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AN INFORMATION SYSTEM FOR VOCATIONAL DECISIONS. SIXTH QUARTERLY REPORT.

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DESCRIPTORS- *RESEARCH PROJECTS, *INFORMATION SYSTEMS, VOCATIONAL DEVELOPMENT, DATA PROCESSING, *OCCUPATIONAL INFORMATION, *INFORMATION DISSEMINATION,

THE PURPOSE OF THIS REPORT IS TO OUTLINE THE MAJOR ACTIVITIES AND ACCOMPLISHMENTS OF THE INFORMATION SYSTEM FOR VOCATIONAL DECISIONS DURING ITS SIXTH QUARTER (1 SEPTEMBER 1967 TO 30 NOVEMBER 1967) AT HARVARD UNIVERSITY. THE REPORT INCLUDES DISCUSSIONS ON PROBLEMS ENCOUNTERED, SIGNIFICANT FINDINGS, AND PLANNED FUTURE ACTIVITIES. IT COVERS THE DISSEMINATION ACTIVITIES (REPORTING AND EDUCATION) ASSOCIATED WITH THE SYSTEM. IT IS MOST CONCERNED WITH THE FOLLOWING MAJOR AREAS--(1) DATA ASSEMBLY, ORGANIZATION, AND FILING FOR COMPUTER PRESENTATION, (2) CURRICULUM CONSTRUCTION AND EDUCATIONAL REORGANIZATION, (3) STUDY AND ASSESSMENT OF THE SYSTEM, AND (4) ADMINISTRATION OF THE PROJECT AS A WHOLE. (RD)

SIXTH QUARTERLY REPORT
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AN INFORMATION SYSTEM FOR VOCATIONAL DECISIONS

November 1967

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

SIXTH QUARTERLY REPORT

Project No. 6-1819
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An Information System for Vocational Decisions

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1 December 1967

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U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

Office of Education
Bureau of Research

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Period: 1 September 1967 to 30 November 1967. Date of submission: 1 December 1967
Name of institution: Harvard University
Title of project: An Information System for Vocational Decisions
Name of project directors: David V. Tiedeman, Russell G. Davis, Richard M. Durstine, Allan B. Ellis, Wallace J. Fletcher, Edward Landy, Robert P. O'Hara, Michael J. Wilson.

1. Major Activities and Accomplishments

2. Problems----------See #1

3. Significant Findings and Events----------See #1

4. Dissemination Activities----------pp 39-43

5. Capital Equipment Acquisitions----------None

6. Forms----------None

7. Other Activities----------None

8. Staff Summary

9. Future Activities Planned for Next Reporting Period----------See #1

INFORMATION SYSTEM FOR VOCATIONAL DECISIONS

Quarterly Progress Report No. 6

1 September 1967 to 30 November 1967

Grant No. OEG-1-061819-2240

Organization of Quarterly Report

This report indicates the activities of the Information System for Vocational Decisions during its sixth quarter, 1 September 1967 to 30 November 1967 inclusive. This quarterly report continues the organization of activities established for the Annual Report and continued in the report on the project's fifth quarter. The project's accomplishments achieved during the sixth quarter are therefore organized into the following four main areas and associated sub-areas:

A. Data assembly, organization, and filing, for computer presentation.

1. Data assembly, organization, and filing

a. Forecasting area

b. Placement area

c. Information area

d. Inquirer characteristics area

e. Data files area

1) Occupational

2) Military

3) Educational

4) Personal and family living

5) Inquirer characteristics

2. Computer presentation area

B. Curriculum construction and educational re-organization

1. Curriculum construction

a. Decision-making area

b. Vocational development curriculum area

c. General curriculum area

d. Psychological curriculum area

2. Educational re-organization

a. Educational re-organization and supervision area

b. Reporting and education area

C. Study and assessment of System

D. Administration of the Project

A.1.a. Forecasting Area

Professional Personnel in the Area: Russell Davis and Richard Durstine, Directors; Lynne Fitzhugh, Stephen Purcell and Elizabeth Truesdell.

Summary. The overall plan for assembling and making occupational forecasts available consists of the following general phases:

June 1966 - August 1967	1. Develop methodology and assemble data
September - November 1967	2. Apply methods to data and establish classifications for on-line use and updating
December 1967 - February 1968	3. Establish operating system for Prototype I
March - April 1968	4. Implement 2 & 3 above for Prototype I
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	6. Implement Prototype II
January - May 1969	7. Field test Prototype II

Phase 1 has been completed as indicated in prior quarterly reports. Phase 2 was undertaken in this sixth quarter. Application of the methodology developed earlier is now under way. A suitable classification of occupations and industries has been established to facilitate use of the most extensive sources of available forecasting information. Clerical work and computational planning have begun toward identifying, interpolating, interpreting, and presenting forecasting information. Our

major source in this effort is "Tomorrow's Manpower Needs." (Bureau of Labor Statistics, 1967)

A.1.b. Placement Area

Professional Personnel in the Area: Duncan Circle and Lawrence Lerer, Directors; Edward Landy, Allan Ellis, and Dorothy Shannon.

Summary. The overall plan for the Placement Area consists of the following general phases:

June 1966 - May 1969	1. Establish placement and career resources centers in high school, college, graduate school, and employment institutions. Plan for computer activities in placement.
September 1967 - February 1968	2. Prepare placement activities for computer in relation to Prototype I
March - April 1968	3. Implement materials from 1 & 2 for Prototype I
May - August 1968	4. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	5. Implement Prototype II
January - May 1969	6. Field Test Prototype II

Phase 1 is being implemented in a high school. These high school activities were continued in the sixth quarter as : 1) the continuation of Jobs for Youth; and 2) the coding of jobs according to the classification of the Dictionary of Occupational Titles (DOT) (for Phase 2).

Implementation of Phase 1 at the graduate school level was also initiated in prior quarters. During the sixth quarter,

activities associated with that implementation and with the expansion of Phase 1 into college and employment service applications included: 3) surveys of placement activities; 4) data gathering (for Phase 2); 5) systems design (for Phase 2); and 6) identification of target areas designated by the Harvard University Graduate School of Education Placement Office.

Jobs for Youth. This activity was reactivated at the start of the new school year. Since students are now in school, fewer of them are looking for jobs than were during the summer months; also, there does not seem to be as much employment available on a part-time basis as there was on a full-time basis during the summer. Therefore, there is not the volume of activity there was at the end of the last school year. About 90 companies have listed openings with the Placement Office to date.

The availability of these openings has made it possible to work with students in more meaningful ways than previously. Several of the openings have been incorporated into the work-study program. Several of the openings have also been used with students who were planning to drop out of school and seek full-time employment, but, because of the availability of a satisfactory part-time position, decided to stay in school. These openings enable counseling to be done with students in the realities of work and provide them support and direction as they search for their first jobs.

During the rest of this school year the job opening information will be available to students through the Career Resources

Center (see Sub-section B.2.a.). This will be staffed by Mrs. Dorothea Overholt, a professional person who will be collecting the necessary information to write scripts on job placement based on the various levels of indecision that students present when they come to the center. These scripts will be finished at the end of the school year and will be ready for use with Prototype I and Prototype II.

DOT Coding. All job openings have been coded with their DOT number. In addition, all the jobs that students have gotten working papers for during the past two years have been coded and the place of employment has been listed with the job code. When a particular type of job is not available for a student, this file has been consulted and possible employers have been called. This has proved to be a valuable source for developing job openings.

Placement at College and Adult levels. Placement activities of the Harvard Graduate School of Education Placement Office, Northeastern University, Wentworth Institute, University of Illinois, R.C.A., Prudential, Project Search (NEA), Association of College and University Staff (ASCUS), and the University Council on Education Administration (UCEA) have been surveyed. Relevant materials from these sources have been carefully examined and extracted for use.

Data Gathering. Placement programs of a variety of institutions have been examined and data gathered as to variables used by employers and employees in effecting successful placement

(either entry or promotion). Based upon the data gathered, "employer" and "employee" information forms have been developed. "Employer" forms have been distributed to target school systems to be surveyed during Phase 3 of our activities. "Employee" forms will be distributed to a sample population attending Harvard Graduate School of Education. Information gathered on these forms will be used in developing and implementing a "self-searching file." This file will group geographically, by level, and curriculum area for each of these target areas.

Initiation of Systems Design. Working closely with personnel at NEEDS and R.C.A., a first approximation to flow charts for a systems design is being completed. The program being developed will attempt to optimize the use of data currently in the placement file of the H.G.S.E.

Identification of Target Areas. In close cooperation with the H.G.S.E. Placement Office, a list of "target areas" has been developed representing a broad spectrum of school systems (urban, rural, suburban), and other significant establishments involved in "education" (e.g., Xerox, General Learning Corp., Office of Education, Silver-Burdett). Letters have already been sent to 75 selected school systems that make frequent use of the services of the Placement Office, and selected elementary schools in New York City involved in the "More Effective Schools" program. It is planned that close continued involvement with these target areas will provide us with employer perceptions of "vocational" education needed on the graduate level.

A.1.c. Information Area.

Professional Personnel in the Area: Duncan Circle and Edward Landy, Directors; Wallace Fletcher, Dorothy Kunberger, James McDade, and Eugene Wilson.

Summary. The overall plan for conducting the work in the Information Area consists of the following general phases:

June 1966 - August 1967	1. Assemble, classify and make occupational information available in Career Resources Center (see B.2.a. below)
September 1967 - May 1969	2. Update information as necessary
September 1967 - February 1968	3. Use information in Prototype I both as scripts themselves and as reference material supporting script purposes
March - April 1967	4. Implement 3 above for Prototype I
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	6. Implement Prototype II
January - May 1969	7. Field test Prototype II

Phase 1 has been completed as indicated in prior quarterly reports. Work on Phases 2 and 3 included: 1) adding materials to continue the up-dating of the occupational library; and 2) recording of newly acquired materials on Hollerith Cards so that they can be available for a variety of bibliographic listings.

Material Acquisition and Up-Dating. A very extensive library of vocational guidance materials, particularly printed matter,

has been developed over the past two years. This was acquired through the use of Public Law 88-210 funds made available from the Bureau of Vocational Education of the Massachusetts State Department of Education. This grant has been extended for a third year for the purpose of writing a document about establishing a career information center and using occupational information with students. New acquisitions will up-date the original library and also expand the variety of audio-visual materials available for use in the center. These latter materials are being examined for their potential use as visual displays in conjunction with the scripts of Prototypes I and II.

Bibliographic Retrieval. All bibliographic references available in the occupational library have been transferred to Hollerith cards. As additional materials are developed they too are recorded on Hollerith cards. Programs are being written to reproduce the data as they are presently stored and in addition to create listings according to specified categories.

A.1.d. Inquirer Characteristics Area

Professional Personnel in the Area: Duncan Circle and Thomas Hutchinson, Directors; Allan Ellis, Lawrence Lerer, Margaret Pincus, David Tiedeman, and Eugene Wilson. Consultant: Paul Lohnes.

Summary. The overall plan for conducting the work of the Inquirer Characteristics Area consists of the following general phases:

June 1966 - August 1967	1. Secure and/or code cumulative record data on pupils to be included in field test of Proto-

		type II. New England Education Data Systems is a source of some of the data.
June 1966 - August 1967	2.	Do follow up studies of Newton classes in order to have data for next generations of students
September 1967 - December 1968	3.	Provide updating of records used in Phase 1
September 1967 - December 1968	4.	Provide necessary updating of records used in Phase 2
September 1967 - February 1968	5.	Plan data file. Collect inquirer characteristics which are to be stored from scripts. Plan for insertion of needed inquirer characteristics not now in scripts.
March - April 1968	6.	Implement Phases 4 & 5 for Prototype I
May - August 1968	7.	Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	8.	Implement Prototype II
January - May 1969	9.	Field test Prototype II

Phase 1 has largely been completed as is indicated in prior quarterly reports. Student characteristics have been gathered for the group of students expected to be the inquirers. Information on these students will be up-dated in accord with Phase 3 as more information becomes available during the school year and additional information may be gathered to give a larger basis for simulation and prediction.

Phase 2 has also largely been completed as has been indicated

in prior quarterly reports. Additional studies are being considered in accord with Phase 4 and will be initiated dependent upon the needs of Prototype II, not Prototype I.

Scripts are also being searched for needed inquirer characteristics in accord with Phase 5.

Student Characteristics. Data are available from the student records of all of last year's Bigelow Junior High School students. Data have been coded on Digitek forms. The new seventh grade class will be added this year and additions to a student's records this year will be added to information coded last year. Additionally, this past quarter all of the students who previously attended Bigelow and who are presently at Newton High School are having their Bigelow and Newton High School records recorded on Digitek. Again this mass of information will be available as a basis for simulation, prediction and games. For those students in the group who become actual inquirers it will be the basis of the file of inquirer characteristics.

Follow-up Studies. The follow-up studies initially outlined have been completed. These include a two-year follow-up of the class of 1963, a seven year follow-up of the class of 1959, a follow-up of the Technical High School including the classes of 1960, 1961, 1962, 1964, and 1965 for each year since their graduation and a follow-up of the post-high school plans of the class of 1966. Presently, consideration is being given to getting additional data,if any, which may be needed for prediction, simulation and games with inquirers on the console.

Inquirer Characteristics from Scripts. Scripts prepared during Summer 1967 are presently being searched for inquirer characteristics which should be saved and stored during the inquirer's interactions with script material. The search has particularly been concentrated during the sixth quarter in terms of the items and variables of Gribbons' Readiness for Vocational Planning. However, a more general attack in terms of the other psychological variables of interest in ISVD was also planned while this trial operation was underway.

A.1.e.1) and 2) Occupational and Military Data Files Areas

Professional Personnel in the Areas: Russell Davis and Richard Durstine, Directors; Christopher Davis, Lynn Fitzhugh, Stephen Purcell, Joanna Seltzer, Elizabeth Truesdell, Laurence Wolff, and Patricia Yee.

Summary. The overall plan for constructing the occupational and Military Data files consists of the following general phases:

June 1966 - August 1967	1. Survey needs, available systems and data. Assemble data. Experiment with models for data retrieval of occupational data file.
September - November 1967	2. Construct military data file and revise occupational data file
December 1967 - February 1968	3. Plan and do cross-referencing required among all five data files
March - April 1968	4. Implement 2 & 3 above for Prototype I
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II

September - December 1968 — 6. Implement Prototype II file

January - May 1969 — 7. Field test Prototype II

Phase 1 has been completed as indicated in prior quarterly reports. During the sixth quarter, the military data file was brought to completion in paper form thus fulfilling Phase 2. Two working papers have been issued in this connection and considerable backup material is in the final stages of preparation.

Continued development of the occupational data files has been done this quarter on the following topics: 1) preparation to sort all the titles in the Dictionary of Occupational Titles to find useful groupings of occupations and functions; 2) exploratory investigation of patterns of sequential passage from occupation to occupation; 3) preparation of data file and script material related to occupations and careers for women; and 4) reorganization of occupational and industrial categories to facilitate the forecasting function, referencing among data files, and information processing.

A.1.e.3) Education Data File Area

Professional Personnel in the Area: Robert O'Hara, Director; Robert Aylmer, Duncan Circle, Richard Durstine, Carl Edwards, Allan Ellis, Thomas Hutchinson, and Lawrence Lerer.

Summary. The overall plan for constructing the Education Data File consists of the following general phases:

June 1966 - August 1967 — 1. Survey of needs and available systems

September - November 1967 — 2. Plan for implementing of college file and specific

	non-college file
December 1967 - February 1968	3. Plan and do cross referencing required among all five data files
March - April 1968	4. Implement 2 and 3 above for Prototype I.
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	6. Implement Prototype II file
January - May 1969	7. Field test Prototype II

Phase 1 has been completed as indicated in prior quarterly reports. The specific college and non-college files have been planned as required in Phase 2. Acts in Phase 2 included: 1) prepare data file on 980 accredited colleges and universities in the United States; 2) plan for interactive inquirer-machine program; 3) move Newton data to tape; 4) explore use of DOT data on educational level and training; and 5) prepare file of college admissions data.

File of Accredited Colleges and Universities. During the quarter, several meetings have been held with Carl Edwards, a researcher in the Department of Social Relations. In June of 1967, Edwards surveyed the college intentions of a sample of over 200 students in three towns in the Metropolitan Boston area. To do this, he prepared a questionnaire and utilized data from the National Merit Scholarship program. He has expressed a willingness to cooperate with ISVD in the preparation of a

data file which would take advantage of his research. Our present plan is to have this data file modeled on the occupational data file. By this we mean that there will be a matrix of 980 colleges with some forty odd characteristics of these colleges available for retrieval. Through the use of Edwards' questionnaire, the computer can match college and student and, given the existence of a printer, produce a hard copy list of computer chosen colleges suitable for the student.

Interactive Inquirer-Machine Program. The second part of this interactive model would be a program in which the student can choose his own set of criteria from the available list, and request the machine to search the data file for colleges conforming to his own criteria. It is also our intention to include data on trade schools and junior colleges using much the same model.

Newton Data. The data on curricula and courses in the Newton junior and senior high schools are already available to us. These shall be moved to tape within the next quarter. One very general program in this area was written last spring. This will probably be broken into smaller segments for inquirer-machine interaction in the next quarter.

Linking Education and Occupational Levels. Since we have available to us on tape the entire DOT, some effort will be made in the coming months to consider the problem of access to the six levels of General Educational Development, and the nine levels of specific vocational preparation which are contained within the worker trait components of this dictionary.

College Admissions Data. Some effort will be made to make use of college admissions data, available from several sources, related to scores on the College Entrance Examination Board tests and the American College Testing Program.

A.1.e.4) Personal and Family Living Data File Area

Professional Personnel in the Area: Charles Gunnoe and David Tiedeman, Directors; Myra Gannaway, John Page, and Esther Wiedman.

Summary. The overall plan for constructing the Personal and Family Living Data File consists of the following general phases:

June 1966 - November 1967	1. Survey of ISVD needs and available procedures
December 1967 - February 1968	2. Plan data file
March - April 1968	3. Implement data file for Prototype I
May - August 1968	4. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	5. Implement Prototype II file
January - May 1969	6. Field test Prototype II

Phase 1 has been completed.

Needs and Procedures. During the quarter it has been determined that the personal and family living data file will be planned around the following four discontinuities: 1) transition from family to school; 2) transition from secondary school to post-secondary work or further education; 3) marriage; and 4) family.

The specific materials intended for this file have not yet been decided upon.

A.1.e.5) Inquirer Characteristics Data File Area.

Professional Personnel in the Area: Duncan Circle and David Tiedeman, Directors; Allan Ellis, Thomas Hutchinson, Margaret Pincus, and Robert O'Hara.

Summary. The overall plan for constructing the Inquirer Characteristic Data File consists of the following general phases:

June 1966 - November 1967	1. Plan cumulative record file and collect and code data for subjects likely to be used in field test of Prototype II.
December 1967 - April 1968	2. Implement cumulative record. Provide Durstine-Wolff type of retrieval capacity
December 1967 - April 1968	3. Provide for merging and subsequent accessing of inquirer characteristics secured from vocational development, decision-making, general education, and psychological curricula
April - August 1968	4. Implement Phases 2 and 3 above as Prototype I and engage in limited field trials to secure specification modifications of file for Prototype II
September - December 1968	5. Implement Prototype II file
January - May 1969	6. Field test Prototype II

Phase 1 of the overall plan has been completed as was indicated in A.1.d. Inquirer Characteristics Area above.

A.2. Computer Presentation Area.

Professional Personnel in Area: Allan B. Ellis, Director; David Brewster, Barbara Howley, Thomas Hutchinson, Roy Norris, Margaret Pincus, Dana Quitslund, Richard Roman, Dorothy Shannon, and Ann Taylor.

Visiting Researchers: Roy Forbes of General Learning Corporation; Selwyn Taylor and Gary Stapleford of Sanders Associates; and John McManus and Fran Archambault of the University of Connecticut.

Sub-contractor: Thomas Cheatem and Wallace Goldfarb of Computer Associates.

Summary. The overall plan of the computer area consists of the following general phases:

June 1966 - February 1967	1. Explore existing software and hardware
March - June 1967	2. Try and evaluate techniques uncovered in exploration
July - October 1967	3. Specify Prototype I (computer)
September 1967 - February 1968	4. Implement Prototype I (computer)
March - June 1968	5. Test and refine Prototype I (computer)
July - October 1968	6. Specify Prototype II (computer
July - October 1968	7. Implement Prototype II (computer)
November 1968 - January 1969	8. Test and refine Prototype II (computer)
November 1968 - January 1969	9. Specify Prototype III (computer)

Throughout the major portion of the sixth quarter, the computer area concentrated its efforts in both Phase 3 and Phase 4 of the above plan. Our present estimate is that while we will be

able to stick with our Phase 4 schedule, Phase 3 activities will need to be prolonged into the winter. The major areas of activity and accomplishment include: 1) hardware; 2) software; 3) system flow charts; and 4) technical support.

Hardware. Our present hardware configuration consists of four model 35ASR teletypewriters and one model 33ASR teletypewriter. All necessary arrangements have been made for the leasing of a Sanders 720 video display terminal to which we will attach a hardcopy printer. Furthermore, Eastman Kodak Company has agreed to give us the use of a terminal specially designed by them which includes two random access carousel slide projectors, a tape deck and an eight millimeter motion picture projector. In order that this Kodak terminal can operate under computer control, Sanders Associates proposes to design and build a special interface. Delivery of the two terminals and construction of the necessary hardware interface are planned for completion by late winter.

The RCA Spectra 70/45 computer to which these terminals will be connected was delivered in late October to the New England Education Data Systems. The machine has entered its final test and debug stage and should be released by RCA sometime in early December at which time the project will have leased access to the machine four hours a day.

Software. Even as the Spectra 70/45 is being tested by the RCA engineers, we have been able to run a number of assemblies of the TRAC processor. Progress in this area has made it possible for most of the professional computer staff to direct its atten-

tion to the problems of modification of RCA's Basic Time Sharing System (BTSS) and of providing certain software enhancements to BTSS necessary for computer support of ISVD guidance software and ISVD data bases.

MINORCA, one of the major elements of the ISVD software, has entered the next stage of its development and implementation. As a result of our work with the summer script writers, we now have a more complete sense of the needed capabilities of the language. Based on the knowledge gained through this summer work, we are now preparing an extensive statement of the basic philosophy and needed functions of the language. For maximum efficiency, this is being done without regard to syntax, and thus, while the version of MINORCA that is implemented for Prototype I will in no way represent a drastic departure from earlier versions, we do not make the assumption that the syntax will remain in its present form.

In addition to our activities in the area of system software, the computer area under the direction of Thomas Hutchinson has begun to develop an extensive statistical library. This library is designed to operate in the batch mode for the use of researchers in the project, and also to serve as the first step toward an on-line statistical processing capability.

Flow Charts. The computer area assisted Tiedeman and O'Hara in the depiction as flow charts of the three access routines that form the heart of the ISVD guidance software package. These flow charts constitute an unambiguous statement of the flow through

the system and will serve not only as a guide to the organization of activities within the system, but as well as the bases for the computer flow charts which will grow out of them.

Technical Support. Ellis and Hutchinson are working with Circle, Lerer, and O'Hara on the Education Data Base. Carl Edwards will give Hutchinson a tape record of his data and Hutchinson will make a copy for ISVD. Edwards and Ellis will construct software procedures for accessing this data base.

Ellis and Hutchinson are assisting E. Wilson in the construction of a Life Career Game. The game will be based on the ISVD model. The game will use hypothetical cases and assigned tasks that are similar to the discontinuities that most inquirers face. A scoring algorithm will be developed to provide results of decisions and to serve as a guide to the inquirer's use of the ISVD routine.

Hutchinson and Pincus have been working with Tiedeman on further specification of the access routines. Pincus and Tiedeman have developed both the EXPLORATION and CLARIFICATION access routines to the point of a first attempt at flow charting. Tiedeman and Hutchinson have done the same with the REVIEW access routine. The stage of script writing has begun with Type I REVIEW.

Aylmer, Ellis, Hutchinson, and Kronstadt are concerned with the general use of language data processing within the ISVD. Work has begun on the implementation of the scripting and LDP procedure for the construction of summary statements which will be

used in CLARIFICATION for anticipation statements and in REVIEW with statements for the results of a decision. The building of a dictionary for dimensions related to course selection has been started by Aylmer.

Hutchinson has an operating "bench model" of his procedure for determining the possibilities of securing a chosen alternative once the values which the alternative is to produce have been ascertained. This model will not completely operate on-line because of the large amount of processing time How-ever, the model will at least operate in batch processing mode in Prototype I of the ISVD model.

O'Mahoney started implementation of his procedure for ascertaining self concept in relation to depictions of work situations. Hutchinson is providing technical support in this implementation.

Contacts were made with Guidance Associates in New York who have much experience in producing pictorial materials for guidance applications of various kinds. Guidance Associates indicated a willingness to share materials on just a cost basis.

B.1.a. Decision-Making Area

Professional Personnel in the Area: Eugene Wilson and Allan Ellis, Directors; Susan Baldwin, Diana Kronstadt, Dorothy Kunberger, James McDade, and Margaret Pincus.

Summary. The overall plan for constructing the Decision-Making Curriculum consists of the following general phases:

June 1966 - August 1967	1. Construct and field test decision-making booklet for junior high school

September 1966 - August 1967	2. Survey career games
September - November 1967	3. Plan educational and career planning games
December 1967 - February 1968	4. Prepare scripts called for in 3 above
March - April 1968	5. Implement 4 above as Prototype I
May - August 1968	6. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
January - May 1969	7. Field test Prototype II

Phase 1 has been completed as has been indicated in prior reports. Completion of Phase 2 led to the decision to implement a revised version of Sarane Boocock's Life Career Game. It also included the commissioning, construction and delivery by Abt Associates of a Machinist Career Game for adult levels.

Summary. During this quarter our efforts have been particularly devoted to planning in Phase 2 of games and simulations which will become part of Prototype I. We have also consulted with personnel at Bigelow Junior High School regarding the unit on decision-making which they plan to use with the ninth grade this year.

Gaming and Simulation. A modified version of Sarane Boocock's "Life Career Game" is now seen as the central game activity available at the junior and senior high school levels. Members of the ISVD staff have played the game and have discussed its modification at some length in two major conferences. In addition, Wilson has

consulted with Eastman Kodak Company, with staff members of the Rochester Career Guidance Project, and with Dr. Sarane Boocock of Johns Hopkins University, author of the game, about our intended modifications.

The planned modifications involve writing scripts for: 1) orientation to the game; 2) rules of the game; and 3) presentation of the profiles of a hypothetical person whose life is to be played. The data bases presently in the "Life Career Game" will be modified and updated in line with ISVD materials and purposes, and the scoring system will also be examined for possible changes needed by ISVD.

The first modified version of the game will allow a small team of two or three players to play the game at the console with the computer furnishing access to the data bases and the scoring system.

The ISVD version of the "Life Career Game" is seen as a central process which will provide a structure through which the user may move to all of the resources of the system at that level.

We are simultaneously planning a more specific educational choice simulation called "Sim/School" which involves all of the choices encountered by a student in planning and modifying his academic program through three years of high school.

We have begun discussions with Eastman Kodak Company regarding a possible modification of the Abt Machinist Simulation, which involves a pictorial presentation of the consequences of each alternative course of action at each decision-point. A random

access slide projector and/or an automatic loading movie projector would be controlled by the computer to allow the user to move through the simulation as he experiences the sights and sounds of the machine shop environment.

Evaluation of the Curriculum Unit on Decision-Making. Scoring of Gribbons' Readiness for Vocational Planning and the Student Evaluation of Decision-Making Unit instruments is now completed. Experience from the administration of these testing instruments is now being applied to the problem of computerizing those tests. Advantages and disadvantages of each mode are being considered in the light of ISVD objectives as we seek to modify existing instruments and develop new instruments designed more specifically to measure what we are interested in.

The concept of the process of "readiness for vocational planning" is being incorporated into the scripts so that MONITOR can store responses on certain tagged items which will then be accumulated to a Readiness for Vocational Planning score.

We are particularly interested in developing a set of subscores to the RVP which will initially correspond to Gribbons' eight dimensions: 1) factors in curriculum choice; 2) factors in occupational choice; 3) verbalized strengths and weaknesses; 4) accuracy of self appraisal; 5) evidence for self rating; 6) interests; 7) values; and 8) independence of choice.

Consultation with Bigelow Junior High. In meetings with Robert Frost, Principal, Dorothy Kunberger and James McDade, Counselors, we have reached understandings regarding the extent

of ISVD's involvement at Bigelow Junior High School during this academic year. We have agreed to serve as consultants and to furnish materials for classes in decision-making which will be conducted by the teachers and counselors at Bigelow. We have also requested space in the library area of the new school which is under construction, for use as a Career Resources Center, beginning September, 1968.

B.1.b. Vocational Development Curriculum Area.

Professional Personnel in the Area: Lawrence Lerer, Robert O'Hara, and David Tiedeman, Directors; Robert Aylmer, Diana Kronstadt, Dorothy Kunberger, James McDade, and Eugene Wilson. Consultant: Esther Matthews.

Summary. The overall plan for constructing the Vocational Development Curriculum consists of the following general phases:

June 1966 - August 1967	1. Write behavioral specifications. Write scripts
September - November 1967	2. Organize, winnow, and edit scripts
December 1967 - February 1968	3. Revise scripts, add needed scripts, and provide scripting of interchanges among scripts as well as data assembly for MONITOR
March - April 1968	4. Implement 3 as Prototype I
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	6. Implement Prototype II
January - May 1969	7. Field test Prototype II

A part of Phase 1 has been completed. During the sixth

quarter, scripts written in the summer were organized and reviewed to determine what parts of the required system are now available and what parts must still be constructed.

Specific activities included: 1) editing and winnowing of 170 scripts prepared during summer '67; 2) organization of existing scripts; 3) development of list of discontinuity specific scripts; 4) identification of RVP elements in existing scripts; 5) listing of suggested areas for additional script writing activities in anticipation of Prototype I.

Editing and Winnowing of Existing Scripts. Scripts prepared during the summer '67 script-writing activity were carefully read and categorized according to level (elementary, junior high school, senior high school, college), appropriate location in relation to "A Tentative Classification Scheme for the ISVD Scripts," and in relation to Access Routines of REVIEW, EXPLORATION, and CLARIFICATION.

The 170 scripts are distributed in the following categories of "A Tentative Classificati · cheme for the ISVD Scripts":

1. Vocational Planning Program. Designed primarily to make explicit the teaching of the Tiedeman-O'Hara decision-making paradigm and its application to a specific discontinuity, a group of 19 scripts was prepared on the elementary level, dealing with self and the use of self information in vocational decision-making, a perceptual framework toward the delineation of problem in decision-making, and concepts of decision-making as potential influences on decision-making. Fifteen of these scripts can be used

at the Junior High School level.

2. Personal Characteristics. Scripts in this category were designed to teach about the dimensions of self through an understanding of the concepts of interests, abilities, achievement, and values. The 74 scripts prepared in this area are directed primarily at the junior and senior high school levels.

3. Education and Training. The 34 scripts in this area are designed to acquaint users with some relevant concepts related to education and training in schools, industry, and military services. These scripts will relate closely with occupational, educational, and military data bases under preparation, and have been written primarily for senior high school and junior college inquirers.

4. Occupations. The objectives of these scripts include giving information about why people work, the results of working, and the implications of one's working on the rest of his life. There are 43 such scripts including several that inform inquirers of the kinds of data available in the occupations data file.

Organization of Scripts. The summer script writing activity did not produce a complete system. The scripts were therefore re-organized in order to see what we had. Existing scripts fall into one of the following categories:

a) attributes of an agent;

b) self and decision-making;

c) self attributes and deciding;

d) economics and employment;

e) educational choices;

f) occupational choices; and

g) placement.

A more complete list and description of scripts according to these categories is given in Appendix A.

Discontinuity Specific Scripts. Based upon the education and work discontinuity chart in Career Development: Choice and Adjustment by Tiedeman and O'Hara, a list of scripts was prepared indicating a specific discontinuity to which the content of each script refers. This list is particularly important in giving direction to planned script-writing activities.

RVP Elements in Existing Scripts. A chart of RVP related materials in existing scripts has been prepared. We are currently noting RVP areas of plenty and paucity in scripts in preparation for further script writing to produce Prototype I.

Additional Script-Writing Activities. A plan for editing and revising of existing scripts and for preparation of additional scripts has been devised.

B.1.c. General Curriculum Area

Professional Personnel in the Area: Lawrence Lerer, Director; Wallace Fletcher and David Tiedeman.

Summary. The overall plan for the General Curriculum Area consists of the following general phases:

June 1966 - August 1967	1. Survey for study-work links for use in cross referencing of education, occupation, and inquirer characteristics data files
September 1967 - February 1968	2. Provide and do cross ref-

	erencing of education, occupation, and inquirer characteristics data files
March - April 1968	3. Implement 2 for Prototype I
May - August 1968	4. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	5. Implement Prototype II
January - May 1969	6. Field test Prototype II

Phase 1 has been completed as has been indicated in prior reports. Work continued in this area according to Phase 2 during the sixth quarter.

The ISVD is committed to creating links through its data files among educational categories themselves, among occupational categories themselves, among military data files themselves, among inquirer characteristics data files themselves, and among files in all of these categories. The project carries out this intention through this Area. During the present quarter, personnel in this Area have largely been occupied elsewhere in the project. However, Lerer has continued to select material from his doctoral project in developing a theoretical framework underpinning a laboratory/experience instructional mode in relation to its role in the "common curriculum."

B.1.d. Psychological Curriculum Area

Professional Personnel in the Area: Charles Gunnoe and David Tiedeman, Directors; Myra Gannaway, John Page, and Esther Wiedman.

Summary. The overall plan for constructing the Psychological Curriculum consists of the following general phases:

June 1966 - August 1967	1. Provide general theory on thought, choice, and action
September - November 1967	2. Specify sense of agency. Test scripts against concept. Plan for additional scripts and assessment and storage of assessments
December 1967 - February 1968	3. Write additional scripts
March - April 1968	4. Implement Phases 2 and 3 as Prototype I
May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	6. Implement Prototype II
January - May 1969	7. Field test Prototype II

Phases 1 and 2 have been completed in detail sufficient for Prototype I.

Theory of thought, choice and action. Dudley and Tiedeman have completed a manuscript entitled THOUGHT, CHOICE, AND ACTION: PROCESSES OF EXPLORATION AND COMMITMENT IN CAREER DEVELOPMENT. This is an extensive statement of the theory on which the ISVD will operate.

Implementation of theory in the psychological curriculum. The theory of ISVD calls for facilitating an emerging understanding of self by means of repeated application and analysis of decision-making in the four areas of personal living. The resources available for this task will be:

1) Teaching scripts designed to provide foundation for self understanding through decision-making and analysis;

2) Games which portray, in rounds of activities, the yearly patterns in which educational and vocational decisions both arise and give delineation to life patterns for a person; and

3) Actual decision-making activity in which the concepts of the games are given personal application for the inquirer.

Interchange among the three modes of activity is to be possible and relatively easy.

The psychological curriculum will be the superordinate set of experiences and analyses which makes possible, but does not guarantee, the emergence of sense of agency in relation to repeated use of the above resources.

Specification of sense of agency. Several seminars have been held during the quarter to discuss the concept of sense of agency. As a result, there now seems to be reasonable comprehension of the concept among project personnel. Several working papers have been prepared on the topic. These working papers are serving as basis for review of scripts which will determine 1) those which will be implemented without further editing, and 2) whose which will require severe editing or complete revision prior to implementation in order that they foster, not hinder, emergence of the sense of agency in the general life context.

Psychological assessments. The psychological curriculum will itself consist of that set of experiences and analyses provided by the System as a whole which bear upon formation of a sense of agency and its generalization into the organization of

self. However, a number of psychological variables will also be included in the System because they bear on the development both of that capacity and of the capacity to decide.

It has so far been determined that two of those variables will be: 1) occupational knowledge (as tested by a test of that name provided by James McSherry and Robert O'Hara); and 2) Readiness for Vocational Planning (as indicated by an assessment procedure of that name provided by Warren Gribbons).

In addition, we have now initiated serious study of the following other variables which will be included in Prototype I of the System if possible or in Prototype II of the System if immediate implementation is impossible because of limits in our resource: 1) role repertories (as indicated by the Kelly Role Repertory Test); and 2) vocational maturity (as indicated by the Vocational Maturity Index of John Crites). We are also studying the need gratification theory of Bordin, Nachman, and Segal and will use as much of their scheme as we possibly can. At the least, we will use a rudimentary form of that theory as those rudiments are available in the theories of Anne Roe and John Holland. The paired-comparison procedure of O'Mahoney will be a part of the means we employ to connect needs and occupations as both are manifested in the self-concept.

We are undertaking library study of the relation of identity formation and decision-making. Any relationships of this nature which are uncovered are also likely to be incorporated into the ISVD assessment variables if they can be specified in reasonable detail.

Psychological assessments will be designed for dual use. One of the dual uses will be by the counselor in order to assess and guide the inquirer's reaction and progress in the ISVD. The other dual use will be as heuristic devices provided for the inquirer in rudimentary form through MONITOR of the ISVD. This use will be to guide the inquirer in his development in reaction to these variables to the extent that such development proves possible.

B.2.a. Educational Re-organization and Supervision Area

Professional Personnel in the Area: Duncan Circle, Wallace Fletcher, Edward Landy, and David Tiedeman, Directors; Robert Aylmer, Charles Gunnoe, Thomas Hutchinson, Diana Kronstadt, Dorothy Kunberger, Lawrence Lerer, James McDade, Margaret Pincus, Robert O'Hara, and Terence O'Mahoney. Consultants: Esther Matthews and Stanley Segal.

Summary. The overall plan for work in the Educational Re-organization and Supervision Area consists of the following general phases:

June 1966 - June 1969	1. Establish relationships with NEEDS, Newton, WEMBROC, and other institutions required for resources, data, and field testing of Prototype II
March 1967 - June 1969	2. Establish and help to maintain the extra support activities required in NEEDS, Newton, and WEMBROC for a try out of Prototype I and field testing of Prototype II
January 1966 - February 1968	3. Plan for MONITOR and supervision. Mount rudimentary MONITOR for Prototype I
March - April 1968	4. Implement 3 for Prototype I

May - August 1968	5. Do restricted field testing of Prototype I to develop specification modifications for Prototype II. Expand MONITOR as much as possible
September - December 1968	6. Implement 5 above as Prototype II. Prepare directions for supervision during field test and train needed support personnel
January - May 1969	7. Field test Prototype II

Relationships have been established with NEEDS, Newton, and WEMBROC as indicated in prior reports. This is in accord with Phase 1. In the present period relationships were also expanded with the Placement Office of the Harvard Graduate School of Education which will serve to illustrate placement at the graduate level.

Fletcher is engaged in attempting to develop an orientation sequence which will be concerned with providing inquirers with a series of audio-visual units to familiarize them on the one hand with the present state of the United States economy as it relates to the exponential rate of technological change and on the other the significance of such changes for the inquirers as they begin to conceive of themselves as self-directing, independent socio-economic units of society.

The recently created Audio-Visual center in the Harvard Graduate School of Education has indicated its willingness to utilize its resources jointly in this endeavor.

Fletcher is also arranging to meet with the Commissioner of Education for the Commonwealth to discuss movement toward coordination of manpower development efforts and anticipated State Department

activities in the educational field.

Attention is also being given to the possible establishment of a relationship with schools and instituitions in some inner city in order to expand the sample of disadvantaged persons who can be included in the pilot testing of Prototype I and the actual field testing of Prototype II.

Phase 2 activities during the sixth quarter included the continuation of activity with Bigelow Junior High School and the establishment and support of the Career Resources Center at Newton High School.

MONITOR and supervision have also been further planned during the sixth quarter in accord with Phase 3.

Consolidating and Expanding ISVD Relationships. Arrangements have largely been completed for lease of time on the computing equipment at NEEDS (see Section D). The ISVD is cooperating with the Placement Office, Harvard Graduate School of Education in the computerization of that illustration of graduate-school placement (see Sub-section A.1.b.). The ISVD has also started to investigate where consoles can be placed in an inner city location for the best advantage of the pilot and field tests of the two prototypes which are intended. Expansion into disadvantaged areas will cause the ISVD to widen the range of its pictorial representation and put the System under more difficult conditions during its field testing. Ascertaining performance characteristics of the System under these more difficult circumstances will provide a better basis for assessing the potential

economic liabilities and advantages of a completed System.

Junior High School and High School Support Activities. As has been indicated in Sub-section B.1.a. above, avenues have been kept open with the Bigelow Junior High School. The climate for pilot and field testing at that Junior High School is very favorable.

At the end of the sixth quarter, the Career Resources Center will move to Newton High School. This move has been strongly supported by a number of teachers and counselors in the school. Available in this Center will be the occupational library and the Jobs for Youth information. Plans are being made to journalize the type of requests made of the Center by the students since it is anticipated that these will closely approximate the requests made of the ISVD console. This record will be available to the script writers for their consideration in the development of scripts.

It is further anticipated that the Center will be one of the field testing sites for Prototype II. This will make the Center available as an immediate referral source for scripts which branch to other types of information not stored in the console.

MONITOR and Supervision. The sense of agency is now fairly well understood among project personnel. Scripts are being assessed in terms of their potential contribution to sense of agency (see Sub-section B.1.b.).

The theory of MONITOR has also been laid out to the general satisfaction of project personnel. MONITOR will be a part of the

three main elements of the System, namely, 1) concept teaching, 2) game playing, and 3) personal deciding. The concept teaching scripts are now being reviewed for possible inclusion of MONITOR variables in the interaction. Needed responses are being singled out and coded for inclusion in the inquirer characteristics data file (see Sub-section B.1.b.). The game scripts are just being planned so MONITOR is not well developed in that area.

Flow charts are under construction for the three kinds of access routines. They will be written in relation to the personal deciding which will proceed in relation to game playing if desired. The flow charts will indicate several places in which MONITOR will exist as a System control. They do not yet indicate many of the places in which MONITOR will have to act as control in the psychological process of developing a sense of agency during the course of decision-making. However, two kinds of steps have been taken in this direction. One step consists of laying out a script which will provide the REVIEW Access Routine for one discontinuity. The second step consists of devising the plan by which content analysis will be used during on-line inquiry (if possible) in order to MONITOR the psychological condition during REVIEW.

Supervision will develop in greater detail in ensuing quarters as the scripts become more definite. Supervision will be required in order to: 1) bring the inquirer into the System; 2) oversee the inquiry in the System; and 3)capitalize those "teachable moments" in building the sense of agency which the System in its totality

will create but which MONITOR in its mechanical limitedness cannot fully facilitate and/or complete.

B.2.b. Reporting and Education Area.

Professional Personnel in the Area: Eugene Wilson and Michael Wilson, Directors; Sara Booth, Gordon Dudley, Priscilla Little, Robert O'Hara, and David Tiedeman.

Summary. The overall plan for the Reporting and Education Area consists of the following general phases:

June 1966 - June 1968	1. Issue reports as they become available. Engage in professional activity designed to bring resources into the ISVD and to ready counselors and vocational educators for the ISVD.
July 1968 - March 1969	2. Continue to issue reports as available. Incorporate graduate students into ISVD to prepare them for subsequent use of ISVD
April - June 1969	3. Conduct institutes for persons who are likely to become users of ISVD

Work continues on Phase 1 in this Area. Weekly staff meetings became an actuality during this quarter. Various staff members have participated in professional activities and plans have been made for a major presentation at the National Vocational Guidance Association Convention in Detroit on April 7-10, 1968.

Staff Seminars. All ISVD staff members are invited to attend a weekly sandwich seminar with an announced topic for discussion. At the end of each meeting those present reach an understanding about the topic for the following week, often one topic is discussed for more than one week. These seminars are designed to

allow for maximum participation of the staff in substantive decisions which are now actively setting the directions for future work to be done in all areas of the project. Topics which have been discussed during this period include: 1) ISVD theory as embodied in "THOUGHT, CHOICE, AND ACTION"; 2) access routines; 3) organization and analysis of scripts; and 4) data bases.

Professional Contacts.

a. Tiedeman, O'Hara, and Wilson presented a panel discussion on ISVD at the twenty-first annual convention of the New England Personnel and Guidance Conference. Frank Minor of IBM added an important dimension to the presentation by showing a movie about IBM's automated guidance and counseling support system.

b. Wilson has continued his consulting contacts with Eastman Kodak Company and the Rochester School System's Career Guidance Project. Joint work is progressing on an "Orientation to ISVD" script, and on a modification of the "Life Career Game." (See section B.1.a. for details.)

c. Wilson spoke recently to a colloquium involving the faculty and doctoral students of the Education Department of Clark University.

d. Ellis, Fletcher, O'Hara, and Tiedeman have been in contact with several persons in the General Learning Corporation. The General Leraning Corporation has loaned Roy Forbes to the ISVD on a half-time basis. Forbes adds to the programming resource available in ISVD. His presence also provides General Learning Corporation an opportunity to learn more about the ISVD and to

construct plans for adaptation and potential use of the prototypes on its own bases.

e. Ellis, O'Hara, and Tiedeman attended a September meeting of the Invitational Symposium for Systems Under Development for Vocational Guidance, hosted by IBM at Yorktown Heights, New York.

f. Tiedeman has been planning for a summer Institute which Teachers College, Columbia and Harvard University were to have offered jointly for counselor education. Professors Roger Myers and Donald Super of Teachers College, Columbia were prime movers in that plan. The plan is now stalled because it is not likely that needed support for the Institute will be forthcoming.

g. Fletcher addressed the A-200 field study group of twenty-two H.G.S.E. doctoral students who are conducting a field study of technical vocational education in the Boston School system as part of Operation Schoolhouse (a task force of H.G.S.E. faculty responsible for designing 22 new schools and educational programs in Boston).

h. Fletcher spoke to the faculty and management of the Women's Job Corps Center in Clinton, Iowa on the need for and the resources of an ISVD type information system within the structure of adult education for the disadvantaged.

i. When in Washington, D. C. Fletcher outlined the ISVD project to Dr. Haddon, Acting Director of Research and Planning for Job Corps.

j. Fletcher addressed and conferred with the Synthesis Group (executive committee) of the Arthur D. Little Company's study of

technical vocational education in California. This is a major activity for the Management Services division of Arthur D. Little and involves an analysis of the present system and program, both public and private, of technical vocational education in California and requires recommendations for the restructuring where necessary up through 1980.

k. Fletcher met with Dr. Philip Arnow, Director of Policy and Planning for the U.S. Department of Labor to both inform and interest him in the potential of ISVD as a future component of the Department's Employment Service System.

l. On November 6 O'Hara spoke at the North Atlantic Regional Meeting of the Association for Counselor Education and Supervision. He discussed the impact of computer systems on counselor education and vocational counseling.

m. O'Hara was invited to speak at the Guidance Workshop at Queens College on November 9. This was an effort to bring knowledge of the Information System to counselors and administrators in the New York area.

n. Lerer was keynote speaker at the Alexandria, Virginia Public Schools' Teacher Training Institute.

o. Lerer spoke at the National Convention of the Associated Electrical Distributors in White Silver Springs, West Virginia.

The following manuscript has been prepared:

Thought, Choice and Action: Processes of Exploration and Commitment in Career Development, by David V. Tiedeman and Gordon A. Dudley, August, 1967.

The following working papers were prepared under Durstine's

direction:

1. "The Data File for Enlisted Careers in the Military with Suggestions for its Use," by Patricia Yee and Joanna Seltzer, Publication date: November, 1967.

2. "A Data File on Military Officers," by Joanna Seltzer, Publication date: October, 1967.

C. System Study and Assessment Area

Professional Personnel in the Area: David Tiedeman, Director; Duncan Circle, Allan Ellis, Russell Davis, Richard Durstine, Wallace Fletcher, Edward Landy, Lawrence Lerer, Robert O'Hara, E. Wilson, and M. Wilson.

Summary. The overall plan for study and assessment of the ISVD consists of the following general phases:

June 1966 - April 1968	1. Plan, construct, and implement Prototype I.
May - August 1968	2. Do restricted field testing of Prototype I to develop specification modifications for Prototype II
September - December 1968	3. Implement Prototype II
January - May 1969	4. Do general field testing of Prototype II
June 1969	5. Prepare final report. Write specifications for Prototype III. Deliver Prototype II and specifications for Prototype III

We are still in Phase 1 of the above plan. Only two field tests have so far been initiated: one is by E. Wilson to test the decision-making booklet used with junior high school pupils in Newton; the other is by Lerer to assess changes in attitudes of pupils associated with the work-study program at Newton. Neither of these studies has yet been completed.

D. Administration Area

Professional Personnel in the Area: Robert O'Hara, David Tiedeman, Eugene Wilson, Michael Wilson, and Sara Booth.

Budget. Negotiations with the U.S. Office of Education, Bureau of Research are underway regarding the proposed budget for our fiscal year, December 1, 1967 through November 30, 1968. Plans are also being laid to make a request for supplemental funds. This request will call for expansion of the ISVD in collaboration with some city having a ghetto population if such collaboration will particularly permit ISVD pilot and field testing of disadvantaged persons.

Computer lease. With the cooperation of Richard Rowe in Dean Sizer's office, a lease has been prepared with NEEDS, which would provide the Information System with four hours of guaranteed time each day on the RCA Spectra 7045.

Sanders Associates. We are about to lease a Sanders 720 as the basic console unit for our student station. Sanders Association will also consider making available to us free of charge a second 720 provided that any equipment additions which might be made would not be governed by the patent, copyright, and public domain clauses of our grant. A request for a legal ruling on this matter has been submitted to the United States Office of Education.

APPENDIX A

Likely Script Organization*

I. Attributes of an Agent.

Elementary 1. Feeling as context giving rise to concepts which affect one's decision-making

A. Smiles (Rosenblatt) - attempts to attach the name "smile" to an obvious kind of non-verbal experience among persons

B. Co-operation (Rosenblatt) - meaning and necessity in task accomplishment and interpersonal activity

C. Punctuality (Utka) - needed attribute in social interactions

D. Accepting disappointments (Utka) - take it and come back

E. Accepting criticism - criticism, value, types, and sources

F. Responsibility (Mellor) - child's responsibility for the consequences of his actions

1. Specific area: to your classroom (Mellor)

2. As a babysitter (Mellor)

G. Honesty (Mellor) - value of honesty

H. Friendship (Mellor) - qualities of friendship and effect upon personal feeling of well being

I. Chain reaction (human relationships) (Mellor) - child and community

J. Respecting individual differences (Mellor) - value of individuality

*Only scripts available as of August 1967 are included. The organization may change as scripts are added.

II. Self and Decision-Making.

Elementary 1. Feelings as context giving rise to concepts which affect one's decision-making

A. Feedback - definition and illustrations (Gassen)

B. Mistakes - as a source of feedback

C. Alternatives (Rosenblatt)

D. Imagination

Elementary 2. Perceptual framework for delineation of problem in decision-making (Danielson)

A. Needs - basic for all and influence a person's activity

B. Sensory bombardment - stimuli come from all sides

C. Perception - sensory experiences from within and without are the raw materials of learning

D. Concepts - similarities, differences, classification, etc., in knowing

E. Communication: messages and meaning verbal and non-verbal messages in relation to meaning

F. Predication about your life - differentiation of educational and occupational choice points in life span

G. Exploring occupations - number of occupations, functions in occupations

H. Beat the brain: a computer game - game gives way to structure provided by the inquirer

Elementary 3. The self and decision-making (Swidler)

A. Orientation: you as a complex person - personality and its complexity with focus on self concept

B. Introduction to decision-making - definitions, concepts, and role of person

C. The process of decision-making - process with values, interests and abilities as concepts in which decision-making should be differentiated

D. Freedom, law, and order: context for free choice - freedom requires acceptance of an obligation to a social order

II. Self and Decision-Making (continued)

E. Habits and decision-making - habits as time-savers and traps in decision-making

F. You in a world of change - change and its impact on you

G. Flexibility: meeting change and coping with its need for change and flexibility

H. Self-evaluation: your blueprint for change - delineation and practice of the skill

I. Orientation: identity (discovering what makes you <u>you</u>) - identity as individuality which is continuously sought

J. Why people work - needs, values, and satisfactions in work

Junior High

4. Self and decision-making

A. Compromise: a way between "rebel" or "robot" (Abrahamson) - election of a compromise alternative in a specific career decision

B. The "politics" of decision-making (McGovern)

1. Areas of personal influence in an institution - ways in which a member of an institution can influence decisions which affect him.

2. Training - training presumably brings power to affect decisions which influence one's self

3. Experience - ditto for experience

High School

5. Self and decision-making

A. Knowledge of self and role of feedback from others in choice and decision-making behavior (McLean) - content as titled

III. Self Attributes and Deciding.

Elementary

1. Feelings as context giving rise to concepts which affect one's decision-making

   A. Relationships and conflicts among norms, values and needs (Gassen)

      1. General plan for the set on relationships and conflict among norms, values, and needs

      2. Norms - definitions and tests

      3. Values - definitions and tests

      4. Needs - definitions and tests

      5. Relationships and conflict among norms, values, and needs

   B. Recognizing a prejudice (Gassen) - prejudice and tolerance

Junior High

2. Concepts of achievement, ability, interest, and values

   A. Achievements (Parker)

      1. Academic achievements - describes ways in which academic achievements may be demonstrated by others and self

      2. Non-academic achievements - describes ways in which non-academic achievements may be demonstrated

   B. Achievement reinforces interests (Curran) - matching concepts of effort and reward in illustration that achievement reinforces interest

   C. Ability

      1. Standardized tests described (Parker)

         a. General - identification of good use of standardized tests

         b. Ability - identification of good use of standardized ability tests

      2. How abilities develop (Abrahamson) - explains how various factors influence the development of ability (perhaps should be conceived in relation to B. above)

      3. Implications of abilities (Psyhogios and Moore)

         a. Introduction

         b. Education and training - levels concept in relation to requirements of jobs for education and training

III. Self Attributes and Deciding (continued)

c. Ability - bears on selection of education and training

d. Abilities for leisure time - hobbies are an important leisure time activity now that leisure time is increasing

D. Values

1. A definition of value (Pelton) - introduces topic of value

2. Values, so what? (Pelton) - attempts to draw attention to influences of personal values on choices

3. Value strength (Pelton) - values vary in strength

4. Value conflict, a definition (Pelton) - value conflict defined and tested for

5. Intermediate values (Curran) - values are somewhat specific to different situations

High School

3. Concepts of achievement, ability, interest, and values

A. Achievements

1. Evaluation of achievements (Stark and Brown) - types and individual variability in achievements

2. "Marketable" attributes (LeClair) - Personal attributes related to demand

B. Distinctions among interests, aptitudes and abilities (Stamas)

1. Test of distinction among interests, aptitudes and abilities - content as titled

2. To correlate interest with vocational decisions - content as titled

3. Aptitudes - the link between interests and abilities - concept of aptitudes and their identifications

4. The net result: Abilities - content as titled

5. Manifest interest in youth (volunteer) programs - youth programs and their value in explorations of interests

C. Values (Clancy)

1. Values in action - role playing experience in values

III. Self Attributes and Deciding (continued)

2. Dad - experiencing values from role of dad

3. Policeman - experiencing values from role of policeman

D. Values and self

1. Knowing yourself helps you determine your values

(Stark and Eddy) - knowledge of self leads to knowledge of personal values, their implications and potential conflicts.

High School

4. Activities

A. Academic activities and clubs (Stamas) - academic activities and clubs exist and provide a means of exploring interests

IV. Economics and Employment.

Junior High

1. Economics and employment

A. Demand and wages (Linscott)

1. Demand and wages - demand concept and its effect on wages and prices

2. Demand - wages - wages follow demand

a. General No. 1 - general concept

b. General No. 2 - test for general concept

c. Specific No. 1 - effect on occupation of blacksmith

d. Specific No. 2 - application of Specific No. 1 to more general concept

3. Demand - prices - prices follow demand

a. General - stipulation of general proposition that prices follow demand

b. Pricing - seasonal demand effects on prices

4. Supply - supply influences many, specific wage-price situations and it is important to think of this in picking an occupation

5. The interaction of supply and demand - after considering supply and demand separately, their interactive effect is presented

6. The true value of money - regional variations in costs and the effect of this on considering one's position in relation to the positions of others in one's neighborhood

B. The business cycle and effects on occupations (Curran)

1. Speed ups and slow downs in the economy - concepts of business cycles and of speed ups and slow downs

2. Safety in numbers - chances of being laid off during slow downs is smaller in a large organization

C. Jobs from Federal government (McGovern) - the Federal government both as a large employer and as an agency which puts money for employment into the economy

IV. Economics and Employment (continued)

D. New techniques and future employment (McGovern) - new machines and technologies will effect occupational structure and considering future effect of a technology on your occupational choice is important

High School

E. Technological change and its effect on occupations (Lamb t) - technology creates an occupational restructuring

F. Occupational implications of education and training levels (LeClair) - relates levels of work to training and ability

G. Define and describe the concept of occupational implications (Lambert) - level of occupation and style of life

H. Costs and occupational implications (LeClair) - choice of education and training level should be examined in relation to costs of preparation

V. Educational Choices

High School

1. Post-secondary Educational Choices

   A. Choosing your college (Lambert) - to delineate factors involved in college choice.

   B. Requirements

      1. Requirements (Addis) - personal and impersonal setting of requirements

      2. Concept of levels in college selection (Schofield) - content as titled

   C. College admissions tests

      1. Plan and links

      2. Overview of college admissions tests (Lambert)

      3. List of college admissions tests (Lambert)

      4. PSAT: Preliminary Scholastic Aptitude Test (Stamas)

      5. SAT: Scholastic Aptitude Test (Stamas)

      6. Scholastic Achievement Test (Stamas)

      7. The Writing Sample (Lambert)

      8. American College Testing Program (LeClair)

      9. Factors in scheduling the SAT (LeClair)

      10. Registration for the CEEB (LeClair)

      11. Use of Test Scores (CEEB) (Lambert)

      12. Terminal frame (Stamas)

   D. Cooperative programs

      1. Cooperative programs (Schofield) - concept of alternate periods of work and school

      2. Choosing a cooperative work program (Schofield) - factors to consider in choosing a cooperative work program

   E. Educated married women work! (Addis) - content as titled

V. Educational Choices (continued)

College

F. Routing Scripts

1. Introduction to transfer (Hayes) - to branch students to one of the five basic areas of post junior college education

2. Introduction to transfer to four-year schools granting bachelor's degree (Hayes) - routes students into specific scripts concerning transfer issues

College

G. Issues involving level of college

1. Achievement vs. level of aspiration (Hayes) - develops routing among scripts on achievements, requirements, and goals

a. Achievement vs. goals (Hayes) - relating achievement at J.C. to level of college to which transferring

b. Requirements for transfer - (Thomason) - lists various considerations involved in transfer decision

2. Specific concerns in evaluating transfer eligibility

a. Predicting availability in transfer schools (Hayes) - the complex matter of amount of space and quality of applicants with link to "Assessment of Achievements."

b. Assessment of achievements (Hayes)

1. Importance of grades - explores reality vs. rationalization in grade achievement

2. Other types of achievement - relevance to transfer with review of student activities

3. Credit evaluation - introduction to same

4. Should I take SATs again? - why and when (?)

College

H. Dimensions of college variability

1. Types of college programs (Hayes)

a. Types of colleges (with respect to program) - college choice from viewpoint of general program variability among colleges.

b. Types of college programs - college choice from viewpoint of more specific program variability (six types of programs)

V. Educational Choices (continued)

2. Size of college (Bazer)

a. Small and large colleges - size of school related to environments for learning and life styles

b. College environment as evaluated from experience at Newton Junior College - content as titled

3. Geography (Mahoney) - geographic distribution of schools and possible effect of that factor on choice

4. Costs (Mahoney) - general facts on existence and range

a. Overview - general routing to nest of four scripts

b. Tuition - content as titled

c. Room and board - content as titled

d. Books, supplies, and fees - content as titled

e. Living expenses - content as titled

5. College cost access script (Mahoney and Aylmer) - links to 4 above and calls for Durstine-Wolff type of retrieval program and report for specific colleges in terms of the factors reviewed in 4 above

I. College living arrangements (Thomason)

1. College living arrangements - general introduction to choice among different kinds of living arrangements

2. Access to commuter/resident scripts - content as titled

3. Cost and the decision to commute or reside at campus - content as titled

4. Group activities of commuter and resident students - differences in group contacts and memberships which are affected by mobility

5. Interpersonal relations as related to the decisions to be a commuter or resident student - content as titled

6. Intellectual climate of college for dormitory and commuting students - content as titled

7. Autonomy in decision to be a commuter or a resident student - degrees of freedom and personal responsibility which depend on either type of residence

V. Educational Choices (continued)

College

J. Implementation of decisions

1. Meeting college costs (Bazer)

a. Overview on how to meet college costs - states variety of means

b. College scholarships - sources and instructions for applying

2. When to apply (Hayes) - means and advice on types of reply

VI. Occupational Choices

Junior High

1. Classifications of jobs, occupations, and industries (Hartman)

   A. Elements of job classifications - inquirer is enabled to classify jobs

   B. Data, people, things classification - inquirer taught to use DOT code numbers and job lists with suggested links to occupational data file

   C. "Industry" Classification - concept of industry as used in Standard Industrial Classification

VII. Placement

Placement 1. The job interview (Mackie and Circle) - orientation to a job interview

Placement 2. Restricted membership in occupational groups (Patterson)

- A. Reasons for restricting occupational membership - general explanation and justification
- B. Job discrimination
  1. Explanation of rights under Civil Rights Act of 1964 - indicates when discrimination is illegal
  2. Recourse upon experiencing inequities - indicates what might be done if illegal discrimination has been encountered.

Placement 3. Legal requirements relating to job eligibility (Circle and Mackie)

- A. Legal requirements for jobs - an overview
- B. If under 16
- C. If 16 or 17
- D. If 18 and over

Placement 4. Working papers (Mackie and Circle)

- A. Working papers - an overview
- B. Employment permit for those 14 or 15
- C. Cooperative employment permit for those 14 to 18
- D. Educational certificate for those 16 and 17