organization Description --
The description of the file organization method must be provided to CICS or other on-line monitor through File Control Tables. Details of these tables are found in the installation manual.

DISCOVER Data Base Techniques

Diagram



PHYSICAL RECORD LAYOUT



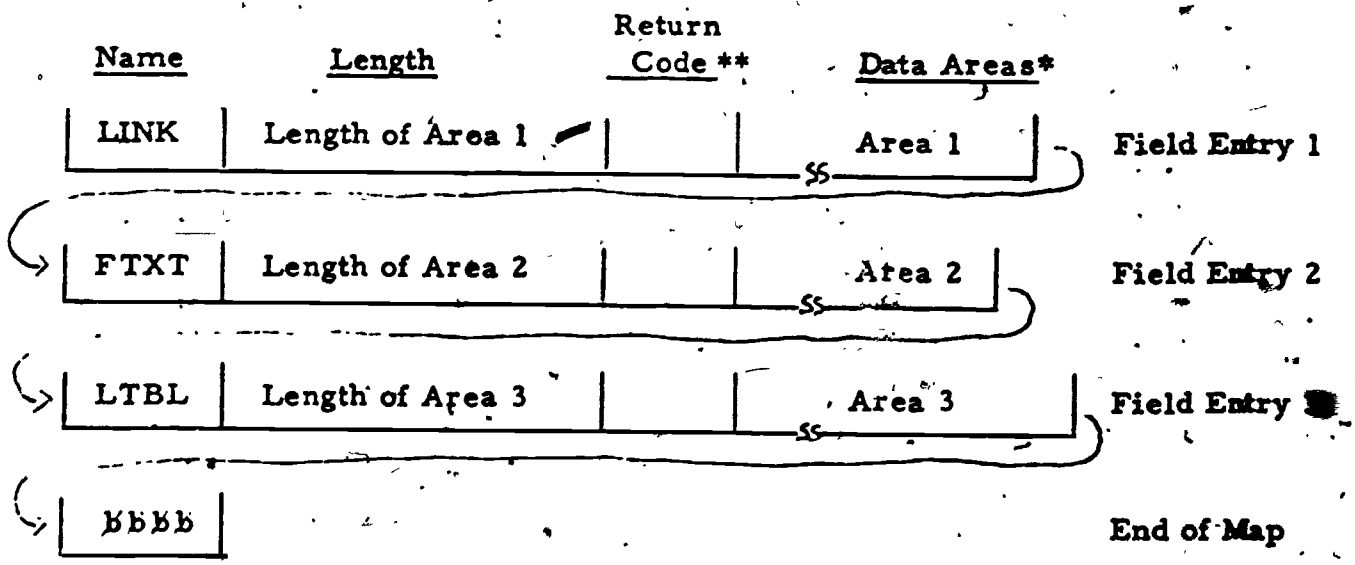
NOTE: Example shows Segment 2 does not exist on this record.
If segment n is missing, the pointer to segment n points to the end of the record.

FIELD ACCESS TABLE

NAME	SEG. #	DISPLACE-MENT*	LENGTH
FTXT	1	0	Var.
LINK	3	0	15
LTBL	3	15	Var.
MTBL	6	0	Var.
PTBL	8	0	Var.

*Displacement from beginning of the segment

DATA BASE MAP



*Data Areas are variable in length. Their corresponding length fields are used to point to the next field entry.

**Original contents of Return Code fields are ignored. Return Code area is used to indicate the results of the mapping operation on a field-by-field basis.

6/-2-75

DISCOVER FILE DESCRIPTION TABLE

File ID - Frame File Code - 1

Field Name	Segment #	Displacement	Length (zero is variable)	Description
FTXT	1	0	0	Displayed text
RTBL	2	0	0	Response linkage
LINK	3	0	15	Sequential linkage, backspace, screen erase, restart, activity counter
LTBL	3	15	0	Loop counter, subroutines
ATBL	4	0	0	Keyword answer linkage
STBL	5	0	0	Save frame-id's and terminal input
MTBL	6	0	0	Merge fields into displays
QTBL	7	0	0	Search strategy support
PTBL	8	0	0	Application program support
UTBL	9	0	0	Update data-base fields from terminal input
KTBL	10	0	0	Save constants, move save areas

DISCOVER FILE DESCRIPTION TABLE

File ID - Temporary Work space File Code - W

Field Name	Segment #	Displace-ment	Length (zero is variable)	Description
SV01	1	0	0	Save area 1
SV02	2	0	0	Save area 2
SV03	3	0	0	Save area 3
SV04	4	0	0	Save area 4
SV05	5	0	0	Save area 5
SV06	6	0	0	Save area 6
SV07	7	0	0	Save area 7
SV08	8	0	0	Save area 8
SV09	9	0	0	Save area 9
SV10	10	0	0	Save area 10

9-2-75

DISCOVER FILE DESCRIPTION TABLE

File ID - Discover Tag File Code - T

Field Name	Segment #	Displacement	Length (zero is variable)	Description
THDR	1	0	30	Narrative description
TNUM	1	30	4	# of tags turned on
TTAG	1	34	0	Tag indicators

9-5-75

DISCOVER FILE DESCRIPTION TABLE

File ID. - Discover Student File (DSF) Code - S

Field Name	Segment #	Displ	Length (zero is variable)	Description
	Student Identifying Information Segment #1			
SSEX	1	0	1	Student sex (male/female)
SSYR	1	1	2	Student year in school
SSEC	1	3	1	Student security code
SBIR	1	4	6	Student birthday
SNAM	1	10	0	Student name
	Student Plans Segment #2			
SCPL	2	0	1	Students' college plans
SSLE	2	1	1	Student selected level of education
SDLO	2	2	0	Student Dynamic List of Occupations
	Student Plans Segments #3 - 7			
SLCV	3	0	0	Student selection on college variables
SCMS	4	0	0	Student selection on college variables
SCSS	5	0	0	Student colleges specific information
SDRO	6	0	0	Student dream occupation
STSS	7	0	0	Student Technical/Specialized schools
	Student Use of System Segments #8 - 11			
SDAT	8	0	6	Date last used system
SOFF	8	6	5	Discover sign off point
STIM	8	11	4	Total time on system
SDMU	8	15	23	Discover Modules used
SDMO	8	38	23	Discover Modules suggested order
SSIJ	8	61	0	Student sub-parts of information about jobs
SIDP	11	0	1	Number of correct answers on IDPT game
SIDN	11	1	1	Number attempts at IDPT game
SWEC	11	2	3	Number correct responses on Work Environment Classification game
SWEA	11	5	1	Number attempts at Classification game
SWEN	11	6	6	Names of Holland categories wrong in WEC game
SWYN	11	12	1	Yes-No choice on frame 83, module 01
	Student Test Data Segments #12 - 18			
SASV	12	0	10	Scores on Armed Services Voc. Apt. Battery
SGAT	13	0	18	Scores on General Apt. Test Battery
SATV	14	0	5	Scholastic Aptitude Test - Verbal
SATM	14	5	5	Scholastic Aptitude Test - Math
SACT	14	10	4	ACT Composite Score
SGRV	15	0	5	Graduate Record Exam, verbal
	15	5	5	Graduate Record Exam, math
	16	0	9	Holland Summary Code

10-29-75

DISCOVER FILE DESCRIPTION TABLE - continued

File ID - Discover Student File (DSF) Code - S

Field Name	Segment #	Displ	Length (zero is variable)	Description
SHSV	16	9	1	Holland Summary Code - Viewed
SHSS	16	10	108	Holland sub-scale scores
SSAR	16	10	3	Activities - R
SSAI	16	13	3	" I
SSAA	16	16	3	" A
SSAS	16	19	3	" S
SSAE	16	22	3	" E
SSAC	16	25	3	" C
SSCR	16	28	3	Competencies - R
SSCI	16	31	3	" I
SSCA	16	34	3	" A
SSCS	16	37	3	" S
SSCE	16	40	3	" E
SSCC	16	43	3	" C
SSOR	16	46	3	Occupations - R
SSOI	16	49	3	" I
SSOA	16	52	3	" A
SSOS	16	55	3	" S
SSOE	16	58	3	" E
SSOC	16	61	3	" C
SS1R	16	64	3	Self-Estimates I - R
SS1I	16	67	3	" I
SS1A	16	70	3	" A
SS1S	16	73	3	" S
SS1E	16	76	3	" E
SS1C	16	79	3	" C
SS2R	16	82	3	Self-Estimates II - R
SS2I	16	85	3	" I
SS2A	16	88	3	" A
SS2S	16	91	3	" S
SS2E	16	94	3	" E
SS2C	16	97	3	" C
SSTR	16	100	3	- Totals - R
SSTI	16	103	3	" I
SSTA	16	106	3	" A
SSTS	16	109	3	" S
SSTE	16	112	3	" E
SSTC	16	115	3	" C
[illegible]	16	118	0	11-25-75
	17	0	15	VIEWED FORM OF HOLLAND SUMMARY CODE
				Sub-section scores on Career Devel. Inv.

10-25-75

DISCOVER FILE DESCRIPTION TABLE - continued (page 3)

File ID - Discover Student File (DSF) Code - S

Field Name	Segment #	Displ	Length (zero is variable)	Description
SCI1	17	0	3	CDI Myself (I) score
SCI2	17	3	3	CDI Myself (II) score
SCI3	17	6	3	CDI Decision Making score
SCI4	17	9	3	CDI Occupations score
SCI5	17	12	3	CDI Career Planning score
SWRV	18	0	10	Student assessment of work-related values
	Student Courses/Grades		Segments #19 - 23	
SGPA	19	0	3	Student High School GPA
SRNK	19	3	0	Student High School Rank
SCRS	20	0	0	Student High School Courses Completed
SECA	21	0	0	Student Extra-curricular Activities
SPTJ	22	0	0	Student Part-time Jobs
SGPF	23	0	3	College GPA Freshman
SGPC	23	3	3	College GPA Cumulative
	Student Data for Counselor Use		Segment #24	
SKIL	24	0	7	Various student skills
SCIV	24	7	11	Information used in 4-year College (D5)
SMIS	24	18	0	Student miscellaneous

(see page 4) List of Data Elements

DISCOVER ADMINISTRATIVE APPLICATIONS

INSTRUCTIONAL ADMINISTRATIVE AND COUNSELOR SUPPORT

Introduction

The Instructional Administrative and Counselor Support Data Bases have been designed with much flexibility in mind. In defining the data elements, their locations and relationships, current existing and proposed processing systems, hierarchies and data elements and data base management systems have been studied. These included:

The Data Element Dictionary (2nd Edition) of NCHEMS at WICHE;
The EPIC: Socrates and EPIC: Student Systems of the IBM Corp.;
The Student On-line System (SOS) and the developing Management Accounting and Information System for Education (MAISE) of the College of DuPage in Illinois;
Report on the Utilization of Data Center Services of Orange County, Florida Schools;
The TOTAL Data Base Management System of CINCOM Systems, Inc.;
The DL/1 Data Management Control System of the IBM Corp.; and
Other batch and interactive data processing systems for education in Northern Illinois.

Generally, the data elements are grouped to facilitate data structuring and ANS COBOL programming language use. The data at the front of most segments is that which is either of fixed length or occurs a fixed number of times or both. The order of most segments is based upon the judgment of what order the data element will be added to the data base although there are some deviations from that philosophy so as to logically group related data segments or elements.

The data elements have been organized and located so as to eliminate any redundancy. Data elements are placed where they will most often be used in association with related elements in the data base in which they are found.

Physical Data Bases

The introductory consideration, functions to be supported and the just-mentioned concepts led to the design of six (6) major physical data bases and three (3) more minor and very specific ones. These are:

(of the major category)
- Student Data Base;
- Family/Census/Contact/Residence Data Base;
- Course Data Base;
- Class/Section/Master Schedule Data Base;
- Facilities/Room Data Base; and
- Instructor Data Base.

(of the minor, more specific category)
- Comments for Publications/Catalogs/Schedules;
- Class Enrollment/Waiting List Data Base; and
- Student Drop-Add/Enrollment-Withdrawal Data Base.

Looking ahead points up the need for future consideration of Data Bases for:

- Attendance Recording;
- Media;
- Learning Objectives;
- Testing, both questions related to objectives and problems which can be constructed to meet objectives;
- Test Results Scoring;
- Individualized Progress Monitoring;
- Financial Aid; and
- Pre-registration/Future Course Requests.

But, for our present purposes we will describe the currently needed Data Bases here.

Student Data Base

This is the grouping of all data elements which pertain to students and pointers to those data elements which may more logically by found elsewhere. All the data elements are grouped so as to allow exclusion of whole groups or segments as they are called until the user has need of the data. This allows a user to "start small" and build his data base as time, need and money permits.

Each student will have an identifier which uniquely describes him or her. While this can be any combination of alpha/numeric characters, a suggestion would be:

District Identifier - 2 characters;
School Identifier - 2 characters; and
Student Number - 7 characters/digits.

If you are using another scheme already, then continue to use it if you like.

Each student can have various segments or groupings of related data elements or fields. At the discretion of the user, segments can be present or absent depending on the need for the data elements contained in them. A user could start out with only segments 1, 6-16, 21-25, 30, 36 and 38. Then at later times, when new applications are needed, others could be added. The segments and data elements for the student data base are described here.

Segments	Data Element
1-5 - Student Demographic Data	
	Sex
	Marital Status
	Birth Date
	Citizenship - Y or N for U.S. Citizen or not
	Civil Rights Racial Category
	Residency Code - code for in-district/out-district/out-state/ senior citizen, etc., usually used for calculating tuition.
	Security/Privacy Flags - 4 1-character codes to provide for data security in accordance with the privacy act and to allow access to the student's record.
	Name - including any prefix, first, middle initial, last, and suffix if any.
	Social Security Number - if not the student identifier
	Payroll Identifier - if a student employee and the payroll identifier is not the social security number.
	Locker Number
	Other Identifier - the student's identifier at another school/district if the student is dually enrolled, e.g. at a high school and a regional vocational/technical center.

6-11 Student Plans (Discover Guidance Use)
- Student's College Plans
- Student Selected Level of Education
- Student Dynamic List of Occupations
- Student Selection on College Variables (1)
- Student Selection on College Variables (2)
- Student College Specific Information
- Student Dream Occupation
- Student Technical/Specialized Skills

12-13 Student Use of System (Discover Guidance Use)
- Date Last Used System
- Discover Sign-off Point
- Total Time on System
- Discover Modules Used
- Discover Modules Suggested Order
- Student Sub-parts of Information About Jobs
- Number of Correct Answers on IDPT Game
- Number of Attempts at IDPT Game
- Number of Correct Responses on Work Environment Classification Game

14-23 Student Test Data (For the standardized tests, the data elements for each test are the date taken and the percentiles, part scores or sta-nines, whichever is applicable, for each part of the test scored.)
- Armed Services Vocational Aptitude Battery
- General Aptitude Test Battery (GATB)
- Scholastic Aptitude Test (SAT)
- College Board Achievement Tests
- American College Testing (ACT)
- Comparative Guidance and Placement Test (CGP)
- Graduate Record Exam
- Holland Summary Code
- Holland Summary Code - viewed
- Holland Sub-scale scores - for Activities, Competancies, Occupations, Self-Estimates I & II, and Totals
- Sub-section Scores on Career Development Inventory (CDI)
- Student Assessment of Work-related Values

24-25 Miscellaneous Student Data for Counselor Use
- Student Part-time Jobs
- Various Student Skills
- Information Used in 4-year College Script
- Miscellaneous

30 - Student Contact Data
Type of Contact - parent, local, medical, emergency
Relationship to Family Record - father, guardian, etc.
Family Identifier - pointer to the Family Data Base

31 - Student Disadvantages/Handicaps/Health Record Data
Health File Indicators - 1-character codes indicating the presence in the Health Office of files for the student on:
recent surgery;
special/current health problems;
immunization record; or
psychological disorders.
Disadvantaged/Handicapped/Health Codes - a series of 2-character codes indicating physical, emotional, mental or environmental handicaps/disadvantages or health problems of the student.

32 - Student Transportation Data
Eligibility - a code indicating yes or no
Tranported ? - a code indicating whether transported
Bus Route - the identifier
Bus Stop - the identifier

33 - Student Transcripts Sent Out
Institution Code - to which sent from Discover Colleges
Date Sent - YYMMDD

34 - Student Previous Education Experience
Institution - from Discover Colleges or local/state codes
Degree/Diploma/Certificate - type/level
- date earned
Program/Major Field of Study
Grade Point Average
Cummulative Credits
Entry Daté - YYMMDD
Completion/Withdrawl Date - YYMMDD
Class Rank
Class Size

35-39 - Student Education Experience Here
35 Admission Data
Entry Date - YYMMDD
Application Date - YYMMDD
Campus/School - for multi-campus community colleges
Entry Level/Grade in school
Admission Status - new, transfer, re-admit, etc.
Degree/Diploma/Certificate Sought
Program/Major Field of Study Declared
Admission Action - admitted, denied, incomplete, etc.
Date of Action - YYMMDD

36 Attendance Session/Term Data
- Beginning Date - YYMMDD
- Ending Date - YYMMDD
- Program/Major Field of Study
- Shift/Division - for schools on shifts if a student is to be scheduled into a specific shift indicate which; for junior colleges with divisions, e.g. day or evening, indicate which here.
- Academic Level/Grade Level
- Academic Status/Registration Hold - a flag indicating conditions of probation or reinstatement exist or the student's prohibitted (held) from registering at this time.
- Advisor/Counselor - the identifier, institutionally defined, of the student's counselor or advisor as found in the instructor Data Base.
- Home Room - Building and Room Nos. of the student's home room.
- Ability Levels - an ability scale from 1-9 for user specified subject areas of which there can be up to 9.
- Credits Requested/Attempted - from registration up to the time when grades are given, this field indicates the number of credits for all courses in which the student has registered. When grades are given, this becomes the number of credits attempted and for which the student was graded.
- Credits Earned - the total credits earned for all courses this term
- G.P.A.
- Class Rank
- Class Size
- Probation Codes/Reinstatement Codes/Holds Reasons - a series of 2-character user-defined codes indicating such things as probation status, reinstatement conditions and/or reasons for not permitting re-registration at this time.

37 Extra-Curricular Activities
- Category - a series of user-defined 2-character codes indicating types of activities or clubs.
- Participation - a code indicating level of participation, i.e. participate or leadership role and if so what.
- Grade/Academic Level - when did student participate

38 Courses - this may be all courses student has taken or is taking depending on whether user wants to have on-line transcripts.
- Course Identifier
- Class/Section Identifier
- Credits Earned - number
- How Earned - graded/pass-fail/proficiency exam
- Status/Grades - can state active in course, dropped, incomplete, etc. and has ability to keep 4 grades, including + and - for each session/term/semester/quarter.

Enrollment Date - YYMMDD
Completion/Withdrawal Date - YYMMDD
Comments Codes - a series of user-defined codes whereby a teacher can have additional remarks other than a grade alone.

39 - Honors/Awards
Type - a code, user specified, which identifies an award or honor
Date Given - YYMMDD

40 - Student Educational Experience Summary
Level - academic/grade level/year in school
Type - all/previous institutions/here
Credits Earned - all means
- graded courses
- pass/fail courses
- by proficiency exams
Credits Attempted - all courses
- graded courses
- pass/fail courses
GPA

Family/Census/Contact/Residence Data Base

This is the repository for all residence name, address, telephone number and family-related data that does not change among related students. This data base eliminates the multiple occurance of addresses for siblings of the same parents. It can also be useful in providing census data for enrollment projections as long as the PTA or some other group will at least annually take a physical door-to-door census for accuracy.

It should be pointed out that the way the segments are organized would let a user start up with only the data in segments 1 and 3 and be able to perform many student related administrative and counselor functions. At future intervals and/or as the need arose additional data could be added and other segments would come into being.

Each family/contact/address will have a unique identifier to describe it. This can be any alpha/numeric combination suitable to the user.

Each family/contact/address can have, at the descretion of the user, various grouping of data elements which we call segments. These segments and their subordinate data elements are described here.

Segment	Data Element
1 - Family Address	
	Status - a 1-digit code indicating whether active or inactive record.
	House Number - up to 8-digit identifying a particular house.
	Street Name - up to 13-character street name
	Suffix - ST, AVE, LN, RD, CR, PL, DR, CRV, PKWY, BLVD, WAY, CNTR, SPUR, TERR, TRL, WALK, PARK
	Direction - N, S, E, W, NE, SW, NW, SE
	Building Unit/Apartment - up to 4-character apartment no.
	City - up to 15-character city/municipality name
	State - official post office 2-letter abbreviation
	Zip Code - the 5-digit zip
2 - Census Data	
	County/Parish - a user specified 2-character code to identify the county of residence
	Township/Municipality - a user specified 2-character code to identify a township or like governmental area.
	Elementary School Area - a user specified 2-character code specifying the elementary school area in which residence is located.
	Middle School Area - a user specified 2-character code specifying the middle/junior high school area in which residence is located.
	High School Area - a user specified 2-character code specifying the high school area in which residence is located.

Dwelling Type - user specified 2-character code defining type of dwelling, e.g. single family, apartment, multiple dwelling, mobile home, town house, institution, Hotel, Motel

Block Number - a user specified map reference to a block or street.

Lot Number - a user specified map reference to a particular lot.

3 - Telephone Data
- Type - home/emergency/doctor, etc.
- Area Code -
- Number -

4 - Head of Household Demographic Data
- Name, includes prefix, first, middle initial, last, suffix
- Sex
- Marital Status
- Birthdate - YYMMDD

5 - Head of Household Education/Employment Data
- Highest Degree/Diploma/Certificate earned - type
- Program/Major Field of Study
- Occupation - DOT code xxx.xxx
- Business Phone
  - Area Code -
  - Number -
- Place of Employment - name

6 - Spouse Demographic Data
- Name, including prefix, first, middle initial, last, suffix
- Sex
- Marital Status
- Birthdate - YYMMDD

7 - Spouse Education/Employment data
- Highest Degree/Diploma/Certificate earned - type
- Program/Major Field of Study
- Occupation - DOT code xxx.xxx
- Business Phone
  - Area Code -
  - Number -
- Place of Employment - name

8 - Other Household Members Demographic Data
- Member Number -
- Name, including prefix, first, middle initial, last, suffix
- Sex
- Marital Status -
- Birthdate -
- Realtionship to Head of Household -

9 - Other Household Members Other Data
- Member Number
- Highest Degree/Diploma/Certificate earned
- Program/Major Field of Study
- Type of Non-Student - e.g. student attending another school district, non-student over/under age, student attending another school where tuition paid by district, etc.
- Disadvantaged/Handicapped Codes - 5 codes indicating a physical/emotional/mental handicap.

10 - Other School Attendance Data (for non-student attending elsewhere)
- Member Number
- District
- School
- Grade Level
- Student Identifier (at other school)

11 - Financial Aid/Need Data

Course Data Base

The course data base contains all data pertinent to the various courses of study offered by the institution which generally remains constant from section to section. By separating this data from the master schedule/ classes/sections, duplication of data is avoided. It is also possible to view the curriculum without having to wade through these repeated sections.

Here too, the data is organized [illegible] to allow the user the ability to "start slowly" by entering only some of the possible data, e.g. segments 1 and 2 would suffice to start up, and then add more later, as more tasks were required.

Each course will have a user specified unique identifier. This can be any alpha/numeric combination suitable to this user. A suggestion might be to make the identifier up from a combination of a district code, a school code and a course identification number.

Each course can have various segments, some of which may be repeated and made up of various data elements. These segments and data elements are described here.

Segments — Data Elements

1 - Course Description Data

- Type - a code indicating whether this is a course for degree-seeking/non-degree-seeking/special education
- Priority - a code indicating whether this is a required/elective/alternate/optional/common/study hall course.
- Duration - a code indicating the number of terms or sessions the course is taught and is what pattern, e.g. 1st and 3rd marking period, 2nd semester, all-year, etc. Allowance is made for up to 5 terms and any combination of them.
- Organization Responsible - code indicating the department or college programmatically responsible for content or budget.
- Discipline Name - the descriptive subject area name, e.g. ENGLISH, MATH, HISTORY, AUTO TECH, etc., specified at the user's descretion.

2 - More Course Description Data

- Course Number - the number indicating a track or level within the discipline, e.g. ENGLISH 1, MATH 101, HISTORY 251, RAD TECH 202, etc.
- Special Fees - the dollar and cents amount of any special fees over and above tuition which are paid for this course, e.g. lab fees, transportation fee, etc.

Credits - the total amount of credit given for the course or if the credit may vary from student to student, the maximum credit which may be earned.

Contact Hours - the number of hours the course is scheduled to meet within its specified time period or the maximum hours for a variable credit course.

Description/Title - the description of what the course content is, e.g. Introduction To Data Processing, College Algebra, United States History 1851-1950, etc.

3 - More Course Descriptive Data

Minimum Credits - if credit may vary from student to student, the minimum number of hours the course may be scheduled to meet for a student.

Minimum Contact Hours - if credit may vary from student to student, the minimum number of hours the "course may be scheduled to meet" for a student.

4 - State Reporting Data

Program Identifier - identification of the program under which the course is offered. The user may wish to refer to NCHEMS classification or develop his own. Some might be General Academic, Occupational Vocational, etc.

Discipline Code - the subject field of teaching, learning or training. The user might use the HEGIS Taxonomy or any local/state code.

Approval Date - the date on which the course was approved for funding/offering by the governing body/funding agency.

"Reported As" - a course code used to report data which may be used to map to other courses or to report multi-subject courses.

5 - Entry Restriction (for use in scheduling)

Sex - the code used to signify to which sex the course is restricted, e.g. M for male, G for girl. This MUST match whatever code is used to identify a student's sex.

Grade Level - codes to restrict entry of students except within a certain range.

from lowest - the low grade level, e.g. 07

to highest - the high grade level, e.g. 08

These codes must be the same as those used to indicate the student's grade level.

Ability Level - code to restrict entry of students except within a certain ability range on a 1-9 scale

from lowest - lowest ability level, e.g. 4

to highest - highest ability level, e.g. 7

These codes must be the same as those used to indicate the student's ability level.

6 - Pre-requisite Courses

Course Identifier - the course identifiers of those courses which must be taken prior to enrolling in the course.

7 - Co-requisite Courses

Course Identifier - the course identifiers of those courses which must be taken at the same time as this course.

8 - Concurrent Courses

Course Identifier - the course identifiers of those courses for which credit is given concurrently with this one for for this course.

9 - Comments for Publications/Catalogs/Schedules, etc.

Type - a code, user-specified, to allow differentiation of comments either for different publications or in groups.

Comment Key - an up to 5-digit number pointing to a comment in the comments data base.

10 Course effective dates

Master Schedule/Class/Section Data Base

This logical grouping of Data Elements contains all those which pertain to those varied and changeable items associated with a particular class or offering of a course. This collection of data can be the Master Schedule of the Institution.

This data base too, is organized so as to be a modular approach to the establishment and maintenance of a Master Schedule. A beginning user might only need segments 1, 2, 4, 5 and 6 to get started and can add others later as needed.

Each user will specify a unique identification for each class or section. While this can be any alpha/numeric character, a suggestion would be to include a District Code, a School Code, a Course Identification Code (all of these being consistent with their uses in other data bases) and a class/section code.

Each class can have various segments made up of various data elements, some of which may be repeated. These segments and data elements are described here.

Segment — Data Elements

1 - Class/Section Descriptive Data

Status - an indication of whether the course is open, closed, temporarily closed, cancelled, etc.

Type of Instruction/Delivery Method - an indication of the primary teaching approach, e.g. traditional lecture, laboratory, individualized media, a reading list, etc.

Term/Duration
- beginning date - YYMMDD
- ending date - YYMMDD

Organization Offering - code indicating the department or college programatically responsible for this section, if different from the course.

Special Fees - the dollar and cents amount of any special fees over and above tuition, if different from the course.

Credits/Maximum Credits - the total amount of credit given for the course or if the credit may vary from student to student, the maximum credit which may be earned.

Contact Hours/Maximum Contact Hours - the number of hours the course is scheduled to meet within its specified time period or the maximum hours for a variable credit course.

Institutional Budget Account - the budget account to which all costs of this course are charged. (Intended to be used for Program Budgeting/State or Local Implementation of USOE Handbook II).

2 - More Descriptive Data

Minimum Credits - if credit may vary from student to student, the minimum credit for which the class may be taken.

Minimum Contact Hours - if credit may vary from student to student, the minimum number of hours the "course may be scheduled to meet" for a student.

3 - Class/Section Entry Restrictions (if different from course)

Sex - the code used to signify to which sex the course is restricted.

Grade Level - codes to restrict entry of students except in a certain grade level range.

from lowest - low grade level allowed

to highest - high grade level allowed

Ability Level - code to restrict entry of students except within a certain ability range on a scale of 1-9.

from lowest - low ability level

to highest - high ability level

4 - Class/Section Instructor(s)

Percent of course load/Cost/FTE - a percentage of the total course for which this instructor is responsible. For example, one instructor teaching the course is 100%; two instructors splitting the course might share 75% and 25%. (This is intended to help Unit Cost/Program Cost studies and load development.)

Instructor Identifier - the identifier of this instructor as he/she is described in the instructor data base.

5 - Class/Section Meeting Data

Beginning Time - in the 24-hour clock

Ending Time - in the 24-hour clock

Days Met - space to indicate which of up to 8 days per weekly pattern the class meets

Location - building - an institutional building identifier

room - the institutional room identifier

6 - Class/Section Enrollment Statistics

Original Seating Capacity - the number of places in the class at the time it was scheduled

Current Seating Capacity - how many places today

Actual Enrollment Counts -

All currently registered students

Male students registered for credit

Female students registered for credit

All students registered for audit

All students who have withdrawn

7 - Class/Section Media List - this is a vehicle for handling instructor's reading lists, individualized instruction, independent learning, ACCESS, and various less traditionally structured class requirements.

Type Code - a user specified code identifying either groupings or types of lists

Item Key - a pointer to a data base containing more descriptive information about the book, film, paper or exercise. This might be the pointer to a Learning Resource Center Shelf List or Catalog Number.

8 - Class/Section Comments for Publications/Catalogs/Schedules, etc. -

Type - a code, user defined, to allow grouping of comments by type of publication for instance.

Comment Key - an up to 5-digit number pointing to a comment in the comments data base.

9 - Class/Section Learning Objectives - this is a vehicle for dealing with the need to provide traditional course and term reporting while being able to provide individualized learning experience. One might define a learning objectives data base and by here grouping pointers to various entries in that data base, might group objectives to form the course content.

Facilities/Room Data Base

This is a logical grouping of those data elements pertaining to room descriptions. It is anticipated that this data base might be expanded to include all facilities for purposes of Unit Cost or Program Cost calculation and for expanded Accounting Practices dealing with such things as indirect costs, depreciation, room utilization or facilities scheduling.

This data base is designed to be approachable modularly by the user. Segment 1 is all that is absolutely necessary to start up. For additional functions, the other segments might be added.

Each room will have a unique identifier. While it can be any combination of alpha/numeric characters, it is suggested that one might use a structure like:

District - 2 characters;
School -- 2 characters;
Building - 2 characters; and
Room Number - 5 characters.

The various segments possible and their data elements are described here.

Segments Data Elements

1 - Facilities/Room Description

Primary Use Category - the designation of major use for instruction, faculty office, administrative office, athletic facility, auditorium, etc.

Organization Unit Primarily Responsible - the department or college programmatically responsible for or having the greatest or primary use of the room.

Maximum Seats - the number of seats or learning stations available in the room or for which it was designed, as the user specifies.

Type of Stations - a description of the seating/working arrangement; e.g. moveable chairs and tables, fixed student desks, laboratory tables, etc.

Accessible by Wheelchair? - Y or N

Primary Subject Area - 2-character code providing the ability to assign rooms so equipped to a certain subject area, e.g. biology labs, athletic facilities, in using room resource allocation programs.

Assignable Square Feet - the useable square footage in the room. May be used for matching to any space per student criteria in force in the district.

2 - Facilities/Room Special Facilities/Equipment Available

Facilities/Equipment Code - a series of 2-character codes specifying special facilities like lab desks, study carrels or air conditioning or special equipment permanently installed such as TV-monitors, computer terminals or the like.

3 - Facilities/Room Schedule of Use

Use Pattern - a code indicating single use, short-term use or whole-session pattern.

Beginning Date/Date of Use - the beginning date of a short-term or whole-session useage pattern or the date of a single use, e.g. for a meeting.

Ending Date - for recurring use

Class/Section/Function Code - the class/section id. of a class or a code indicating a meeting or outside use rental or the like.

Days Meets - 7 characters allowing specification of the days of use.

Beginning Time - in the 24-hour clock.

Ending Time - in the 24-hour clock.

4 - Dept relationship

Instructor Data Base

This is a logical grouping of Data Elements related to the instructor. The intent here is to maintain enough data to allow instructor resource allocation systems to perform and to provide in non-recurring form enough data for information retrieval concerning class schedules including instructor name and instructor schedule and load data. It is assumed that this data base may either be expanded for purposes of payroll/personnel systems, be merged into existing payroll/personnel systems, or be replaced by same.

The segments are organized so that a beginning user could establish a data base using only data elements from segments 1, 2, 11, and 12. He could then add additional segments as needed.

Each instructor will have a unique identifier. While it can be any combination of alpha/numeric characters, a suggestion would be to establish a pattern to also allow the District/Institution Code and an instructor number, perhaps even the social security number.

The data base can have, at the user's discretion, various segments or groupings of data elements. These segments and data elements are described here.

Segment — Data Elements

1 - Instructor Demographic Data
- Status - active, leave of absence, etc.
- Citizenship - Y or N for U.S. citizen
- Civil Rights Racial Category
- Sex
- Marital Status
- Birthdate - YYMMDD
- Date Hired - YYMMDD
- Faculty Rank
- Tenure - Y or N for has tenure or not
- Instructor Name - including any prefix, first name, middle initial, last name and suffix
- Social Security Number - if not used for identifier

2 - Instructor Contact Data
- Type - medical, local, emergency
- Family Identification - pointer to the family data base for address and other information

3 - Instructor Handicaps
- Codes - series of codes indicating any physical/health handicaps

4 - Instructor On-campus Location Data
- Organization Having Fiscal/Programmatic Responsibility - the department/college to which the instructor "reports".

Office Location - building
- room
Telephone/Extension
Home Room - building
- room number

5 - Instructor Previous Teaching Experience
Location Code - signifies in district/in state/out of state
Function - a code indicating whether teaching, administrator type, etc. according to a local/state set of codes
Grade Level - from lowest
- to highest
Program/Major Field
Beginning Date - YYMMDD
Ending Date - YYMMDD

6 - Instructor Previous Occupational Experience
Type - DOT code xxx.xxx
Number of Years

7 - Instructor Educational Experience
Institution Identifier
Type of Degree/Diploma/Certificate Earned - B.A., M.B.A., Ph.D.
Date Earned - YYMMDD
Program/Major Field

8 - Instructor Courses Beyond Highest Degree
Institution Identifier
Type - code indicating whether a credit course or in-service training or other user codes
Date Earned - YYMMDD
Credits/Credit Equivalents
Program/Major Field
Course Title/Description

9 - Instructor Subject Areas/Program Specialties/Certificates Held
Code - a series of user defined codes identifying various subjects/program specialties/certificates. The intent is to be able to use instructor resource allocation systems and be able to provide state/federal reporting.

10 - Instructor Assignment Specifications
Here too, the intent is to provide input to instructor resource allocation systems.
Maximum Number of Preparations
Maximum Number of Meetings/Classes/Sections
Maximum Number of Contact Hours
Maximum Number of Students

11 - Instructor Current Schedule/Contracts

Type of Contract - full-time, part-time, overload

Duration in Whole Months

Function - a code indicating administrative, guidance, LRC, instruction, conference

Percent of Total Load - the percent of the instructor's load that this contract carries

Class/Activity Identifier - either the class identifier code or a code indicating conference time, coaching, etc.

12 - Instructor Termination Data

Reason Code

Date - YYMMDD

Comments for Publications/Catalogs/Schedules Data Base

This is a collection of possible comments to appear on the CRT, but primarily in handling publications like the term schedules, future registration course selection lists, catalogs and master schedule lists. The comments may cover such things as "Independent Study," "Laboratory Required," "Consent of Instructor Required," "For Women Only," and the like. These are usually comments which must appear, but do not fall into the realm of Pre-requisite or Co-requisite courses.

Each comment will have a unique identifier. The identifier can consist of any alpha/numeric characters, but sense would indicate some structure be followed, possibly like:

District Code - 2 characters
School Code - 2 characters
Comment Identifier - 5 characters

The comments themselves consist of a single segment with two data elements. They are:

Segment	Data Elements
0 - Comments	
	Type - a code for classifying or grouping comments.
	Comment - the text of whatever length

Class/Section Enrollment/Waiting List

This is simply a repository of the identifiers of all the students either enrolled in or on the waiting list for this class. Its purpose is to allow rapid access to these lists without having to search all students to see what they are taking.

A user may or may not have waiting lists at his discretion. There is also the ability to maintain the status of each student and each student's grades here for ready and quick reference as needed.

Each list will have a unique identifier and while it is possible to use any combination of alpha/numeric characters for it, it would seem sensible to have a scheme which relates to the class for which this is the list. In this regard, a suggestion is:

District - 2 characters;
School - 2 characters;
Course - 5 characters;
Class - 3 characters; and
List Type - E or W for enrollment or waiting list.

The data will consist of a segment for each student who ever enrolled in the course with his status or grades.

Segment	Data Elements
1 - Enrollees/Students Waiting	
	Status/Grades - space for up to 4 grades or status indicators per student. This allows for dropped students and for + and - grades where applicable.
	Student Identifier - the institution's student identifier

Student Enrollment/Withdrawal Log

This is a collection of data pertaining to the daily activities of dropping or adding courses by students. All changes in registration would be logged here to allow notification of instructors and appropriate offices. This can also serve as a means of providing Attendance Audit Trail Data for funding reports and facilitates daily attendance taking.

Each log will have a unique identifier to associate it with a school/campus. While this id. may be any combination of alpha/numeric characters, it would seem appropriate that it contain the district code, the school code and some record number since many activities can be logged on one record.

Segment	Data Elements
1 - Activity Log Data	
	Activity Type - drop or add
	Activity Status - save/purge/printed-but retain
	Date of Activity - YYMMDD
	Time of Activity - HHMMSS
	Student Identifier -
	Class Identifier - course and section

NOTE: This data would occur for each occurance of activity for each student, so that there might be multiple occurances for a student if he both dropped a course and added a course.

Tables

In designing the Instructional and Counselor Administrative Support functions of Discover, the intent is to be able to tie in (interface) with a user's existing systems or techniques for data handling. One of the ways Discover seeks to do this is by making the various codes used in the system specifiable by each user of the system. In this section are listed the various codes and their default values should the user wish to use them. Each code is contained in one of the tables which is accessible for viewing or modification by the user on-line.

Table Name	Code	Meaning
Sex	M	male (users could substitute B or 1)
	F	female (users could substitute G or 2)
Marital Status	S	single, the state of never having been married
	M	married
	D	divorced
	W	widowed
	L	legally separated
Civil Rights Race	1	American Indian or Alaska Native
	2	Asian or Pacific Islander
	3	Black/Negro
	4	Hispanic
	5	White, other than Dispanic
	6	Refuse to Indicate
Residency	1	In-district
	2	Out of district - In State
	3	Out of State
	4	Senior Citizen
	5	Out of District Charge Back
	6	Shared Student - cooperative education
	7	Foreign Student
	8	In-district non-reimbursable
College Board Achievement Tests Code	A	English Composition Test
	B	Literature Test
	C	American History and Social Studies Test
	D	European History and World Culture Test
	E	Latin Test
	F	Mathematics Level I Test
	G	Mathematics Level II Test
	H	French Test
	I	German Test
	J	Russian Test
	K	Spanish Test
	L	Hebrew Test
	M	Biology Test
	N	Chemistry Test
	O	Physics Test

Family Relationship Code	M	Mother
	F	Father
	H	Husband
	G	Guardian
	S	Stepfather/mother
	N	None
	O	Other
	X	Self
	P	Foster Parent
Disadvantaged/ Handicapped/ Health Problems Code	1A	exhibits hostile or apathetic behavior
	1B	over age for grade by at least 2 years
	1C	reading at least 2 grades below grade placement
	1D	difficulty in oral and written communications
	1E	frequently absent from school without apparent cause
	1F	needs economic assistance to continue an education program
	1G	cultural or linguistic isolation from rest of community
	1H	mathematical ability at least 2 years below grade placement
	2A	Vision handicap
	2B	Hard of Hearing/Deaf
	2C	Speech
	2D	Crippled/Physically Limited
	2E	Other
	3A	Referred to psychologist, family service or receiving intensive counseling individually or in a group
	3B	Deviant behavior pattern as observed by Deans, Counselor-deans and others
	3C	Identified for socially maladjusted
		Individual Achievement Program (IAP)
	4A	Educable Mentally Handicapped (EMH)
	7A	Epilepsy or convulsive disorder
	7B	heart disease
	7C	diabetes
	7D	abnormal pulse
	7E	hemophelia
	7F	asthma
	7G	ulcers
	7H	Paralysis
	7I	nervousness
	7J	orthopedic
	7K	allergies
	7L	dietary problems
	7M	head injuries
	7Z	other

Degree/ Diploma/ Certificate	A	elementary diploma (K-6)
	B	middle/junior high school diploma (7-8)
	C	middle/junior high school diploma (7-9)
	D	elementary diploma (K-8)
	E	high school diploma
	F	postsecondary diploma/certificate for a program covering less than 1 academic year
	G	postsecondary diploma/certificate for a program covering from 1 to 2 academi years
	H	associate degree
	I	bachelor's degree
	J	First Professional Degree
	K	Master's Degree
	L	Doctoral Degree
	M	Other
Grade Level	N	pre-school
	K	kindergarten
	01-12	the normal elementary/middle school/ junior high school/high school levels
	PR	preparatory school
	FR	freshman postsecondary
	SO	sophomore postsecondary
	JR	junior postsecondary
	SR	senior postsecondary
	FP	first professional
	G1	graduate I
	G2	graduate II
	SP	special
	O	Other
Admission Status	1	new student
	2	transfer student
	3	re-admitted student
Admission Action	1	pending
	2	incomplete data
	3	accepted
	4	denied
Shift/ Division	1	first shift
	2	second
	3	third
	4	fourth
Academic Status	1	good standing
	2	probation
	3	suspended
	4	withdrew from school
	5	unclassified

	6	dropped, low scholarship, last quarter on pro.
	7	reinstated on probation
	8	reinstated/probation dropped
Extra-Curricular Activities Participation/ Leadership	1	participates
	2	is an officer/leader as wll as participates
How Earned (Credits)	1	in graded courses
	2	in pass/fail courses
	3	by proficiency examination
	4	military service
Type Code (for Educational Summary)	1	all education
	2	previous institutions
	3	this institution (here)
Family Status	P	Parent Address record
	L	Local Address record
	M	Medical Address record
	E	Emergency Address record
Dwelling Type	SF	Single Family Dwelling
	S1-S5	Single Family Dwelling, one to five bedrooms
	AP	Apartment
	A1-A5	Apartment, one to five bedrooms
	MX	Multiple Dwelling
	M1-M5	Multiple Dwelling, one to five bedrooms
	MH	Mobile Home
	TH	Townhouse
	IN	Institution
	HT	Hotel
	MT	Motel
Telephone Type	H	home
	E	emergency
Type of Non-Student	1	a student attending other than a district school
	2	non-student family member over/under school age
	3	student attending other than a district school, but tuition is paid by the district, e.g. special education cooperatives
Type of Course	1	degree
	2	non-degree
	3	special education
	4	seminar
Priority (Course)	R	required
	E	elective
	A	alternate
	O	optional
	C	common
	S	study hall
Program Identifier	11	General Academic Instruction

	12	Occupational and Vocational Instruction
	13	Special Session
	14	Extension (for credit) Instruction
	31	Community Education
	52	Supplementary Education
Publications Comments Type	1	General Listings
	2	Catalog
	3	Schedule of Classes/Courses
	4	Other
Class Status	O	open
	1	closed, no seats available
	2	closed, no room capacity
	3	closed temporarily
	4	closed temporarily for updating
	5	cancelled
Type of Instruction	A	Lecture
	B	Laboratory
	C	Recitation/Discussion
	D	Seminar
	E	Independent Study
	F	Tutorial
	G	Proframmed Instruction
Days Class Meets	S	Sunday
	M	Monday
	T	Tuesday
	W	Wednesday
	H	Thursday
	F	Friday
	A	Saturday
Media Type	A	Book
	B	Lecture
	C	Test
	D	Laboratory Procedure
	E	Film
	F	Filmstrip
	G	Slides
	H	Video Tape/Cassette
	I	Microfilm/fiche
	J	Audio record
	K	Audio Tape/Cassette
	L	Computer Terminal
	M	Field Trip
Facilities Primary Use	1	Classroom
	2	Laboratory
	3	Office
	4	Study Facilities
	5	Special Use, e.g. Athletics
	6	General Use, e.g. Auditorium
	8	Health Care

Type of Stations	A	fixed chairs
	B	moveable chairs
	C	table seating
	D	stools
	E	lab stations
	F	desks
	G	carrels
Instructor Status	1	active, full-time
	2	leave
	3	sabbatical
	4	active, part-time
	9	terminated
In-district/ Out-district/ Out-State	1	in-district
	2	out of district, in state
	3	out of state
Instructor Contract Type	1	full-time
	2	part-time
	3	overload
Termination Reason	A	Employed in different In-state Public Schools
	B	Employed in Private In-state School System
	C	Employed in an out of state Educational System
	D	Entered Non-educational, Non-military Vocation
	E	Entered Military Service
	F	Entered College for further study
	G	Domestic Responsibilities
	H	Death or Incapacitating Illness
	I	Retired
	J	Position Eliminated
	K	Asked to Resign
	O	Other Reason for Resignation
	L	Leave of Absence for Pregnancy
	M	Leave of Absence for Health
	N	Leave of Absence for Military
	P	Sabbatical
	Q	Other Leave of Absence

Additionally, for viewing purposes, it might be necessary for the user to define various other codes, to facilitate their translation, for instance, as displayed on a CRT. An example would be County: a Northern Illinois User might have coded county as 02, but would like to see DuPage when county is displayed. For these purposes, additional tables will have to be coded by the user, but if not coded, there are no defaults. In this case no translation is done.

Here we list those.

Security Code/Privacy Codes
Local Institutions, such as all schools in a district
Program/Major Field of Study - one might use the HEGIS Taxonomy and add local codes for junior high/high school curricula.
Campus/School, especially for multi-campus institutions
Ability Levels - a suggestion would be to follow the IBM Corp. EPIC: Socrates scheme
Reinstatement Conditions, such things as counselor conferences
Registration Hold Reasons, such things as LRC material outstanding, NSF checks, loans not repayed, meetings with Dean of Students, etc.
Extra-Curricular Activities
Grades/Status Codes
Instructor Comments regarding student performance
Honors and Awards
County/Parish Codes and Names
Township/Municiplaity Codes and Names
Elementary School Codes
Middle/Junior High School Codes
High School Codes
Community College/Junior College Codes
Course Duration Patterns - a suggestion would be to follow the IBM Corp.'s EPIC: Socrates scheme
Organization Unit Codes - for departments, cluster colleges, etc.
Special Facilities or Equipment Codes
Faculty Rank
Instructor Function Codes
Instructor Subject/Special Certificate Areas

Other Members Data

Add a family - number generated by system
Delete a family

Course and Master Schedule Data Base Oriented

Review and Update Courses
Scan Curriculum
Review and Update Classes/Sections
Open classes
Close classes
Cancel classes
Add classes
Scan class schedules
Class List
Waiting List
Review sections of a Course

Facilities/Room Data Base Oriented

Review and update Room Data
Room Utilization Schedule
Schedule a room for other than a class
Scan rooms by type of facility

Instructor Data Base Oriented

Review and Update Instructor Data
- Demographic/Previous Experiences
- Education and Subject Areas/Certificates
- Local address - office, phone, etc.
- Assignments/Schedule

Scan Instructor by Subject Area

Logically Data Base Independent

Student Schedule Maintenance (Drop/Add Classes)
Mark/Grade Maintenance
Schedule Planning - using requirements, courses taken
Locating a Student on Campus

Functions

In designing these data bases for Instructional Administrative and Counselor Support, we investigate for immediate application the functions of:

Student Data Maintenance including adding, updating and deleting both entire records and individual data elements. This function was considered from the viewpoints of various administrative offices who would deal with the student, such as Admissions, Guidance, Deans/Principals, Business Office, Learning Resource Center/ Library, Student Activities/Athletics, Nurse/Health and Security.

Student Scheduling and Schedule Maintenance including dropping and adding of courses throughout the year. Care was taken here to ensure compatibility with existing scheduling systems and to consider the ramifications of attendance recording and individualized instruction.

Master Schedule Creation and Maintenance including adding, updating and canceling courses/classes. Again here existing scheduling systems were examined for compatibility.

Mark or Grade Maintenance including adding or changing of grades and associated data like GPA, cumulative credits, class rank.

Additionally, consideration has been given to such future applications as:

Attendance Reporting
Test Scoring
CMI/CAI
Financial Aid
Pre-registration and future scheduling requests
Family/Census reporting for enrollment projection

Concepts which governed our thinking included Individualized or Independent Instruction; Multi-media Delivery of Instruction; Traditional Course and Term Structure; and the occurance of courses either overlapping terms or courses, or starting and ending completely within, yet not aligned with, the traditional course or term structure.

APPENDIX B

Documents Related to the Field Trial

Outline of In-Service Training Program for Counselors

Estimated Training Time	
	I. Review of Career Development Theory
1 Hr.	A. Life Stages and Developmental Tasks
1 Hr.	B. Measurement of Vocational Maturity
1 Hr.	C. Career Decision Making
1 Hr.	D. Personal Characteristics and Vocational Choice
	II. Synthesis of Theory into a Systematic Model for
1 Hr.	Career Guidance. The DISCOVER model
	A. Information about self
1 Hr.	1. Values and Occupational Choice a) Study of Katz' work, ten values and occupations which relate.
1 Hr.	b) Playing of board version of Career Decision Game.
	2. Interests and Competencies and Occupational Choice
1 Hr.	a) The Self-Directed Search 1) take the instrument 2) learn how to interpret it
	B. Learning how to make decisions
1 Hr.	1. The classical model of decision making and decision making styles
1 Hr.	2. Super's Career Decision Tree
	C. Information about Occupations
	1. Classification systems
1 Hr.	a) Ideas - Data - People - Things (IDPT)
1 Hr.	b) Holland's work environment system
	2. Browsing via the Holland framework
1 Hr.	3. Contents and source of "Getting Information About Occupations"

Project DISCOVER

Baltimore Counselors Inservice Training

OUTLINE

I. *A review and synthesis of career development theory*

   A. *Donald Super*

   B. *John Holland*

   C. *Decision-making theory*

   D. *A synthesis of these three*

II. *DISCOVER as a systematic career guidance program based on career development theory.*

   A. *Review of the DISCOVER conceptual model and of individual modules.*

   B. *"Hands On" experience at the terminal*

III. *Using DISCOVER as an integral part of the guidance program*

   A. *Reasons for using a computer to help with guidance tasks.*

   B. *The role of the counselor and the computer.*

   C. *Possible supportive activities for DISCOVER in the guidance program and the curriculum (if the System is kept for long-term use.)*

AGENDA
for
MEETINGS with FIELD TRIAL SITES

I. DEMONSTRATION

A. "Learning to Make Decisions" Jack Rayman

B. "Learning to Group Occupations" → "Browsing" → simulation of "Getting Information about Occupations" Doris Bryson

C. Frame Builder Jim Boyd

II. PROJECT NEEDS (see sheet entitled, "Project Needs")

A. General Support

B. Technical support.

III. PROJECT TIME LINE

July 18: Invite site(s) to serve as field trial sites.

Mid-August: Receive administrative approval from site(s).
Order phone lines.

September: Begin planning with school districts for implementation, including technical implementation, selection of specific locations for terminals, orientation, and inservice training.

DISCOVER team plans all specifics of student orientation, student use, and evaluation of guidance system with consultant help, including the designated Project Coordinator within each school district.

November: Installation of DISCOVER program in host computer(s).

December: Trial run of system with terminals.

January: Inservice training for counselors.
Begin field trial.

May: Conclude field trial.

IV. PROJECT OFFERS

A. Opportunity to be the first implementers of a significant innovation.

B. All terminal equipment (3 cathode ray tube terminals and 1 printer per test site) and phone lines for the period of the field trial.

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B. All terminal equipment (3 cathode ray tube terminals and 1 printer per test site) and phone lines for the period of the field trial.

C. Free use and maintenance of the program for two school years (1976-1977 and 1977-1978)

D. Technical support as needed during the field trial.

E. Project team on-site for observation, interviews, and completion of all tasks related to evaluation during the field trial.

V. QUESTIONS and DISCUSSION

PROJECT NEEDS

A. Needs for adequate field trial of guidance content:

1. Operation throughout the entire school day.
2. Availability of students to fill the terminals during all hours of operation.
3. Availability of students for orientation session (one period).
4. Availability of students for completing questionnaires, for interviews, and for possible pre- and post-testing.
5. Availability of student data for student record backup and for student data analysis.
6. Paraprofessional support for scheduling at terminal.
7. Inservice training time with counselors--2 or 3 days.
8. Administrative-level local coordinator.
9. Availability of users in grades 7-12.
10. Space and security for two to three cathode ray tube terminals, a control unit, a data set, and one printer, including sufficient electical outlets.
11. Cataloguing of student behavior after use of system: i.e., use of library resources, visits to counselors, etc., as applicable.
12. Supportive environment from counselors.
13. Random selection of control and experimental groups.
14. Adequate communications about the field trial to Board, administration, faculty, and parents.

B. Needs for technical operation:

1. CICS/VS capability and staff support.
2. CICS partition in priority 1.
3. One 3330 disk drive or equivalent on-line storage.
4. 20K real or 96K virtual storage pool.
5. One bisynchronous port dedicated to DISCOVER
6. Student data base in DISCOVER format.

7. Implementation and operational support.

8. Operational procedures for running DISCOVER support programs.

9. Logging of system and terminal down-time with causes.

Project DISCOVER

Inservice Training Program
Rating Sheet

Please indicate if you are: 4 a teacher 1 an administrator
12 a counselor ___ other _____

1. Please rate each of the following parts of the inservice training program on a scale from 1 to 5, with 1 as the lowest rating and 5 as the highest.

	Very Poor 1	Poor 2	Acceptable 3	Good 4	Excellent 5
The review of career development theory	___	___	___	4	8
Detailed study and use of the DISCOVER guidance system	___	___	___	6	6
Instruction about the use of DISCOVER as a part of the school's guidance program	___	___	___	3	1

2. Please list any activities or parts of the inservice training program which you found PARTICULARLY HELPFUL.

Experience with SDS; the visual display of materials used with DISCOVER; the Professional Manual; the review of career development theory, values, and decision making.

3. Please list any parts of the DISCOVER inservice training program which you found to be NOT HELPFUL and/or UNNECESSARY.

4. Please make any suggestions which you'd like to make for the improvement of this inservice experience:

Demonstration and practice time with the system at the terminal;

A longer time for inservice so that materials can be digested and then discussed.

5. Additional comments:

Project DISCOVER

Guidance Evaluation Design

WITH STUDENTS

Sample Description

Group A: 48 Students selected from Garrison, Poly & Western to provide the following distribution:

7-9	10-12	Sex	Q
1	2	M	1
1	2	M	2
1	2	M	3
1	2	M	4
1	2	F	1
1	2	F	2
1	2	F	3
1	2	F	4
1	2	M	1
1	2	M	2
1	2	M	3
1	2	M	4
1	2	F	1
1	2	F	2
1	2	F	3
1	2	F	4
16	32		

Group B: 72 Students selected from Garrison, Poly & Western to provide the following distribution:

7	8	9	10	11	12	Sex	Q
1	1	1	2	2	2	M	1
1	1	1	2	2	2	M	2
1	1	1	2	2	2	M	3
1	1	1	2	2	2	M	4
1	1	1	2	2	2	F	1
1	1	1	2	2	2	F	2
1	1	1	2	2	2	F	3
1	1	1	2	2	2	F	4
8	8	8	16	16	16		

TOT=24 TOT=48

Student Treatment

1. Use all 21 modules of DISCOVER in order; approximately 20 periods of use spread over 8 weeks.
2. Be observed by DISCOVER staff member during use.
3. Have a 5-10 minute interview with a DISCOVER staff member after each use.

1. Use modules 1A, 1B, 2A, 2B, 3A, 3B, 4, 5, 6, 7, and appropriate parts of 8 in systematic order; approximately 10 periods of use spread over 8 weeks.
2. Be observed by DISCOVER staff member during use.
3. Complete short questionnaire after each System use.
4. Complete longer questionnaire at the end of total experience.
5. Have 15-minute interview (selected sub-sample only) with DISCOVER staff member at end of total experience.
6. Take three instruments at end of total experience:

a. Super's Career Development

Inventory (30-40 minutes)

b. ACT's Assessment of Career Development (35 minutes)

c. An instrument to measure decision-making skill (not to exceed 1 hour)

Group C: 72 Students selected from Garrison, Poly & Western to provide the same distribution as in Group B.

1. Use the DISCOVER system as often as desired on a voluntary basis, in any order desired, available during an 8-week period.

2. - 6. As listed above.

Group D: 72 Students selected from Garrison, Poly & Western to provide the same distribution as in Group B.

These students cannot use the computer system. They need to complete the three instruments listed in item 6 in Group B.

WITH COUNSELORS

1. Participate in proposed inservice training program.

2. Evaluate DISCOVER inservice training program, Professional Manual, Student Resource Guide, and student orientation material via questionnaire and discussion.

3. Provide a monthly report in regard to the results of System installation, including:

   a. number of students who come for interviews or information as a result of using DISCOVER.

   b. topics (DISCOVER-related only) covered in these interviews.

   c. differences, if any, noted in counselor time appropriation, role, or function.

   d. any student feedback received.

4. Participate in an interview with a DISCOVER staff member at end of field trial.

WITH ADMINISTRATORS

Participate in an interview with a DISCOVER staff member at end of field trial.

WITH PARENTS of EXPERIMENTAL GROUPS

Receive a letter containing a questionnaire and a stamped, addressed envelope.

PLAN and DESIGN of DISCOVER FIELD TRIAL

PLAN A: February - May, 1976
(in the event of no further funding)
PLAN B: January - June, 1976
(in the event of supplemental funding
from Career Education)

I. SELECTION OF FIELD TEST SITES

PLAN A: Begin with a list of all secondary-level school districts within a 50-mile radius of Westminster which already have IBM 370 machines running under CICS operating systems. Seek two sites which meet the following criteria:

1) Have an adequate supply of the desired target population.
   a) grades 7-12 enrollment
   b) lower-class, inner-city students (one site)
2) Have a competent and willing guidance staff.
3) Have a competent technical data processing staff with teleprocessing experience.
4) Are willing to allow the DISCOVER staff freedom and time to do on-site observation; interviewing and administration of questionnaires; inservice training of some teachers and counselors; orientation of students; and to allow students freedom and time to use the system.
5) Are willing to donate sufficient computer time for the running of the field trial in return for receiving the system free of charge. Terminal equipment will be provided by the Project.
6) Are aware of the publicity such a field trial may generate and are willing to deal with the attendant inquiries, visitors, and opportunities.

Approach two sites which most nearly meet all criteria with the field trial offer and plan.

PLAN B:

1. Seek the assistance of Niel Carey and other appropriate persons in Maryland to develop a list of schools within a 50-mile radius of Westminster which meet the following criteria:
   a) Are representative of the desired populations: lower-class, inner-city and upper-middle class suburban secondary-level students.
   b) Have an openness to innovation.
   c) Have a competent and willing guidance staff.
   d) Are willing to allow the DISCOVER staff freedom and time to do on-site observation; interviewing and administration of questionnaires; inservice training of some teachers and counselors; orientation of students; and to allow students freedom and time to use the system.

e) Might have some interest in and ability to retain the system at the close of field test.
f) Are aware of the publicity such a field trial may generate and are willing to deal with the attendant inquiries, visitors, and opportunities.

2. Rank order the resultant list based upon the degree to which each possible school meets the stated criteria.
3. Approach one site for each of the two target populations with an invitation to be a field test site, with all computer power and terminal equipment being provided by the Project.
4. In case of lack of interest or administrative approval in an invited site, go to the next in priority order.

II. TIME SCHEDULE

	PLAN A	PLAN B
May 1975	Identify possible field test sites	Identify possible field test sites.
June 1975	Invite field trial sites	Invite field test sites. Order phone lines & modems.
July 1975	Get Board approval for field trial.	Get Board approval for field test.
August 1975		Test program in Western Maryland College computer in dedicated mode.
September 1975	Plan schedule for staff inservice training, student orientation, and equipment installation.	Plan schedule for staff inservice training, student orientation, and equipment installation.
October 1975		
November 1975		Upgrade Western Maryland computer; get program at Western Maryland computer operational.
December 1975	Get program operational at host computer.	Install and test phone lines and all terminal equipment; conduct inservice staff training; conduct student orientation.
January 1976	Install and test phone lines and terminal equipment; conduct staff inservice training, student orientation.	Begin Phase I of field test.

February 1976	Begin field trial. Begin system revisions.	Begin system revisions.
March 1976		Begin Phase II of field test.
April 1976		
May 1976	Conclude field trial	
June 1976.	Complete system revisions Write field trial report.	Conclude field test Complete system revisions Write field test report.

III. RESEARCH DESIGN AND QUESTIONS

A. Plan A.

	Method
Question 1: What are the characteristics of system operation in host environments?	
a. What is the response-time range?	observation/record keeping
b. What amount of "up" and "down" time is experienced?	record keeping
c. What system "bugs" occur?	observation/record keeping
d. What difficulties, if any, are encountered by simultaneous operation of DISCOVER with other programs in the host school?	observation/record keeping
e. What is the per-hour cost of operation?	Division of cost of operation of DISCOVER per month/ potential hours of student use per month
Question 2. To what degree is the content of the system appropriate for the target populations?	
a. Is the reading level appropriate?	observation; random sample interviewing
b. Are the system instructions clear and understandable?	observation; random sample interviewing
c. Is the content of specific modules understandable and acceptable to users?	observation; random sample interviewing
d. What is the average time spent on each module: Does module content fit logically within one class period?	observation/record keeping
Question 3. What are the characteristics of voluntary system users?	
a. How many times do students	

return to use the system?	record keeping
b. How are voluntary users distributed by sex, grade level, and academic achievement?	record keeping

Question 4. What are the reported effects of system use by students?

a. How do students respond to the system?	Observation Questionnaire Structured interview
b. What effects--such as gain in occupational knowledge, self-knowledge, specification of career goals, etc.--do users report?	Questionnaire Structured interview
c. What kinds of exploratory behaviors do students engage in after use of the system?	Questionnaire Structured interview

All of the above data will be collected as a result of accepting as many voluntary users of the system as possible during the field trial period.

In addition to collection of data from students, data will be collected from a random sample of parents and teachers and from all administrators and counselors by structured interview. Reactions will be sought in regard to a) the total system, b) the inservice training material and experience, c) the student orientation materials, and d) the professional manual.

B. Plan B.

All of the plans proposed under Plan A will also be carried out under Plan B. In addition, hard data will be sought in regard to the measured effects of student use of the system. As soon as smooth technical operation has been achieved, and answers to Plan A questions have been found, a second phase of evaluation will begin. A sample of approximately 400 students will be randomly drawn from the population at each of the two field test sites. Half of these will be randomly assigned to an experimental group and half to a control group. System use will now be confined to those in the experimental group. Each of these students will be scheduled to use the system at least four times during part two of the field test, and each will be encouraged to use the system more often. No treatment will be given to the control group by DISCOVER personnel, except pre- and post-testing. Research design will consist of pre- and post-testing of both the control and experimental groups with the instruments specified below. Data will be analyzed by grade level, sex, and quartile of school achievement both within and across test populations. Data will also be analyzed by majority-minority group membership and by socio-economic class across the two test populations. Analysis of covariance will be used to determine whether changes in specific variables are significant over time in the experimental group

as compared to the control group.

The following research questions will be asked. Expected user outcomes are stated in terms of directional hypotheses. Instruments and techniques which will be used to measure each of these variables are specified.

Research Question 1	
What change, if any, is effected in self-knowledge due to use of the system?	Pre- and post-administration of American College Testing Program's Assessment of Career Development (ACD), making use of self-awareness scale.
Hypothesis: Students who use the system show a significant increase in knowledge and awareness of personal values, competencies, interests, and achievement.	Pre- and post-administration of questionnaire designed by DISCOVER team.
Research Question 2	
What change, if any, is effected in occupational knowledge due to use of the system?	Pre- and post-administration of the ACD, making use of the six occupational knowledge subscales (Holland's six groups of occupations, the same clustering system used in DISCOVER.)
Hypothesis: Students who use the system will show a significant increase in cognitive knowledge about and in awareness of occupations in Holland's six occupational clusters.	Pre- and post-administration of questionnaire designed by DISCOVER team.
Research Question 3	
What change, if any, is effected in decision-making and career-planning skill as a result of use of the system?	Pre- and post-administration of the ACD, making use of the Career Planning and Decision Making Scale.
Hypothesis: Students who use the system will show a significant increase in decision-making and career-planning skill.	Pre- and post-administration of the College Entrance Examination Board's new measure of decision-making skill.
	Pre- and post-administration of questionnaire designed by DISCOVER team.
Research Question 4	
What change, if any, is effected in progress toward specification of career goals?	Pre- and post-administration of DISCOVER questionnaire.

Hypothesis: Students who use the system will show a significant move toward specification of both educational and vocational goals.

Research Question 5

What change, if any, is effected in vocational maturity?

Hypothesis: Students who use the system will show a significant increase in vocational maturity.

Pre- and post-administration of Super's Career Development Inventory.

APPENDIX C

Documents Related to the Formation of DISCOVER Foundation, Inc.

Agreement

This agreement, entered into this 1st day of July, 1976, by and between College of DuPage and the DISCOVER Foundation, Inc. (a not-for-profit corporation licensed in the State of Maryland), witnesseth:

Whereas, the DISCOVER Foundation, Inc. will have staff members located both at Western Maryland College and College of DuPage; and

Whereas, the capital of the DISCOVER Foundation, Inc. obtained from the lease of its products and whatever proposal-writing activities it may engage in will be deposited in a specially-designated account at Western Maryland College; and

Whereas, the official accounting of the Foundation's books will take place at Western Maryland College;

Now, therefore, in consideration of the mutual promises hereinafter set forth, College of DuPage and the DISCOVER Foundation, Inc. agree as follows:

1. Scope of Work and Staffing:

   The technical team of the DISCOVER Foundation, Inc. shall be housed at College of DuPage and shall be directed by Mr. James Boyd, vice-president of the Foundation.

   a. Under his direction, the technical team shall provide the following services: preparation of computer tapes and associated documentation materials for distribution; constant/technical maintenance of the DISCOVER grades 7-12 system, including programs, text, and data

files; provision of supportive services to DISCOVER users by phone, correspondence, and in person as appropriate; programming of new developments, specifically the currently-unfinished modules of the grades 7-12 system and the counselor and administrator-support systems; and installation of DISCOVER grades 7-12 for users who elect to pay for this service.

b. James Boyd shall have a 40% time commitment to the DISCOVER Foundation, Inc. and shall have the following staff: one full-time programmer; 40% time commitment of administrative assistant-secretary; and one half-time data entry paraprofessional.

2. Period of Agreement

This agreement shall be in effect between College of DuPage and the DISCOVER Foundation, Inc. from July 1, 1976 through June 30, 1977.

3. Financing

a. Basis

This agreement is for the amount actually expended for the services as outlined under "Scope of Work and Staffing" in Section 1 above and as estimated in item 3b below.

b. Estimated Budget

1) Personnel

Mr. James Boyd - 40%	$12,000
Administrative Secretary - 40%	4,000
Programmer - 100%	10,000
Data-entry Paraprofessional - 50%	4,000
Total personnel -	$30,000

2) Fringe Benefits - 16.38% of personnel salary $4,914

3) Duplicating and printing 2,000

4) Travel 3,000

5) Computer time as needed, billed at $600 per internal CPU hour 5,000 (estimated)

6) Overhead (to include phone expenses, office space, postage, general materials and supplies) 25% of personnel salaries 7,500

c. Method of Payment

The DISCOVER Foundation, Inc. will make payment to College of DuPage on a quarterly basis, on approximately October 15, 1976, January 15, 1977, April 15, 1977, and July 15, 1977, pursuant to receipt of a statement of expenditures by September 30 and December 30, 1976; and March 30 and June 30, 1977. This statement of expenditures must be accompanied by an itemized listing which clearly indicates the date, nature, and amount of each expenditure. For line items 1 and 2 (personnel and fringe benefits) a letter at the beginning of the fiscal year which states the salary, fringe benefits, and percentage of time commitment of these individuals will suffice. Since DISCOVER Foundation, Inc. is required to submit its books to the United States Office of Education for an annual audit, such accounting is mandatory.

In witness whereof, the parties hereto have caused this agreement to be executed as of July 1, 1976.

College of DuPage

By: _____

Title: _____

DISCOVER Foundation, Inc.

By: _____

Title: _____

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
OFFICE OF EDUCATION
WASHINGTON, D.C. 20202

MAR 17 1976

JoAnn Harris Bowlsbey
Project Co-Director,
Project DISCOVER
Western Maryland College
Westminister, Maryland 21157

Re: Copyright Program Docket No. 742-75

Grant Nos.: OEG-0-74-1751 with Northern Illinois University and C007500109 with Western Maryland College
Request Dated August 26, 1975

Signed by: Ms. JoAnn Harris Bowlsbey
Project Co-Director

Materials: Project DISCOVER Materials

Authorization Termination: June 30, 1977, unless sooner terminated or subsequently extended

This is an agreement made between the United States Office of Education (USOE) on behalf of the United States Government, JoAnn Harris Bowlsbey or her own behalf, and also on behalf of a not-for-profit corporation intended to be chartered by the State of Maryland in the name of DISCOVER Foundation, Inc. This agreement will become effective, in part, upon signing by the USOE Contracting Officer and by Ms. Bowlsbey, for herself. However, it will not become fully effective until such time as the Corporation is chartered, becomes functional, and accedes to this agreement by signature of its then duly constituted representative. In consideration of the mutual obligations set forth below the parties hereby agree as follows:

ACTION PRELIMINARY TO AGREEMENT BECOMING FULLY EFFECTIVE

1. Based upon the intentions of JoAnn Harris Bowlsbey as set forth in her letter of November 3, 1975 to Morton Bachrach of the National Institute of Education, Ms. Bowlsbey will take action immediately after this agreement is executed to form a not-for-profit corporation, along lines set forth in the attachment to her November 3, 1975 letter. In addition Ms. Bowlsbey agrees to take any other necessary action preparatory to this agreement becoming fully effective.

SCOPE

2. This agreement contemplates the marketing of various career education materials and services including automatic data processing services and outcomes which were generated, in part, with funds awarded first, to the Northern Illinois University, and later to Western Maryland College, by the United States Office of Education (USOE) under the above-identified grants. This agreement also contemplates the development and marketing of additional similar materials and services utilizing funds to be derived from marketing the materials and services which were funded, in part, by the USOE.

PARTIES

3. The development and marketing functions to be accomplished under the terms of this agreement are to be performed by DISCOVER Foundation, Inc., hereinafter designated the Foundation, which is to be formed by JoAnn Harris Bowlsbey and her colleagues as set forth in the attachment to the November 3, 1975 letter, a copy of which letter and attachment are hereby made a part of this agreement. This agreement is conditioned upon the Foundation having a corporate function of the scope set forth in the attachment to the November 3, 1975 letter, unless a different functional scope is approved by the USOE Contracting Officer.

FUNDING

4. It is understood and agreed that no Federal Government funds will be utilized to carry out the specified development and marketing function during the effective period of this agreement. Rather, the Foundation has or will arrange to obtain the necessary funds from non-Federal Government sources.

PERIOD

5. This agreement, as fully effective, is for a three year period commencing July 1, 1976 and ending June 30, 1979, unless sooner terminated or subsequently extended. It is intended that, approximately six months prior to the end of said three year period, the USOE will review the performance of the Foundation in order to determine whether the agreement should be extended or whether some other arrangement should be made, in the best interest of that portion of the public for which the materials and services are intended.

COPYRIGHTS

6. The right of the USOE to establish the requirements of this agreement are based upon the provisions of the above-identified grants, by which the USOE is entitled to determine the disposition and

use of copyrights for materials generated under these grants. Accordingly, the Foundation is hereby authorized to secure copyright, in its own name, for all materials which are subject to this agreement, and to enjoy the exclusive right to market those materials in the United States during the period of this agreement, subject only to a royalty free, irrevocable, nonexclusive license to the United States Government to utilize the copyrighted materials in any manner for U.S. Governmental purposes; and provided that all computer equipment manufacturers are given reasonable access to all materials for the purpose of developing computer programs in order to make their equipments compatible with the extant materials and programs.

LEGENDS

7. Each component of materials subject to copyright will be marked in the following manner:

> © 1976 DISCOVER Foundation, Inc.
> Copyright will not be asserted after June 30, 1979 unless the U.S. Office of Education authorizes the Foundation to assert the copyright for an additional period. To determine the status of the copyright contact either the copyright proprietor or the U.S. Office of Education.
>
> This item was generated, in part, under grants from the U.S. Office of Education, Department of Health, Education and Welfare. However, the content does not necessarily represent the position or policy of that agency and no U.S. Government endorsement should be inferred.

ROYALTY

8. The Foundation agrees to pay to the U.S. Government, on a semi-annual basis, a royalty of five percent (5%) of the net sales or rental revenues on copyrighted materials and computer programs sold or rented under this agreement. The net sales or rental revenue is defined as the gross receipts from sales or rentals less shipping charges, sales or brokerage fees, sales or use taxes, returns, credits and bad debts. Any services provided are to be priced separately from the materials and no royalties are payable on services rendered. The sale and rental prices to U.S. Government agencies and institutions will be reduced by an amount equal to the royalty requirement and no royalties will be paid based upon such sales or rentals. The foregoing provision is not intended as a commitment by the U.S. Government to purchase and/or rent at "list" prices; rather, the Government would expect to negotiate prices which might be related to the quantities to be procured.

REPORTS

9. The Foundation will provide to the Copyright Administrator, National Institute of Education, an annual written report and an annual audit of the financial condition of the Foundation by September 30 following each fiscal year (ending June 30) of operation under this agreement. In addition, the Foundation will provide to the U.S. Office of Education semiannual statements of sales, rentals and royalties. Those statements will be rendered by March 31 and September 30, covering each six month period ending December 31 and June 30, respectively, during the pendency of this agreement. Each statement will be accompanied by a remittance of royalties accrued during the applicable period, will be made payable to the U.S. Office of Education, and will be sent to the following address:

U.S. Office of Education
Fiscal Services Branch
Finance Division (Room 3091)
400 Maryland Avenue, SW.
Washington, D.C. 20202

Each remittance will include the grant numbers and the copyright program docket number shown in the heading of this document.

AUDITS

10. The U.S. Government reserves the right to make periodic audits of the Foundation's financial records including its books of accounts covering sales and rentals and royalties.

PROMOTION

11. The Foundation has the sole responsibility for advertising and promoting the materials subject to this agreement and agrees to conduct a reasonable promotional effort intended to make the anticipated target audience aware of the materials and services available and the benefits to be derived therefrom.

PRICE AND COMPENSATION

12. It is clearly understood that the functions contemplated by this agreement are to be performed solely in the interest of the intended audience and that this agreement is not intended to inure to the financial benefit of any individual beyond reasonable compensation for services performed. In that vein the charges for materials and services provided and the compensation to be received by individuals engaged by the Foundation may not exceed those set forth in the schedule accompanying the attachment to the November 3, 1975 letter, unless a modified schedule is presented to and approved by the USOE Contracting Officer.

ASSIGNMENT

13. The Foundation may not assign this agreement, or any part thereof, without the written approval of the USOE Contracting Officer. In the event of such assignment, the assignee shall be bound by all the terms and conditions of this agreement, and be subject to all claims by the Government against the Foundation as of the assignment date.

TERMINATION

14. (a) The Government may terminate this agreement upon 90 days written notice following a determination by the Commissioner of Education that the Foundation has committed a substantial breach of this agreement, and such breach has not been corrected within said 90 days; and provided further that the Foundation is informed of the nature of the purported breach and given an opportunity to counter the allegations. Provided the Foundation counters the allegation in writing within 30 days after receipt of notice of the purported breach termination will not occur during such period as the matter is pending before the Commissioner. The decision of the Commissioner with regard to that matter upon review shall be final and binding. (The failure of the Foundation at any time to maintain a financial posture which will assure the effective and efficient conduct of the contemplated activities will be deemed to be a substantial breach.)

(b) The Government may terminate this agreement at any time if the Commissioner of Education determines that the Foundation is not exerting reasonable effort within its financial and personnel means to provide the materials and services contemplated, to the intended audience, in a fair, effective, and dedicated manner; provided that the Government will give thirty (30) days written notice to the Foundation of its intention to terminate under this provision and termination under this provision will not occur prior to the time the Commissioner makes a final determination upon review provided the Foundation presents its arguments against termination to the Contracting Officer within said 30 day period.

(c) The Foundation may terminate this agreement for any reason by providing ninety (90) days written notice to the Contracting Officer of its intention to terminate.

(d) This agreement shall be terminated if a court having competent jurisdiction shall have made or entered any decree or order (i) adjudging the Foundation to be bankrupt or insolvent, (ii) approving as properly filed a petition seeking reorganization of Foundation or an arrangement under the bankruptcy law or any other applicable debtor's relief law or statute of the United States or any State, (iii) appointing a receiver, trustee or assignee of Foundation in bankruptcy or insolvency or for its property or (iv) directing the winding up or liquidation of Foundation, and such decree or order shall have continued unstayed or undischarged for a period of thirty (30) days, or Foundation shall have voluntarily submitted to or filed a petition seeking any such decree or order.

(e) This agreement shall be terminated if Foundation shall have assigned its assets for the benefit of creditors, or the sequestration or attachment of or execution on any substantial part of the property of Foundation shall have occurred, and Foundation shall have failed to obtain a return or a release of such property within thirty (30) days thereafter or prior to sooner sale pursuant to such sequestration, attachment, or levy.

(f) This agreement shall terminate automatically if the Foundation shall voluntarily suspend its business.

(g) This agreement may be terminated at any time by mutual agreement of the parties.

(h) This agreement shall terminate at the end of the designated period or after all royalties due are paid, whichever is later, unless the U.S. Government and the Foundation agree to an extension.

(i) This agreement will terminate on July 1, 1976 unless the Foundation is established and ready to function by that date, unless that date is extended by agreement of the Government and Ms. Bowlsbey.

RIGHTS FOLLOWING TERMINATION

15. If this agreement is terminated for any reason specified herein, the U.S. Office of Education shall have the right either to require that the Foundation abandon all copyrights acquired on the authority of this agreement, or else require that the Foundation grant a nonexclusive license under all such copyrights to any entity or entities designated by the U.S. Office of Education for such period as the Contracting Officer shall specify; provided, that the USOE must specify the licensee or licensees to be granted or else that the copyrights are to be abandoned, within 6 months following termination. The license(s) shall either be royalty-free or for a reasonable royalty specified by the Contracting Officer. Between the date of termination and the date the Contracting Officer makes his specification the Foundation will suspend its marketing activities (unless the Contracting Officer specifically authorizes the continuation of marketing activities), provided that materials and services sold or contracted for sale or rental at the time of termination may still be delivered and provided further that if the Contracting Officer fails to make such specification within said six months the Foundation may, if it wishes, and provided there are no legal impediments, continue operations as before on a year to year basis until such time as the Contracting Officer does make a specification.

APPLICABLE LAW

16. This agreement shall be interpreted in accordance with the laws of the District of Columbia. Any terms, conditions or provisions which

are required by applicable Federal laws to be a part of this agreement shall be deemed to be fully incorporated in this agreement and are an integral part hereof.

SEVERABILITY OF AGREEMENT

17. If a provision of this agreement contravenes or is otherwise invalid under the laws of the United States or the District of Columbia, then such provision shall be deemed eliminated from this agreement, and the agreement shall, as so modified, remain valid and binding upon the parties hereto, and in full force and effect.

FORCE MAJEURE

18. Neither party shall be deemed in breach of this agreement nor shall the work be deemed out of production because of a failure to perform or delays caused by war, civil riots, strikes, fires, acts of God, governmental restrictions or other similar or dissimiliar circumstances beyond the control of the party whose performance was so prevented or delayed.

MERGER

19. This instrument contains the entire understanding between the parties with respect to publication, there being merged herein all prior and collateral representations, promises and conditions in connection with the subject matter hereof. Any representations, warranties, promises or conditions not expressly incorporated herein, shall not be binding on either party. Foundation's submission, cited in the heading of this agreement, is incorporated herein by reference.

NO WARRANTIES

20. The U.S. Government makes no warranties or representations with regard to these materials and assumes no liability whatever in connection therewith, including the publication and distribution thereof.

COPYRIGHT INFRINGEMENT

21. The Foundation shall have the sole responsibility for taking action, at its own discretion, against alleged infringers of copyrights materials subject to this agreement. In the event the Foundation does begin an action against an infringer, it will be permitted to deduct from any recover an amount equal to its expenses in conducting the necessary proceeding. All remaining recoveries will be shared equally by the Foundation and the Government, and the Government's share, if

any, will be remitted with any royalty remitted on the same period basis as utilized for royalty payments. The Foundation will hold the Government harmless against any recovery resulting from a counterclaim to any legal action initiated by the Foundation.

For the USOE	For Herself	For the Foundation
Eugene T. Peterson	JoAnn Harris Bowlsbey	[illegible]
Contracting Officer, USOE (Position)	[illegible] (Position)	[illegible] (Position)
(Date)	[illegible] 26, 1976 (Date)	[illegible] (Date)

ARTICLES OF INCORPORATION

OF

DISCOVER FOUNDATION, INC.

approved and received for record by the State Department of Assessments and Taxation of Maryland February 10, 1976 at 8:30 o'clock A. M. as in conformity with law and ordered recorded.

A 48041

Recorded in Liber 2255, folio 92, one of the Charter Records of the State Department of Assessments and Taxation of Maryland.

Bonus tax paid $ 20.00 Recording fee paid $ 15.00

To the clerk of the Circuit Court of Carroll County

IT IS HEREBY CERTIFIED, that the within instrument, together with all indorsements thereon, has been received, approved and recorded by the State Department of Assessments and Taxation of Maryland.

AS WITNESS my hand and seal of the said Department at Baltimore.

Richard T. Hecht

STATE DEPARTMENT OF ASSESSMENTS AND TAXATION OF MARYLAND

RECEIVED FOR RECORD
APR 22 11 49 AM '76
CLERK OF THE CIRCUIT COURT
CARROLL CO.

110

DISCOVER Foundation, Inc.

ARTICLES OF INCORPORATION

THIS IS TO CERTIFY:

APR 22-76 A ******3.75

FIRST: I, the undersigned, JOANN H. BOWLSBEY, the post office address of whom is 1600 Green Mill Road, Finksburg, Maryland 21048, being over eighteen (18) years of age, under and by virtue of the General Laws of the State of Maryland authorizing the formation of Corporations, do hereby execute and cause to be filed these Articles of Incorporation with the intention of forming a corporation.

SECOND: The name of the Corporation (which is hereinafter called "Corporation") is:

DISCOVER Foundation, Inc.

THIRD: The purposes for which the Corporation is formed are as follows:

1. To operate as a non-profit organization concerned with the research, development and marketing of career guidance and instruction programs, systems and materials, including automatic data processing services and outcomes, for use in both secondary schools and colleges; to lease, market, sell and distribute career guidance products and services and supporting materials; to maintain, service, update and improve career guidance products and services and to promote and coordinate their use; and to provide information, demonstrations and assistance to the users of career guidance systems, programs and materials.

2. To raise money by any lawful means for the effectuation of the corporate purposes and, in furtherance of such purposes, to make such grants, to or in aid of, or to make donations to, or to give assistance to, or to make contracts with such individuals, trusts, corporations, associations, societies, institutions, or other organizations or authorities, whether within or without the State of Maryland, as may be necessary or desirable to accomplish the corporate purposes;

3. Without limitation of the foregoing, the corporation may use such means to achieve its purposes as may seem advisable

to its Board of Trustees, to the extent permitted by the laws of the State of Maryland.

4. To purchase, own, sell, or dispose of the same, mortgage and lease real estate and other property as may be necessary for the purposes of this corporation; to receive donations, to receive, manage, take, and hold real and personal property by gift, grant, devise or bequest, and to sell or dispose of the same, and to do each and every thing necessary, suitable or proper for the accomplishment of any of the purposes herein enumerated, or which shall at any time appear conducive or expedient for the protection or benefit of this corporation.

5. The foregoing provisions shall each be construed as independent purposes, objects and powers, and it is hereby expressly provided that the foregoing enumeration of the purposes, objects and business of the Corporation is made in furtherance of and in addition to, and not in limitation of, the powers conferred upon the Corporation by law, and it is not intended, by the mention of any particular purpose or object, in any manner to limit or restrict the generality of any other purpose or object mentioned, nor to limit or restrict any of the powers of the Corporation. The Corporation is formed upon the articles, conditions, and provisions herein expressed, and subject in all particulars to the limitations relative to corporations which are contained in the General Laws of the State of Maryland.

6. Said Corporation is organized exclusively for charitable, religious, educational, and scientific purposes, including, for such purposes, the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law).

7. No part of the net earnings of the Corporation shall inure to the benefit of, or be distributable to, its members, trustees, officers, or other private persons, except that the Corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes hereinabove set forth. No substantial part of the activities

of the Corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the corporation shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision of these articles, the Corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from Federal income tax under section 501(c)(3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law) or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law).

FOURTH: The post office address of the principal office of the Corporation in this State is:

P. O. Box 363
Westminster, Maryland 21157

The Resident Agent of the Corporation is JoAnn Bowlsbey, whose post office address is:

1600 Green Mill Road
Finksburg, Maryland 21048

Said Resident Agent is a citizen of the State of Maryland and actually resides therein.

FIFTH: The Corporation formed hereby shall have no capital stock, and shall be composed of members rather than shareholders. The Corporation is one which does not contemplate pecuniary gain or benefit for the members thereof and is organized for non-profit purposes. Members may resign or be removed, vacancies may be filled and additional members elected, as provided in the By-Laws, which may prescribe different classes of members and prescribe the powers and duties of each class.

SIXTH: The Corporation shall have at least three (3) and not more than twenty-five (25) Trustees, and JoAnn Bowlsbey, James Boyd, Jack Rayman, and Thomas Boyle shall act as Trustees until the first annual meeting or until their successors are

duly chosen and qualified. The number of Trustees may be increased or decreased pursuant to the By-Laws of the Corporation, but shall never be less than three (3). The Trustees shall not be liable for the debts, liabilities or obligations of the Corporation.

SEVENTH: The Board of Trustees of the Corporation shall be its members for the purposes of any statutory provision or rule of law relating to members of corporations having no capital stock, and as such, may hold their meetings outside the State of Maryland. The Trustees shall have the power to adopt and amend the By-Laws of the Corporation, and to elect officers of the Corporation according to law and the By-Laws of the Corporation. All corporate powers are vested in the Trustees.

EIGHTH: Upon the dissolution of the Corporation, the Board of Trustees shall, after paying or making provision for the payment of all of the liabilities of the Corporation, dispose of all of the assets of the Corporation exclusively for the purposes of the Corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable, educational, religious, or scientific purposes as shall at the time qualify as an exempt organization or organizations under section 501(c)(3) of the Internal Revenue Code of 1954 (or the corresponding provision of any future United States Internal Revenue Law), as the Board of Trustees shall determine. Any such assets not so disposed of shall be disposed of by the Circuit Court of the county in which the principal office of the Corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

IN WITNESS WHEREOF, I have signed these Articles of Incorporation on this 1st day of October, 1976.

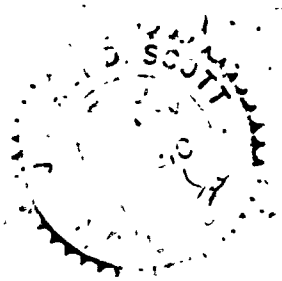
WITNESS:

_____ _____ (SEAL)
JOANN BOWLSBEY

STATE OF MARYLAND)
COUNTY OF CARROLL) TO WIT:

I HEREBY CERTIFY that on this ____ day of _____, 1976, before me, the subscriber, a Notary Public of the State of Maryland, in and for the County of Carroll, personally appeared JOANN BOWLSBEY and acknowledged the foregoing Articles of Incorporation to be her respective act.

AS WITNESS my hand and Notarial Seal the day and year last above written.



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Notary Public

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APPENDIX D

Publicity Materials

A Computer-Based Career Guidance & Counselor-Administrative Support System

The Career Guidance System

The purpose of this brochure is to introduce you to DISCOVER, a computerized system which assists counselors in the delivery of career guidance services. DISCOVER is designed for use with students in grades 7-12 and has undergone an extensive field trial. It provides a systematic set of guidance experiences through interactive dialogue at television-like terminals called cathode ray tube terminals. These terminals may be placed in your guidance office, career resource center, or library and connected by phone lines to an appropriate computer anywhere. Students will want to use the system many times throughout the grades 7-12 years

Why Should You be Interested in DISCOVER?

Recent national surveys have shown that most students and guidance professionals believe there is a drastic need for the improvement and increase of career guidance services at all age levels

Meeting these expressed needs is a very difficult problem. Unfavorable counselor-student ratios plus heavy counselor time demands for administrative and clerical duties make one-to-one assistance with career development virtually impossible With the recent career education emphasis, you are probably now struggling with ways to solve these problems in your own institution.

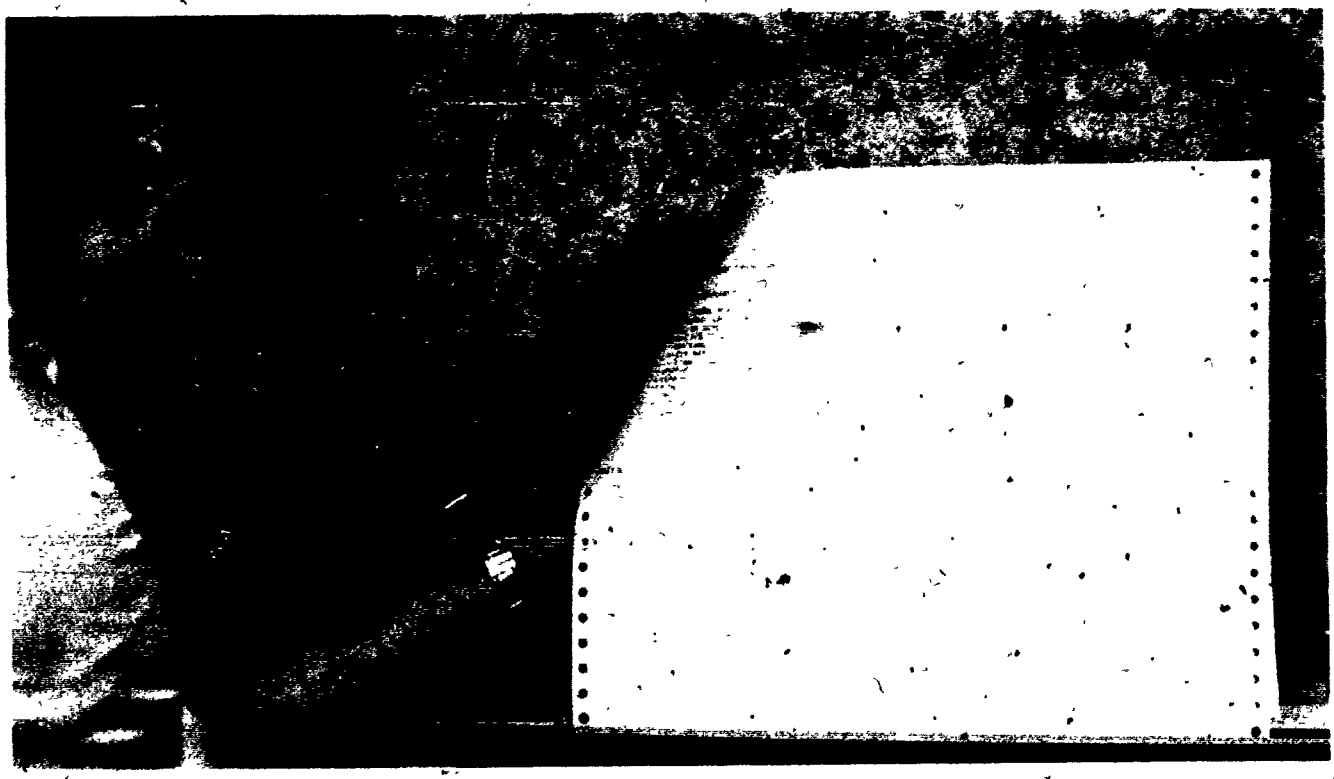
DISCOVER attempts to help meet the need for additional career guidance It provides systematic assistance with career development tasks on an individualized and one-to-one basis throughout six of the most critical years for vocational and educational decision making

Why Use a Computer to Help with Career Guidance?

The DISCOVER development team does not suggest that counselors be replaced by computer terminals. However, the team has identified guidance tasks which the computer can do as well as, or better than counselors and built them into the DISCOVER system. A professional manual has also been prepared with ideas for program development which make best use of the counselor and the computer together. It is hoped that DISCOVER products will provide increased career guidance to students, remove clerical and information-giving tasks from counselors so that they can provide truly professional services, and help guidance departments become more cost-efficient.

The computer has many capabilities which make it a valuable guidance tool. It can store vast quantities of information about occupations, colleges, technical-specialized schools, military programs, financial aid, apprenticeships, and local jobs with ease. Such information can be retrieved and updated quickly from a range of different terminal devices. The computer can combine occupational or educational characteristics desired by the student, search through the appropriate data file and retrieve the needed information with tremendous speed. Since the computer can also store information about each student, it can easily relate information about the user to information about a given occupation, program or school. This creates new and highly useful information for career decision making. The technology of cathode ray tube terminals allows the development of highly interactive dialogue between the user and the computer files, thus simulating a structured interview. This individualized attention can be provided to several students at a time, depending upon the number of terminals available. The computer's ability to store key information about each student's use of its program makes it possible for the user to have a continuing experience over the secondary school years with the computer providing review at each new use.

Several computer-based guidance systems have been in use during the past ten years. Enough experience has accumulated that we know computerized systems have a very high degree of student appeal. Students enjoy using computers and appreciate their objectivity. Available research data indicate that use of computer-based systems produces some real gains in occupational information, vocational maturity, and specificity of career plans.



What Can DISCOVER Do For You?

DISCOVER is a systematic career guidance program designed to enhance normal career development for grades seven through twelve. The study of career development theory makes it clear that a career guidance system should include at least the following components:

- self-information, including values, interests, and competencies
- exploration of occupations in a systematic way
- teaching and low-risk practice of decision-making
- relationship of self-information to occupational alternatives
- informational assistance with implementation of choice

DISCOVER provides assistance in all of these areas through twelve modules of interactive content

Data about the user—including school courses and grades, test information, extracurricular activities, and work experience—are stored in the system for use in comparing occupational or training requirements with the user's past experience. Seven large data banks—occupations, four-year colleges, two-year colleges, technical and specialized schools, apprenticeships, military training programs, and graduate and professional schools—support the student's search for occupational and educational alternatives. DISCOVER is a combination of originally developed interactive dialogue and simulations, of instruments and tools used by permission of other developers, and of both originally developed and borrowed data files.

The "main line" modules of the system are graphically depicted on the following two pages.

UNDERSTANDING MY VALUES

1a

PLAYING A VALUES GAME

1b

LEARNING TO MAKE DECISIONS

2a

PRACTICING CAREER DECISIONS

2b

REVIEWING MY INTERESTS AND STRENGTHS

4

MAKING LIST OF OCCUP TO EXPLOR

5

LEARNING HOW OCCUPATIONS CAN BE GROUPED

3a

BROWSING OCCUPATIONS

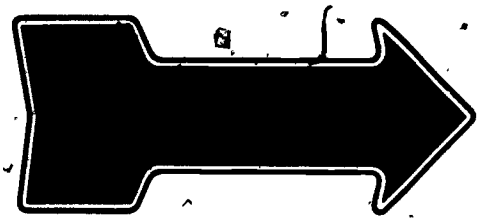
3b

GETTING INFORMATION ABOUT OCCUPATIONS

NARROWING MY LIST OF OCCUPATIONS

EXPLORING SPECIFIC CAREER PLANS

6 7 8



What are the 12 modules and their content?

00 ENTRY

The entry module introduces the user to the System, teaches him/her how to use the terminal, and explains the many special features of the System It monitors each person's use of DISCOVER, recording each entry and exit point to facilitate long-term use and review. Each user has the opportunity to complete an on-line survey of career development. This survey is scored and the results serve as the computer's guide in suggesting which modules of the System will be most appropriate for a given user

1a UNDERSTANDING MY VALUES

This module contains a number of experiences which lead the user to think about what a value is, to analyze personal values, and to decide upon actions to implement those values. The module defines nine specific values related to occupations The student rates the personal importance of each of these nine values and may then ask the computer to search its data file for occupations which can provide the combination and weighting of the values assigned by the user. The summary of work values is retained for later use in the System.

1b PLAYING A VALUES GAME

This module is a monopoly-like game designed by the DISCOVER team which may be played by one or two players. In the beginning of the game, the student is introduced to the concept of weighting values. He/She is invited to place relative weight on three possible goals: income, recognition, and happiness Winning the game consists of reaching the goal which the user has set for himself/herself in each of these categories. The user plays the game by moving forward on a board as determined by the computer in a random rolling of the die. The spaces on which the user lands may provide him/her with an opportunity to make decisions about choice of occupation, educational options, use of leisure time, or life style On the other hand, they may subject him/her to some of life's events, such as unexpected setbacks, unexpected opportunities, and payment for necessities The user also acquires "plan cards" which allow him/her to have more control over life than the computer's rolling of the die affords. The way in which decisions are made on the "decide" squares adds points toward the values for which the player is playing the game. The game ends when the player receives the score previously set under the categories of income, recognition, and happiness.

2a LEARNING TO MAKE DECISIONS

This module attempts to teach a planful decision-making process by presenting the steps of the decision-making process in example and flow chart form The System provides a number of exercises designed to illustrate and provide practice in the decision-making steps It also illustrates other non-planful decision-making strategies (impulsive, delaying, painful) and assists the user to identify his/her present style of decision making

2b PRACTICING CAREER DECISIONS

This module makes use of a "career decision tree" as an organizing principle for understanding how decisions affect occupational choice Since each of the twenty branches of the tree represents a group of occupations, the tree structure is used 1) to show the key decisions which lead to entry into a given occupation, 2) to plot a given user's course up the branches of the tree, 3) to simulate the career paths of others, and 4) to allow the user the opportunity to "play" his/her own life in a variety of ways by making decisions in this low-risk, simulated way

3a LEARNING HOW OCCUPATIONS CAN BE GROUPED

This module presents the world of work by way of two organizing principles. the data-people-things-ideas division (which is the American College Testing Program's refinement of the *Dictionary of Occupational Titles* classification system) and the Holland System A number of exercises are presented to give the student practice at using these classification systems, the student's responses are monitored for the purpose of providing more instruction if needed.

3b BROWSING OCCUPATIONS

This module makes use of the Holland classification system presented in Module 3A as an organizational structure by which the user can browse the world of work. The module allows him/her to touch any two points of the Holland hexagon and to receive a list of occupations which fall in that particular segment of the circular world of work. The user may select titles from the list and receive a one-display description of the occupation's work setting and work tasks. This module contains descriptions of 500 occupations.

4 REVIEWING MY INTERESTS AND STRENGTHS

This module is John Holland's *Self-Directed Search* or ACT's *Career Planning Program* administered "on-line." Institutions will have the opportunity to select one of these alternate modules for use by students. These instruments are self-reports of the user's career-related interests, experiences, and competencies. The data, collected via the items on the instrument, give the user a focus for exploration in the world of work. The results of the instrument are interpreted to the user "on-line."

5 MAKING A LIST OF OCCUPATIONS TO EXPLORE

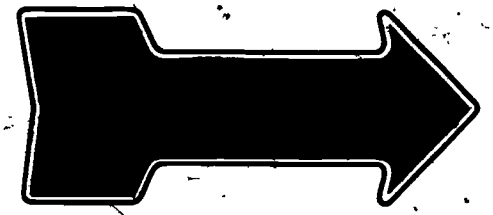
This module provides the user with five alternate ways to make a list of personal vocational options: a) by relationship of occupations to personal work values, b) by use of the results of the *Self-Directed Search* or the *Career Planning Program*, c) by selecting titles from a list of occupations by the terminal, d) by combining selected occupational characteristics (such as salary level, place of work, level of training, degree of independence, etc.) and/or e) by relating favorite school subjects to occupations.

6 GETTING INFORMATION ABOUT OCCUPATIONS

This module allows the user to get extensive information about the occupations on his/her list. By the voluntary selection of as many of the twenty-one questions as desired, the user may receive information about an occupation, its duties, benefits and limitations, educational requirements, future outlook, and additional sources of information. The user may also review his/her own student record (record of grades in related courses, related work or course experience, present rank in class, etc.) against the requirements of the occupation or its prerequisite training. The module also provides the capability to compare two occupations by calling in data about both simultaneously. The user leaves this module with a list of occupations in which he/she has serious interest This list may be a shortened form of the list with which the user entered the module, or it may be a new list which has been generated on the basis of information gathered in this module.

7 NARROWING MY LIST OF OCCUPATIONS

The user enters this module with the list of occupations from the previous module or with a new one which he/she generates at the beginning of the module The purpose of this module is to assist the user to narrow the list further so that he/she leaves the module with a first choice occupation in mind and a limited number of others in priority order This narrowing is assisted by the capability to:1) ask for additional information about any occupations on the list, 2) compare information about two occupations, and 3) analyse the remaining occupations in light of identified work values, desired level of training, and interests and competencies. Finally, the user is asked to remove occupations which are no longer of interest and to put the others in priority order. The user leaves the module with a top-priority selection.



8 EXPLORING SPECIFIC CAREER PLANS

The user enters this module with one specific occupation in mind at a time. The System identifies for the user all of the possible paths of training to the selected occupation The user may choose the path of entry which he/she wishes to explore in depth and branch to any of the following sub-modules of the System

8a LOCAL JOBS

This module provides an informational section about how to seek a job It also provides a search strategy for finding a job in the local area with the characteristics desired by the user. Use of the search strategy requires that each local site develop a local job data bank

8b FINANCIAL AID

This module provides three capabilities 1) definition of standard financial aid terms, 2) information about how to obtain financial aid, including an on-line assessment of student financial need (based on a short form of ACT s Family Financial Statement), and 3) information about available sources of financial aid

8c APPRENTICESHIPS

This module provides two capabilities. 1) answers to common questions about apprenticeship programs, and 2) search strategies to find apprenticeable occupations, including locating local companies which sponsor apprentices in the user s chosen occupation (requires local data file development).

8d FOUR-YEAR COLLEGE INFORMATION AND SEARCH

This module is a very extensive one which has two divisions. exhaustive information about college admission and selection and a search strategy The search strategy draws upon a data file of all four-year colleges and universities in the nation, collected and maintained by the American College Testing Program. The strategy allows the user to combine characteristics in the following areas: approximately 200 majors, cost ranges, enrollment ranges, geographic locations; levels of competition for admission; student characteristics (test and class rank, sex, and racial/ethnic membership), type of control, type and size of community; type of institution, type of school year calendar; and a variety of special features Combination of the student's selected variables produces a list of colleges which have the desired characteristics. Five displays of specific information are available about each college: entrance requirements; general information; characteristics of the freshman class; majors offered, and cost and financial aid.

8e COMMUNITY AND JUNIOR COLLEGES

This module provides two capabilities: answers to common questions about community and junior colleges and search strategies to find a college. Two strategies are provided: search of local college only or search of a nationwide file. DISCOVER sites may choose to use only the local search. The DISCOVER-provided college data file contains the data with which to do both searches.

8f GRADUATE AND PROFESSIONAL SCHOOLS

This module provides a search through a national data file of graduate and professional schools making use of characteristics very similar to those used in the four-year college search, module 8D.

8g TECHNICAL AND SPECIALIZED SCHOOLS

Similar to other modules in this group, this one provides general information about technical and specialized schools and a search strategy to find those which will provide the training needed for entry into a specific occupation. The data file provided by DISCOVER is a national one, containing information about approximately 11,000 schools. The local site may choose to use only a part of this file.

8h CONTINUING EDUCATION

This program has two sections general information about adult and continuing education and instruction on how to find adult-continuing education opportunities in the local area A local site might choose to enhance this module by adding a local data file of continuing education opportunities

8i MILITARY INFORMATION AND SEARCH

This module provides answers to a large number of typical questions about the military Additionally, it provides a search strategy to find the specific program within any branch of the military which provides the training needed for entry into a specific civilian occupation The module contains the data file published in the Department of Defense *Military-Civilian Occupational Source Book*

What Kind of Computer Do You Need for DISCOVER?

DISCOVER is an "on-line" system designed to operate in a multi-purpose computer (That is, all interactions take place directly with the computer by means of various terminal devices) You may currently own or lease your own computer system In that case, you would probably want to incorporate DISCOVER as a part of your present operations. If you do not have your own system, you may wish to find a computer which is compatible with DISCOVER and lease time on that machine, connecting terminals in your school to it by phone line In either case, you will need,

- a medium or large size computer, operating under a virtual storage system
- visual display terminals
- direct access storage devices with at least one disk drive available for DISCOVER

Although DISCOVER has been programmed for a specific computer system, it has been organized so that it can be easily modified to run under other systems The DISCOVER Foundation, Inc. can provide technical support for such modification Details about the technical design and requirements of DISCOVER are available in other publications.

How is DISCOVER Supported?

DISCOVER is the product of four years of conceptualization, implementation, and field trial effort. It was conceptualized by members of the former CVIS (Computerized Vocational Information System) team Funding from the Illinois Division of Vocational and Technical Education, the United States Office of Education and the International Business Machines Corporation made the system possible. The product is continuously maintained, updated, evaluated, and improved by a not-for-profit research and development foundation, called the DISCOVER Foundation, Inc. The Foundation also provides support for installation and operation

If you would like to know more about DISCOVER, please write or call for additional publications and/or a demonstration

DISCOVER Foundation, Inc.
Post Office Box 363
Westminster, Maryland 21157
301-848-1113

THANK YOU FOR

CONSIDERING DISCOVER.

A Computer-Based Career Guidance & Counselor-Administrative Support System

An Informational Manual
For Decision Makers

INTRODUCTION

The purpose of this manual is to provide more detailed information about the DISCOVER System than is contained in the promotional brochure. It is hoped that sufficient information is provided here so that guidance personnel, administrators, and data processing staff can reach a decision about whether or not to lease DISCOVER. If further information is needed after reading this material, please do not hesitate to write or call.

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Purpose of DISCOVER

DISCOVER is designed to provide assistance to the counselor in the delivery of a systematic career guidance program to every student. The developers of DISCOVER believe that all secondary-level students need assistance with educational and vocational decision-making although the amount of this assistance varies with students' differing levels of vocational maturity. Further, the developers of DISCOVER believe that counselors alone cannot provide the level and amount of assistance needed due to the present counselor-student ratios and the proliferation of assigned responsibilities.

DISCOVER is, therefore, the computerized implementation of a systematic career guidance program based upon the best of current career development theory. It makes use of some of the best tools and techniques available in the profession. The computer is used as a skilled paraprofessional to relieve counselors of instructional, information-giving, and file-searching tasks. The optimal career guidance program is one in which the counselor and the computer work together to provide harmonized programs in which the best capabilities of both are used.

Target Population

The present DISCOVER has been developed for students in grades 7-12. DISCOVER has been field-tested for a three-month period in two sites in Baltimore. The experimental subjects in this field trial ranged from lowest quartile (Iowa Tests of Basic Skills Reading Score) seventh graders to top quartile 12th graders. Although some modifications were made in exercises, vocabulary, and directions as a result of this field trial, the general finding was that

DISCOVER is usable and effective across the total span of the field trial populations. More detailed information about the field trial is available in a publication entitled: DISCOVER: Field Trial Report, July 1976.

DISCOVER has also been field-tried with college students in preparation for the development of a college and adult version to be available in 1978. Preliminary findings indicate that most of the modules of DISCOVER are usable at this age level also.

Method of Delivery

The content of the DISCOVER System is delivered to students by a cathode ray tube terminal with a light pen. This terminal is connected to a medium or large size computer somewhere, either by cable (if within 2,000 ft.) or by a leased phone line. The student begins the session by entering his or her student number. When this number is sent to the computer program, the system reviews with the student the last use of the system and offers available alternatives. The student continues this interactive dialogue by responding either by typing, if appropriate, or by making selections by touching designated places on the screen of the cathode ray tube terminal with the light pen. Although the student's experience at the terminal has been necessarily pre-structured, DISCOVER does provide a high degree of personalization for its users due to: 1) the storage of a student record, thus allowing the use of the student's name and test and grade information; 2) the constant monitoring of the student, thus allowing a review each time the student comes to the terminal; 3) the availability of an instrument in the Entry Module which assists a student

to find out where he/she is in career development and to receive a suggested plan for use of the system; and 4) the use of random generation in many parts of the system with the result that two students using the same part of DISCOVER at the same time will receive different practice exercises.

Attached to the cathode ray tube terminals is a printer. This printer serves to make a paper copy of anything which appears on the screen of the cathode ray tube, by student request. The student just pushes the "green key" on the keyboard of the cathode ray tube in order to activate the printer.

In a conversational system like DISCOVER, response time is exceedingly important. This is the time which elapses between the student's response and the computer's next response. Ideally, this time should range from 1-10 seconds. Occasional response times of 10-30 seconds may be tolerable. Every effort should be made to give DISCOVER sufficient priority in the computer during prime school hours to assure favorable response time.

Present Content

The grades 7-12 guidance system has been designed as 21 modules of material for student use. Each of these modules can be completed in one class period if the student proceeds in straight-line fashion and the computer operation is good. Students may, however, spend much more than one class period in a module if they choose to do all optional exercises, to browse or get specific information about many occupations, or to repeat search strategies more than once using differing combinations of options. It is assumed that DISCOVER will

be available to students over a span of 4-6 years and that the various modules can be used at different times throughout a 4-6 year period as student readiness or the design of the total guidance program dictates.

The content and the sequence of the guidance material is based on a thorough study of current career development theory. Study of the work of Super, Holland, and Tiedeman indicates that a systematic guidance program should contain at least the following components:

1) information about self, including values, interests and competencies
2) cognitive knowledge about and exploration of the world of work
3) deliberate teaching and low-risk practice of decision-making skills
4) strategies and bridges for constructing a list of personal occupational alternatives based on self-knowledge
5) low-risk reality testing of occupational alternatives, leading to crystallization and choice
6) assistance with implementation of career choices.

DISCOVER has been designed to address these major components as follows:

1) Information about Self — Understanding My Values-Module 1A. Playing a Values Game-Module 1B. Reviewing My Interests and Strengths (Holland's Self Directed Search)-Module 4.

2) Knowledge about and Exploration of the World of Work	Learning How Occupations Can Be Grouped-Module 3A. Browsing Occupations-Module 3B.
3) Teaching and Practice of Decision Making	Learning How to Make Decisions-Module-2A. Practicing Career Decisions-Module 2B.
4) Strategies for Constructing a List of Personal Alternatives	Making a List of Occupations to Explore-Module 5.
5) Low-risk Reality Testing of Occupational Choices	Getting Information About Occupations-Module 6. Narrowing My List of Occupations-Module 7.
6) Assistance with Implementation of Choice	Exploring Specific Career Plans-Module 8.

Each of these modules is described briefly in the DISCOVER brochure. Each is outlined and explained in greater detail in the DISCOVER Professional Manual, which is available on an at-cost basis from the Foundation. In addition, the Professional Manual states the objectives of each module, suggests replacement and/or supportive activities which would be desirable in the career guidance program, and suggests background materials which the professional may need in order to work with students who have used DISCOVER.

Proposed Future Content

The Foundation plans to add counselor and administrative support functions to the DISCOVER software by June, 1977. Counselor-support

functions will include: 1) on-line recall (at the terminal), building and modification of student records, 2) quick and easy access to all of the data files--occupational information, two- and four-year colleges, military programs, technical/specialized schools, apprenticeships, financial aids, graduate schools, and local jobs, and 3) ability to see a summary or review of each student's use of the guidance system.

The administrative-support functions will include: 1) on-line schedule changing, 2) on-line maintenance of the schools master schedule, and 3) on-line building, updating, and modification of student records.

The DISCOVER Package

Should you decide to enter into an agreement with the DISCOVER Foundation, Inc. for a DISCOVER "package" it will include the following:

--A computer tape which includes all DISCOVER text, data files, and programs.

--Technical documentation, for data processing personnel.

--Installation manual, for data processing personnel.

--Professional Manual, for counselors and other guidance workers.

--In-service training package--outline and materials for training of guidance staff.

--Student orientation materials--including a tape-slide presentation, a student handout, and two informational posters.

Maintenance

The annual lease fee for use of DISCOVER includes maintenance of the text, data files, and programs. This means that all text will be reviewed each year by the staff of the DISCOVER Foundation and changed as it seems appropriate. All program bugs which have been reported will be corrected. All national data files will be reviewed and updated as new data are available. These include the occupational data file, the two-year college file, the four-year college file, the technical and specialized school file, and the military data file. The maintenance function will be performed by sending a new DISCOVER tape to each user site at least once annually. In the first year of dissemination it is anticipated that updates will be sent quarterly. The update tapes will also include new developments as these become available.

Local Additions and Modifications

DISCOVER has an easy author capability called Framebuilder. This capability allows user sites to modify existing text and programs or to develop new applications with a minimum of programming support. The existence of this capability means that any frame of DISCOVER text may be displayed on the screen of the cathode ray tube and modified as may seem appropriate for the local site.

There are also places in the DISCOVER modules where local data files need to be added, or, if this is not possible, specific options need to be deleted from the screen. Some examples are: 1) three questions in "Getting Information About Occupations" which need local answers (What is the employment outlook locally? Are

there workers in my community to whom I may talk? Are there books in the school/guidance library which may be helpful?), 2) one section in "Financial Aids" called "Local Scholarships", and 3) the data file for "Local Jobs".

How DISCOVER Might be Used

It is suggested that you provide at least one cathode ray tube terminal for each 500 students enrolled. In addition, one printer will be needed for at least each four cathode ray tube terminals. This equipment might be placed in the guidance department, in the library, or in a career resource center.

Students will be able to use the equipment and the program without assistance. DISCOVER's Entry Module teaches the student how to use the equipment and also teaches the student about the content of the system. It will be necessary, however, to have a clerical or paraprofessional person available in the area to serve the following functions: 1) to provide students with their identification number if this has been forgotten, 2) to schedule students for appointments, 3) to call the computer center in case of technical difficulties, and 4) to assist the occasional student who has some question about use of the system.

The procedures for scheduling students to use the equipment will necessarily vary from school to school. Based upon experience with other computer-assisted guidance systems, we know that some schools make the system available entirely for voluntary use; others schedule all students to use particular parts of the system at specified times; still others weave the computerized system integrally

into the total guidance program; thus "assigning" system use at specific points in a predesigned guidance curriculum.

Expected User Outcomes

Based upon the evaluation of other computer-based guidance systems and the field trial of DISCOVER, the following outcomes can be expected:

1) Students will use the system easily and accept it enthusiastically.
2) Student contacts with counselors will not decrease; however, the nature of the contacts will tend to change from general questions (What shall I be when I grow up?") to more concrete and specific ones ("I've narrowed my choices to five occupations. Can you help me think through these?")
3) Students will show an increase in vocational maturity, self-knowledge, occupational knowledge, decision making skill, and specificity of career plans.
4) Students will engage in exploratory behavior such as talking with parents about career plans, reading, and talking with people in the specific occupations of their choice.

Technical Considerations

Unfortunately all computer programs are tied to a specific set of hardware and software. The version of DISCOVER which is currently ready for distribution requires the following:

--and IBM 370-135 machine or larger

--DOS/VS operating system

--CICS as an input/output monitor

--one dedicated disk drive

--IBM 3270 cathode ray tube terminals with light pens.

DISCOVER is written in COBOL; it is hoped that this fact will facilitate the translation of DISCOVER for operation on other vendor's equipment.

Cost Considerations

Due to the many complexities which may cause a variation in the cost of DISCOVER in different sites, it is impossible to attach a firm price. Rather we choose to list the components of cost so that specific figures can be fixed at the local level. These costs are:

1) Lease of the DISCOVER software from the DISCOVER Foundation. $8,250 annual fee for one driving computer

2) Central processing unit time and 70K of real storage

3) Equipment at the computer center--one disk drive, and transmission control unit with a bi-sync capability.

4) 4800-BAUD leased phone line from computer to user site(s) at a per-mile per-month cost and two MODEM's (one at each end of the line).

5) Cathode ray tube terminals with light pens and printer(s).

6) Personnel assigned to DISCOVER

TOTAL Annual Cost

Total annual cost divided by total terminal hours of availability = per-hour cost of student use.

Next Steps

1) Form a joint planning team with one or more representatives from the guidance department, the administrative staff, and the data processing staff. You may want to add other representatives from vocational education and/or career education. Close cooperation between the guidance team and the data processing team is an absolute "must". The implementation of DISCOVER in your site will fail if these two do not work together toward a common goal.

2) Become thoroughly knowledgeable about the DISCOVER System through demonstration or use and/or study of the Professional Manual. Demonstrations are currently available at College of DuPage, Glen Ellyn, Illinois (15 miles W of Chicago), or at your closest IBM Data Center. Call (301)848-1113 (Maryland), (312)858-2699 (Illinois) or your local IBM representative to arrange for demonstrations.

3) Make decisions about equipment and staff needed in your site. Order the DISCOVER package from the DISCOVER Foundation, Inc. Order the needed hardware from IBM. Order the phone line (and possibly MODEMs) from the phone company. Assign responsibility to a guidance person and a data processing person.

4) Provide inservice training for guidance staff either by using the materials provided with the package or by contracting with the DISCOVER Foundation to do the inservice training.

5) Install DISCOVER in your local site either by studying the Installation Manual and doing the installation with local staff or by contracting with the DISCOVER Foundation to do the installation and to provide inservice training for the data processing staff.

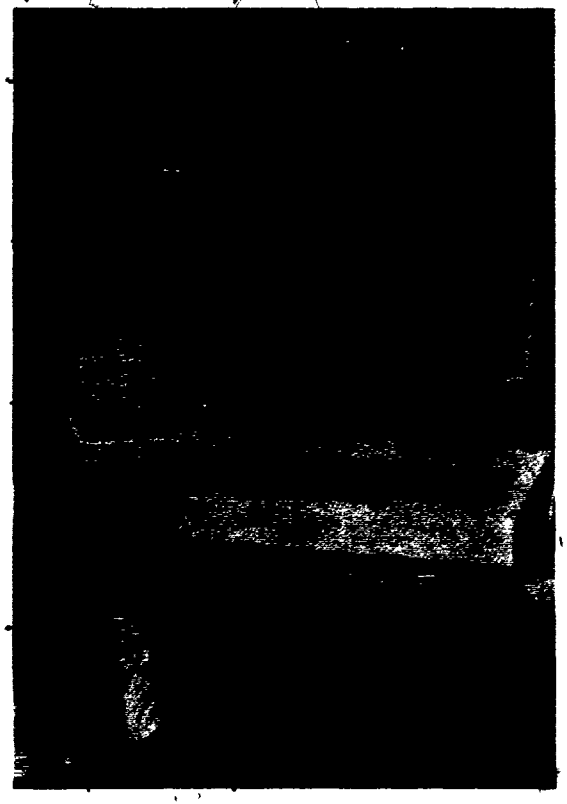
6) Provide orientation to faculty, parents, and students.

7) Begin use of the system.

For further information, write:

DISCOVER Foundation, Inc.
Box 363
Westminster, Maryland

or call: (301)848-1113



DISCOVER

DISCOVER

your future...
this way.

DISCOVER ...

An exciting new way to get career information by using a COMPUTER.

If you have any of these kinds of questions, DISCOVER CAN HELP:

- What are my interests and abilities?
- What occupations should I choose with the interests and abilities I have?
- How can I make good decisions?
- What decisions should I be making about my choice of an occupation?
- What kinds of training are possible for the occupations of my choice?
- Where can I get my first job?
- How can I relate the school subjects I've had to occupations?
- What college or technical school should I choose?
- How can I get into an apprenticeship program?
- What kind of training can I get in the military?
- How can I get financial aid so that I can continue my education and training?

If you'd like to use DISCOVER, fill out the attached form and drop it off in the guidance office.

Please schedule a time for me to begin using DISCOVER

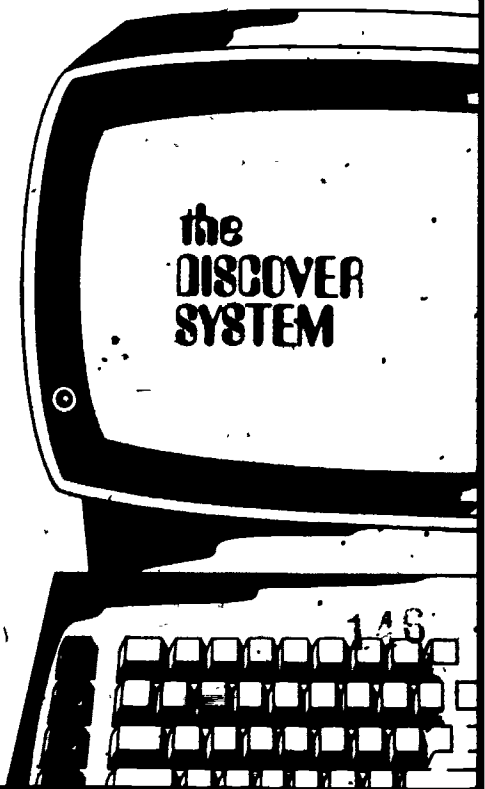
Name _____

Grade _____

Today's Date _____

I have free periods as follows:

Time	Room Number
_____	_____
_____	_____
_____	_____



DISCOVER Foundation, Inc.

HISTORY

The DISCOVER grades 7-12 career guidance system has had support from three sources since its conception in 1972; the Illinois Division of Vocational and Technical Education; the United States Office of Education (Vocational Education, Part C Research monies); and the International Business Machines Corporation. The resultant product, therefore, belongs to the three funding agencies. The DISCOVER developers devised a plan which would ensure distribution and continuing maintenance for this complex product, and they presented it to the United States Office of Education and to I.B.M., the last two funding agencies. Basically this plan asked for two things: 1) the right to form a not-for-profit research and development foundation for the distribution and maintenance of DISCOVER, and 2) the right to copyright DISCOVER and to hold the copyright. This plan, as reflected in the remainder of this document, was approved by the funding parties. The USOE granted a copyright to the Foundation for a three-year period, renewable at the end of that period. That agency also asked for a clear statement of the purposes of the Foundation, for a pricing structure, for a three-year budget which details staff and salaries, for an annual audit of the Foundation books, and for a royalty return on the product. All of these matters have been detailed in a contract, signed by both USOE and DISCOVER, which will become effective on 1 July 1976.

ACTIVITIES OF THE FOUNDATION

The DISCOVER Foundation, Inc., plans to engage in the following activities to the extent that its capital will allow:

1. to disseminate the grades 7-12 DISCOVER guidance system and all other DISCOVER products as they become available;
2. to maintain the DISCOVER products, i.e., text, programs, and data files;
3. to provide technical and guidance assistance and training to DISCOVER users;
4. to continue development in the area of on-line guidance and instruction by improving present products and by developing new ones;
5. to evaluate its products and to make such evaluative data known to the users of its products.

CURRENT SERVICES AVAILABLE

In support of its lease of the grades 7-12 guidance system, the DISCOVER Foundation, Inc., provides:

1. *guidance assistance by phone, correspondence, and through the Professional Manual;*
2. *solution of technical problems, should they exist, within its own software;*
3. *maintenance of program, text, and data files provided at least annually by means of update tapes.*

On an optional basis, the Foundation also offers:

1. *technical installation of DISCOVER and inservice training of data processing personnel;*
2. *inservice training of guidance personnel.*

PRICING OF THE DISCOVER PRODUCTS

Since the DISCOVER Foundation, Inc., is a not-for-profit organization the price of the DISCOVER products will be determined by two variables; the numbers of users of these products and the operating budget needed to provide the functions listed above. The United States Office of Education will monitor the Foundation's not-for-profit status, as well as the salary of its employees.

PRICE LIST: 1976-77

Lease of DISCOVER software for one year for one computer . . . . . *$8,250.*

(all necessary documentation and professional materials included)

Installation of DISCOVER software and on-site inservice training of data processing staff (time as needed) . . . . . *$ 500. (plus transportation from Illinois to your site and return)*

On-site inservice training of guidance staff . . . . . *$ 150. (per day, plus expenses)*

DISCOVER UPDATE

Volume I, Issue 1.1 March, 1976

DISCOVER in Field Test in Baltimore

The grades 7-12 guidance system is near completion and the field trial is in process in two schools in Baltimore. One school is a junior high with grades 7-9 and a 100% black population. The other school is a high school with grades 9-12 and a good distribution by ability level, racial membership, and socioeconomic class.

During the months of March and April, the first experimental group consisting of 48 students, are using all modules of the DISCOVER system. The purpose of this portion of the field trial is to assess the technical adequacy of the system, the appropriateness of the content and reading level for the populations being served, and the general reactions of students. Based upon the findings of this trial, modifications will be made to the text, data files, and programs as needed.

During the months of April and May, a new experimental group will use DISCOVER. This group of 48 students will use all of its content in systematic order as designed. A control group of 48 students matched by sex, grade level and ability will not use DISCOVER at all during this time period. At the end of this phase of the field trial, both groups will complete a questionnaire developed by the DISCOVER staff, ACT's Assessment of Career Development, and Super's Career Development Inventory. The two groups will then be compared on the basis of vocational maturity, self-knowledge, occupational knowledge, decision making skill, specification of career plans and exploratory behavior. A full report of the procedures and findings of the field trial will be available by midsummer.

FIRST IN A SERIES OF NEWSLETTERS

This is the first DISCOVER newsletter! From now on a quarterly newsletter will be prepared which reports any new developments and provides a concise report of the projects activities. Unless you request that we remove your name from our mailing list, you will continue to receive the DISCOVER UPDATE.

DISCOVER GRADES 7-12 SOFTWARE AVAILABLE IN JULY

The field trial will end on May 30. During the month of June, final revisions will be made and the distribution tape will be prepared. The package which will be distributed will contain:

- -DISCOVER programs on tape
- -Technical documentation
- -Professional manual
- -In-service training material
- -Posters for student orientation
- -Slide-tape presentation for student orientation

DISCOVER will initially be available on an annual lease basis only. The lease price will be $8,250 per driving computer center.

DISCOVER FOUNDATION, Inc.

The United States Office of Education, primary funding source for DISCOVER development, has given the DISCOVER development team permission to form a not-for-profit research and development foundation and to hold the copyright on DISCOVER for a three-year period, which may be extended.

The DISCOVER Foundation, Inc. will have the following functions:

- -the distribution of DISCOVER
- -the maintenance of the DISCOVER programs, data files, and text
- -continued development of the product
- -technical and guidance support to users through in-service training
- -the payment of royalties for the copyrighted instruments used in the system

The Foundation will begin its activities in July, 1976.

COUNSELOR-ADMINISTRATIVE SUPPORT FUNCTIONS

The detailed design of the counselor and administrative support functions of DISCOVER is now underway. The project's Advisory Board for these functions met in New Orleans on February 27-28 and generally approved the plans presented by James Boyd, DISCOVER's director of technical development. Some programming will begin on these functions this spring and will continue through the 1976-77 year. It is anticipated that these will be added to the package, at no extra cost, by July, 1977.

These functions include:

- -direct access to all of DISCOVER's extensive data files
- -recall of student records in a variety of displays
- -on-line scheduling and schedule-changing
- -on-line building and modification of student records

DEVELOPMENT OF COLLEGE/ADULT VERSION BEGINS UNDER EXXON GRANT

The DISCOVER team has received a grant of $132,000 from the Exxon Foundation for the development of a college and adult version of DISCOVER. The first phase of this new development was begun March 29, 1976, with a preliminary field trial of the present material with students at two diverse institutions: Western Maryland College (Westminster, Maryland, where the guidance team is based) and College of DuPage (Glen Ellyn, Illinois, where the technical team is based). Western Maryland is a private, small, selective liberal arts college while College of DuPage is a large, comprehensive community college. During the three-month field trial, the team will attempt to assess what parts of DISCOVER are usable as they are with the college population, what parts might be usable with content or text modifications, what parts are needed. Based upon the findings of this field trial development will begin in July, 1976, and continue through August, 1977. During the first semester of 1977-78, the new product will again be field-tested in the same two institutions. It is planned that the college and adult version of DISCOVER will be ready for dissemination in the spring of 1978.

DISCOVER RUNS ON IBM EQUIPMENT

The version of DISCOVER which is available for release in July of 1976 has been designed to run on an IBM 370 computer, under CICS, using IBM 3270 cathode ray tube terminals with light pens. The technical design of the system makes it possible, however, to convert the program for use on other machines.

DISCOVER TO BE DEMONSTRATED AT APGA

DISCOVER will make its debut at the Chicago American Personnel and Guidance Association Convention, April 11-15. The DISCOVER team will present a program as well as provide a continuous demonstration of the system in the exhibit hall.

FOR FURTHER INFORMATION, WRITE OR CALL:

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