DOCUMENT RESUME

ED 075 667 VT 020 042

AUTHOR Branch, Robert L.
TITLE Evaluation System Model for the Basic Functions of Vocational Education in California: A Computer Based Evaluation System for Vocational Education.
INSTITUTION Sacramento County Dept. of Education, Calif.
SPONS AGENCY California State Dept. of Education, Sacramento. Vocational Education Services.
PUB DATE Aug 72
NOTE 184p.

EDRS PRICE MF-$0.65 HC-$6.58
DESCRIPTORS *Computer Programs; Curriculum; *Data Analysis; Data Collection; *Evaluation Methods; Job Market; *Models; Pilot Projects; Program Effectiveness; Program Evaluation; Program Planning; Student Needs; Systems Analysis; *Vocational Education
IDENTIFIERS *California

ABSTRACT

A computerized model was developed to evaluate local vocational education programs in relation to the various functions of vocational education. A data base was generated using the local school districts' information and the output was designed for local self-evaluation use in further planning and review of the overall vocational education plan. Data were collected for curriculum objectives, student needs, and job market information. The evaluation model is in the form of a computer printout by individual vocational programs and by each function within a program. The model offers an unbiased view of a vocational program as it is actually functioning, notes recommended courses of action for areas of weakness, and provides an accurate job market analysis. Appendixes contain data collection forms, detail procedures for gathering population needs data and job market analyses, the computer programs, and sample evaluation printouts. The system's function and integrity were verified using segmented dummy data and actual data from one high school. The model is applicable to high school districts, community colleges, and regional occupation programs/centers in California. (MF)

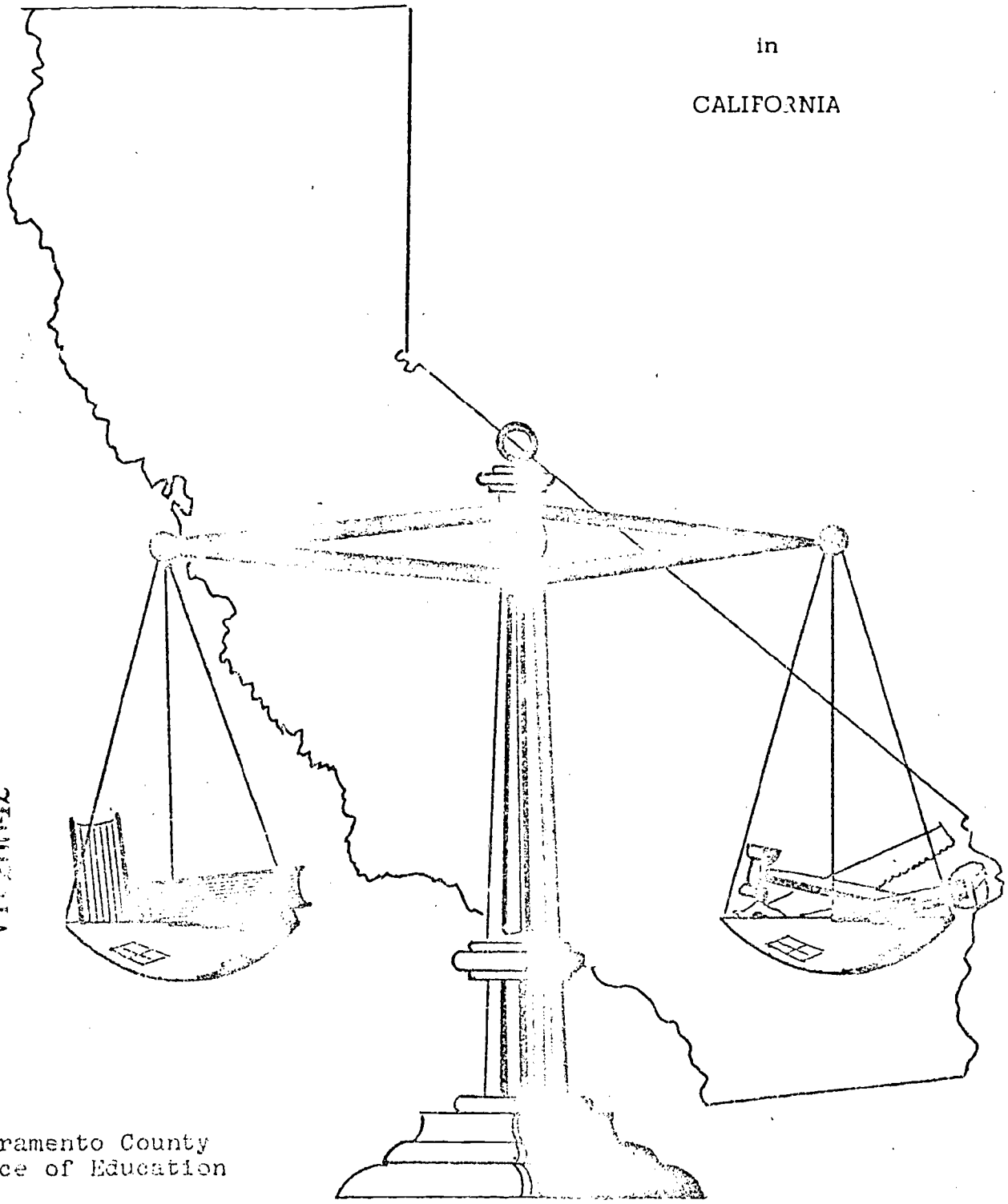
EVALUATION SYSTEM MODEL

for the

BASIC FUNCTIONS OF VOCATIONAL EDUCATION

in

CALIFORNIA



Sacramento County
Office of Education

Sacramento, California

EVALUATION SYSTEM MODEL

for the

BASIC FUNCTIONS OF VOCATIONAL EDUCATION

in

CALIFORNIA

A Computer Based Evaluation System
for Vocational Education

Project Director: Dr. Robert L. Branch,
Director of Research

Systems Analyst: Ralph Thompson

Leo A. Palmiter, Superintendent
Sacramento County Office of Education
6011 Folsom Boulevard
Sacramento, California 95819
August, 1972

This research project was developed with funds authorized under Title I, Part C, Section 131 (b) of Public Law 90-576 (The Vocational Education Amendments of 1968) and administered through the Vocational Education Section of the California State Department of Education. The report does not necessarily represent the California State Department of Education's official opinion or policy. The project director is solely responsible for the factual accuracy of all material developed in the report.

TABLE OF CONTENTS

ACKNOWLEDGMENTS

Projects of the type described herein can only be developed through the efforts and abilities of many people. The project director and the Sacramento County Office of Education wish to acknowledge, with gratitude, those who contributed to whatever success this computer based evaluation model may experience.

Mr. Ralph Thompson, the systems analyst for the project was the prime architect in developing the logic for the model. He spent countless hours in "living with the system" to insure its integrity and feasibility. Mr. Ray Ellis served as the computer programmer and his measure of "extra effort" helped to move the project along at critical points. Mr. Herb Redlack, the senior computer analyst helped to keep the model development on schedule through his analytical and organizational abilities.

Special thanks goes to Dr. Richard Sovde and Mr. Louis Chirco of Elk Grove Senior High School. These gentlemen and the school's counseling and vocational education staff, willingly gave of their time and experience to insure that the model was practical in design and application so that it could truly serve the needs of vocational educators and their students.

Many other persons in the Sacramento County Office of Education contributed materially to the project's development. Dr. David Montague, Director of Vocational Education

and Dr. Delmar Firme, Vocational Education Consultant, gave counsel and advice at strategic points in time. Mr. Richard Henderson, Director, and Mr. Stephen Kalinowski, Manager of the Sacramento Regional Data Processing Center, constantly extended themselves in meeting data processing schedules.

The final typing for this report was done by Miss Diane Lahola.

SUMMARY

The purpose of the project was to develop a model to evaluate a local vocational education program in relation to the various functions of vocational education. The model had to be computer based and have state-wide application. The data base is generated using the local districts' information and the output is designed for local use as a self evaluation for further planning and review of the overall vocational education plan. The model is applicable to Regional Occupation Programs/Centers, community colleges and school districts.

SYSTEM FEATURES

Data Documents

The system utilizes a variety of instruments to gather data for the several functions of vocational education. Curriculum objectives, written in behavioral terms, are used as the basis for both job performance surveys and as a measure of progress in instruction. Additional forms were used to gather budget and student drop out information. All forms are "fill-in-the-blank" types designed to facilitate key punching.

A special mark sense card was designed to gather student needs information. Data for job market information are on computer tapes from the California Department of Human Resourses Development and the U.S. Bureau of Labor Statistics with additional job market data added via punch cards. A follow-up survey is used to gather data on graduates and drop outs.

The evaluation model is in the form of a computer printout by individual vocational education programs and by each function within that program. The model brings relevant data together so that planning decisions can be based on factual information. Where applicable, data are expressed in terms of statistical significance.

Data Processing Routines

Data processing routines are developed as sub-systems of an overall system. The evaluation procedure is segmented into separate routines to facilitate computer programming.

Computer Programs:

FUNALL - Generates final report from output of all programs and data

FUNØ12 - Selects schools for FUNØ15 from student master file

FUNØ13 - Sorts and builds a master file for select history file

FUNØ15 - Punches and lists mark sense cards (student needs data)

FUNØ16 - Decodes returned mark sense cards to create input to FUNØ18

FUNØ18 - Population needs analysis program

FUNØ21 - Converts state ES 2Ø2 data to Honeywell format

FUNØ23 - Tape-to-tape conversion to aggregate Standard Industrial Classification (SIC) codes

FUNØ24 - Expands Bureau of Labor Statistics ratios to 3 dimensional matrix

FUNØ26 - SIC projections to 20 calendar quarters

FUNØ27 - DOT projections to 20 calendar quarters

FUNØ28 - Job market analysis detail report

FUNØ29 - Updates history file for job market

FUNØ5Ø - Follow-up study processing and report

Utility programs used in Honeywell equipment to sort and recompile records are not listed.

The objectives of the project were met and the system's function and integrity were verified using segmented dummy data and actual data from one high school in Sacramento County.

Advantages and Recommendation

The model offers the advantage of a totally unbiased view of a vocational program as it is actually functioning. Recommended courses of action are printed when an area of weakness, or conditions for a potential area of weakness, is discovered in a program. The overall program evaluation is based upon the several functions of vocational education defined by the California State Department of Education. The system is fully compatible with the state's directions for evaluating vocational education program planning. The model provides an accurate job market analysis.

It is recommended that this model be adopted by those high school districts, community colleges and ROP/ROC's in California that operate vocational education programs.

1. INTRODUCTION

This system for the evaluation of vocational education was developed, employing the several functions of vocational education defined by the California State Department of Education. The model was developed for state-wide application, it is computer based and it utilizes a school's existing data as much as possible.

The model was developed to be used as a management tool by local decision makers through a self evaluation of conditions which exist at the time the evaluative data are gathered. The primary purpose of the model is as an internal audit system, but it could be used to evaluate the program effectiveness of subordinate units within a district or state.

The functions evaluated within the model are:

1) Population Needs
2) Job Markets
3) Job Performance
4) Curriculum Resources
5) Program Planning
6) Program Review
7) Promotion
8) Recruitment
9) Counseling
10) Instruction
11) Placement
12) Evaluation

The model uses certain data sets collected from individual students and the school or district to evaluate all of the functions except job market analysis. The data sources for job market analysis are unemployment and disability insurance reports collected by the California State Department of Human Resources Development and data from the Bureau of Labor Statistics. Data on job performance are

collected directly from the employer. Most of the data are subjected to statistical analysis to determine levels of significance.

The final printout is organized by program to allow planners to review programs as separate entities for decision making purposes. Job Market analysis data, students' needs data and a summary of the follow-up questionnaire data are printed as separate outputs.

A substantial amount of project time and effort were directed toward developing the job market analysis sub-system. This action was necessary as there are no manpower projections models available which were deemed specific enough to be used in the project. The job market analysis sub-system in the model is unique in both application and data source. The sub-system has state-wide application and could be used nationally. It can be computer processed separately as it is totally independent from the rest of the model. The total model, however, must have inputs from the job market analysis sub-system.

Elk Grove Senior High School, Elk Grove, California was used as the pilot school to generate data to test the model. Due to the constraints of time and money only a part of the school's array of vocational education programs was evaluated.

1.1 Definitions

To standardize terminology, occupations are identified by the Dictionary of Occupational Titles six digit numbering

system and are referred to in this report as DOT codes. Industries are identified by the Standard Industrial Classification Manual 1972 four digit numbering system referred to as SIC codes.

The labor market area will be that geographic area defined by the vocational evaluator, but must be composed of whole counties; however, the counties need not be contiguous. The labor market area should be defined to include those counties where 90% of the school's graduates find employment. The labor market area used in pilot testing this model is the Sacramento labor market area (Sacramento, Placer and Yolo counties).

Each state reports unemployment insurance data to the federal government in a document termed "ES 202 Report". Some categories of workers are exempted from this report; e.g., contract workers in agriculture and most employees of non-profit organizations. Effective with the first calendar quarter of 1972 the structure for collecting unemployment insurance premium data in California was expanded to include all categories of employees. This action was taken to facilitate the collection of state withholding tax. California continues to forward to the federal government unemployment insurance data for those categories of workers reported by all states, however, the raw employment statistics for the total labor force are now available from the State Department of Human Resources Development. The model uses this total data source.

VIEW is the acronym for a career guidance system called Vital Information for Education and Work. VIEW is in the form of data processing cards with micro film inserts which can be enlarged by use of a special reader. It contains general information about a career, educational and physical requirements, salary, locations, and how to enter the occupational field. The value of this tool as a promotion and guidance instrument has been widely accepted and was employed in this project.

2. THE PROBLEM

The California State Department of Education has defined several discreet functions which are applicable to the operation of vocational education programs in the state. These functions are:

1. Population Needs Analysis
2. Job Market Analysis
3. Job Performance Requirements
4. Curriculum Resources and Ancillary Services
5. Program Planning
6. Program Review
7. Vocational Education Promotion
8. Student Recruitment
9. Guidance and Counseling
10. Vocational Instruction
11. Placement
12. Evaluation

Each school district, county office or community college which requests state funds for vocational education programs must submit a plan based upon these functions.

The problem is how to best evaluate these functions as they relate to each other. The model should be oriented

toward a self evaluation and should be capable of identifying specific areas where a change is needed to improve the program.

The evaluation model should be dynamic by considering data from past evaluations. General trends should be indicated by the model as well as the identification of specific problem areas.

The model should display data in a manner which assists administrators and decision makers in determining how well they accomplished their plan during the past year and how best to plan for the next year and five years into the future.

2.1 Investigation of Literature

An exhaustive search of the literature failed to disclose a systematic evaluation model that would lend itself to a computer operation for vocational programs in California. The search was made through the ERIC system and in journals and other published documents. Ohio State University (The Center for Vocational and Technical Education) and the University of Arkansas have developed vocational evaluation systems; however, these processes are not directly related to the discreet vocational education functions described in California.

Additional literature searches were made for models relating to job market analysis, follow-up studies, placement of graduates and planning vocational education. The many models which were examined contributed threads of ideas

which were woven into the final fabric of this project; however, the model which evolved from the project is unique (especially the job market analysis sub-system).

3. SYSTEM DESIGN

3.1 Conceptualization

The initial step in devel el was to establish goals and measurable objectives for each function. In most cases certain assumptions were made to limit and clarify sub-system definitions. The several functions were to be interrelated to the extent that decisions would not be made based on a set of data in isolation. To simplify the design of the model, each function was viewed as a separate computer program whose inputs may be common to other functions and whose outputs may also be inputs to other functions.

Job Market Analysis

The sub-system concept for job market analysis was viewed as a separate entity based on the assumption that an expansion or contraction in the structure or composition of vocational-education programs would not have an effect on the demand for jobs in a labor market area. This function can be viewed as an independently operating element unaffected by the other functions. The job market analysis function is the only function that can be readily isolated in this manner.

Further assumptions to limit the scope of the analysis are:

1) Graduates of vocational education will seek employment in the local labor market.

2) Increases in employment in any DOT code will be entry level jobs for that skill.

3) The composition ratios of local industry work force is comparable to the national composition ratios. 1/

Goals:

1) To identify specific DOT codes where jobs will exist when the student completes vocational education training.

2) To identify those industries that:
   a) are expanding in number of employees
   b) are contracting in number of employees
   c) are the 10 largest in number of employees

3) To identify growth in each DOT code for years one, two, three, and five.

4) To identify specific DOT codes that are:
   a) growing and vocational education training is not being conducted
   b) the 10 largest in total number

5) Add to growth figures new jobs created by mortality and retirement.

Objectives:

1) Forecast the growth or contraction of each SIC industry within the labor market area for 1 year, 2 years, 3 years, and 5 years.

1/ California Department of Human Resources Development validated the percentages of change in the composition of an industry's work force reported in U.S. Department of Labor/ Bureau of Labor Statistics bulletin 1606. Correlations ranged from .83 to .97 for industries in the Sacramento labor market area. BLS is developing ratio matrices for statistical areas in which the population is 200,000 or above. When these matrices are available, correlational statistics will not be necessary.

2) Forecast the growth or contraction of each DOT code employed within the labor market area for 1 year, 2 years, 3 years, and 5 years.

The raw data to accommodate the job market analysis function are substantially derived from unemployment and disability insurance statistics. Each employer who has a payroll in excess of $100 per calendar quarter files a report that gives, among other data, the industry SIC code, geographic area and number of employees for each month of the quarter. Data for California are available on computer tape from the California Department of Human Resources Development. Data applicable to city, county, state and other employees not covered by unemployment compensation must be gathered separately.

The Bureau of Labor Statistics has placed the ratio matrices of bulletin 1606, appendix G, on computer tape to facilitate the computation of specific jobs within a given industrial category. 2/

Population Needs Analysis

Population Defined: That segment of the total population in need of educational training which is within the scope of responsibility of the school (or district).

Assumption: One hundred percent of all students need to develop a set of marketable skills.

2/ For details concerning the application of matrix ratios to ES 202 data, see appendix 2.

Goal:

Identify the specific need for training for each student. The skill to be acquired through training will be identified by a six digit DOT code.

Objectives:

1) Classify students in each specific DOT code who have chosen careers requiring post-secondary education.

2) Classify students in each specific DOT code who have chosen careers requiring vocational education training.

3) Classify students in each DOT code who have a special problem (physical, academic, socio-economic or other handicap) which prevents them from succeeding in the regular vocational education program.

This information will be gathered by the school or district directly from the students. Counselors and teachers will assist students in defining needs.

Job Performance Requirements

Assumption: Each skill taught in a vocational education program has basic performance requirements that are acceptable to 50% or more of the employers employing persons with that skill.

Goals:

1) Identify the minimum number and kinds of skills required by prospective employers for a particular job.

2) Detect changes in skills and skill level requirements.

The minimum skill requirements are determined by the task to be performed. The employer ultimately determines what skills he wants employees to possess in accordance with the price he is willing to pay for that skill.

It is the responsibility of the school and instructor to convert these requirements into a program of instruction. Therefore, the school authority must determine from the employer what kinds of skills will be accepted as a minimum for entry level employment. 3/ As generalized skills are broken down into smaller specific measurable performances, a feed back to the employer is necessary to ascertain that they are correctly stated.

The school develops a list of job performance requirements for each vocational program. The evaluator or evaluation instrument determines from the employer if he agrees or disagrees with each specific requirement. This procedure may be accomplished on a sampling basis but must include those employers who have not hired and those employers who have hired vocational education graduates from the program in question.

Each requirement can be evaluated in a 2 x 2 matrix (agree or disagree, hire vocational education graduates and do not hire vocational education graduates). If there is a significant positive or negative correlation something may be wrong with the performance requirements and they should be reviewed and analyzed for change or deletion.

3/ An employer may require an employee to possess skill in typing. This skill may be translated to "Type 40 words per minute on an IBM Selectric typewriter with not more than 2 mistakes per 40 words."

The questionnaire includes provisions for the employer to add additional requirements. Some care must be exercised to insure that only minimum level requirements are accepted employer feed back.

The job performance requirements determine the allocation of resources for curriculum instruction.

Curriculum Resources and Ancillary Services

Programs should have attainable resources that will be put to optimal use.

Goal:

To form an optimal combination of resources to facilitate vocational education training.

Objectives:

To meet this goal each vocational education program will need:
a) space
b) equipment
c) trained instructors
d) curriculum materials

Resources will be determined by the school or district and, based upon district policy, the optimum use factor defined for each piece of equipment. An optimum class size is defined by the operating unit and material resources are matched against student need. A comparison is made to determine the relationship between resource availability and resource need.

It is not the object of the model to evaluate the efficiency or effectiveness of an instructor. The only measurement of the instructor that is determined is that of "currency". The question is asked, "Has the instructor

received in-service or academic training during the past four years which is directly related to the vocational subject taught?"

To determine if vocational offerings are meeting the expressed needs of students the following data are secured:

1) The number of students identified as needing training in those DOT's where there is not a program offering to meet that need.

2) The number of students enrolled by DOT code in each vocational education program.

3) A list of student needs by DOT code.

To orient training toward those areas where graduates will find employment the following data must be determined:

1) Industries that are increasing their work force.

2) The number of job openings for replacement and expansion in each DOT code.

3) The number of jobs in each DOT code for the next 5 years.

4) The changes in composition of the work force by industry.

The data listed above are generated in the job market analysis function.

Program Planning

Goals:

1) To equate student needs and job market projections with vocational education training.

2) To plan the most efficient training system per budget dollar.

3) To identify needs for new and/or improved curricula.

Objectives:

The primary purpose of this function is to insure that relevant data are separated by function for the decision makers to examine as they plan and review resource allocations for programs.

Information needed for planning purposes includes:

1) For each DOT code for which vocational education training now exists:
   a) the total number of students or trainees in all public institutions receiving training in the DOT code
   b) net increases in jobs for 1, 2, 3, and 5 years
   c) the number and percentage of student enrollment identified in population needs function
   d) the amount budgeted for instructional purposes
   e) resources more than 100% utilized as computed in curriculum resources and ancillary services function
   f) cost per expected graduate
   g) drop out rate

2) Drop outs from school as percentage of enrollment.

3) Expenditure per enrolled student of the school or district.

4) Federal contributions to the school or district for vocational education.

5) State contributions to the school or district for vocational education.

6) List of the ten DOT codes which have job openings greater than the DOT code being examined for 1, 2 and 3 years in the future.

7) Changes in population needs analysis from previous evaluation.

8) List of DOT codes and number of students in each code from the population needs function.

9) For each vocational education program:
   a) population needs for that skill
   b) enrollment
   c) jobs available in that skill
   d) vocational education graduates placed in employment in that skill

e) drop out rate
f) facility utilization rate of:
   1) space
   2) equipment
   3) instructor

10) The number of students per DOT code for whom vocational education programs do not exist.

11) Net cost to the district for each vocational education graduate by program.

Program Review

Assumption: A board or advisory committee will review all planning activities and direct changes in programming where necessary.

Promotion

Assumption: Interested students will seek vocational training if they know that programs exist to meet their needs.

The major purpose of this function is to foster positive attitudes toward vocational education and the world of work.

Goals:

1) To stimulate in the student an interest in some field of vocational education.

2) To make every student cognizant of the existence of vocational education programs.

3) To reach every parent to make them aware of vocational education programs.

Objectives:

1) Students counseled in each DOT code.

2) Students attending promotional lectures.

3) Students attending promotional movies.

4) Students that have used VIEW.

5) Students exposed to special promotional programs.

6) Parents contacted through or by any vocational education promotional activity.

7) Students in their senior year going to college within 12 months.

8) Students in their senior year graduating in vocational education courses.

9) List of promotional programs: circulars, T.V. scripts, newspaper articles, radio, other media.

Promotional activities have a direct affect on recruitment and counseling. These three functions are closely interrelated and become so entwined it is difficult to separate them in actual operation.

Recruitment

Assumption: A proper recruitment program will enhance enrollment, retention and student satisfaction in vocational programs.

Goals:

1) To recruit for a specific program only those students who exhibit a desire and a need for that particular vocational education program.

2) To identify and recruit every student who has a desire and a need for a particular vocational education program.

3) Contact drop outs and recruit them for the vocational education program that meets their needs.

Objectives:

1) For each vocational education program:
   a) students enrolled
   b) jobs predicted to be available when student graduates
   c) optimum class size
   d) drop out rate

2) Drop outs recruited.

3) For each vocational education program the number of students identified as desiring that skill.

4) For each program the number of students desiring that skill but not enrolled in a vocational education program.

Counseling

Assumptions: Counselors can guide students in selecting or choosing a vocation that is both satisfying and rewarding to the student.

This assumption is made to preserve the fine line of separation between the function of promotion and counseling. Even though a student is motivated, has an interest in some field of vocational education and knows what programs are available, the counselor's assistance is still necessary to help narrow the broad area of choice to specific jobs. The student should have a clear understanding of the preparation needed for the career he has selected.

Goals:

1) To help students select training which is compatible with their interest abilities.

2) To provide the student with a full array of choices from which he selects a career.

3) To identify those students who cannot succeed in regular vocational education programs and direct them to specialized study.

Objectives:

1) Drop outs from vocational education.

2) Drop outs from school (district).

3) Drop outs redirected into other vocational education programs.

4) Drop outs re-enrolled more than once.

5) Students that received career counseling.

6) Students that used VIEW.

7) Students referred to vocational education counselor.

8) In each vocational education program:
   a) graduates not placed in skill for which trained
   b) graduates enrolled in advanced training
   c) graduates enrolled in programs unrelated to vocational education training

9) Unemployment in labor market area (unadjusted)

The measurement of the objectives will allow some inferences to be made about the effectiveness of counseling. A determination of a vocational education program drop out rate can be compared with the school or district drop out rate; however, the evaluation is not designed to establish criteria for an "acceptable" drop out rate.

The output from this function is reduced to general statements of fact. Examples of these statements are:

"Excessive drop outs"

"Counselor training may be indicated"

"Problem area - could be counselor, student, instructor, or home environment"

"Goals may not be met without counseling all students"

"Counseling is less effective than desired"

"Unemployment among vocational education graduates exceeds local area average unemployment rate"

To make these statements more relevant the absolute numbers and percentages associated with each will also be printed.

Instruction

Assumption: Instruction is related to job requirements.

This assumption is necessary to limit the scope of the evaluation of this function. The curriculum should be established to meet the job performance criteria of employers.

Goal:

To create learning experiences for students to acquire cognitive and psychomotor skills necessary for job entry.

Objectives:

The school will have the responsibility of translating both cognitive and psychomotor skills to program objectives. Each program will have a set of behavioral objectives which are measurable and based on the program objectives.

To measure the program of instruction the following are needed:

1) List of behavioral objectives for each program of instruction.

2) The number of students who have completed each objective.

3) The job requirements (job performance requirements) for each DOT code.

4) Additional job performance requirements from employer feed back for each DOT code.

5) The enrollment in each program by DOT code.

From the list of behavioral objectives and the number of students who have completed each objective a percentage is calculated. Since the difficulty of each objective varies, no attempt is made to determine the relative worth of the percentages.

Placement

Assumption: Graduates will seek jobs suitable to their personal desires and in the career area for which they were trained.

Goal:

To place vocational education graduates in jobs for which they are trained.

Objectives:

1) Number of graduates working

2) Number of graduates not working

3) Number of graduates working in skills for which they were trained (this will include related skills)

4) Number of graduates in advanced training - same field

5) Number of graduates in advanced training - different field

6) Number of graduates continued in college - same field

7) Number of graduates continued in college - different field

8) Number of graduates working outside the defined labor market area

9) Number of graduates sent for job interviews

The measurement of the objectives is printed as percentages with a judgment made regarding an acceptable percentage range. When the data are beyond the acceptable range, certain statements will be printed to focus attention on the condition. Examples are:

"Percent of graduates working in jobs unrelated to training"

"Excessive number of graduates working in unrelated fields"

"Percent of graduates retraining into other fields; review counseling methods"

"Percent of graduates retraining at college level; review counseling methods and procedures"

"Changes in labor market area may be indicated"

"Review placement procedures"

"Consider reducing or divesting this program"

Evaluation

The final function of evaluation is concerned with the overall program.

Goal:

To measure each vocational education program in relation to the functions of:

a) Job Market Analysis
b) Population Needs Analysis
c) Job Performance Requirements
d) Curriculum Resources and Ancillary Services
e) Program Planning
f) Program Review
g) Vocational Education Promotion
h) Recruitment
i) Counseling
j) Instruction
k) Placement

The printout for this function is in the form of conditional statements, i.e., statements which flag areas of caution. Parameters for each function are established and when these parameters are exceeded, the evaluation function triggers the printing of the appropriate statement.

4. DATA COLLECTION: PROCEDURES AND INSTRUMENTS

4.1 Program Objectives

Teachers in vocational education should establish a set of behavioral objectives in the cognitive, affective and psychomotor domains. These objectives state who is going to

do what, under what conditions and the criterion of measurement. Behavioral objectives, as used in this model, are worded to describe the terminal behavior of the student, e.g., "to type 50 words per minute on an IBM Selectric Typewriter with not more than two errors per 40 words". This objective assumes that the student knows how to insert the paper, set margins, tabulator, etc.

Objectives are printed on a form which contained the course code, DOT codes and the enrollment in each DOT code. The objectives are numbered so that the course code combined with the objective number is unique and will not be repeated elsewhere in the system.

4.2 Job Performance Requirements

The behavioral objectives (terminal objectives) established by the teachers are sent to the employer. The form used for this purpose lists the employer's SIC, and space is provided to indicate whether or not the employer hires graduates for this specific job. Additionally, the employer is asked if he agrees or disagrees with each objective for that specific job.

If a vocational program trains both bookkeepers and cashiers, the same set of behavioral obejctives is written for each occupation; however, the cashiers' form goes to employers who hire for that occupation and the bookkeepers' form goes to employers who hire for that specialty. The employer may add additional requirements to the form. Each added requirement is given a number with an "A" prefix.

Those employers who are asked to participate in the survey should be randomly selected each time the survey is taken. However, the sample should always include the five largest employers of the occupation surveyed.

The sample size for each survey is established at the .05 level of significance (Table 1). One enters the table with the number of companies (N) to find sample size (S). The number of companies is found by adding the totals for each relevant SIC in the ES 202 data.

4.3 Student Needs

A special mark sense card was developed to gather student needs data. The card is pre-printed with the school number, student number and student name. Each student should complete a needs card, as it has additional value as a counseling tool; however, these data may be collected on a stratified sampling basis.

A letter of instruction on how to complete the "needs" card and a list of occupations with appropriate DOT codes are given to each student. The occupations array from which a student makes his selection is restricted to the 161 occupational aggregations represented in the BLS matrix. All occupations identified by the BLS are included. Counselors can efficiently administer the survey to approximately 15 students at a time. Whoever is administering the needs survey should exercise caution not to influence the students' answers. The student makes the determination in each category.

4.4 Instructional Data

A form to gather these data was designed for the teacher as a "fill-in-the-blank" type. The behavioral objectives are pre-printed with space for the teacher to fill in the number of students who have completed that objective. Additional blanks are provided to fill in the instructional day the data are compiled and the total instructional days in the school year or semester.

Only one form is used per subject regardless of the number of class periods. A teacher will fill in more than one form if he teaches more than one subject.

4.5 Curriculum Resources

The teacher or his designate lists, on a form, each capital expenditure item used in the course of instruction. The teacher adds needed equipment and equipment on order. For each piece of equipment used in the program space is provided to enter the number of students served per item. Equipment on order but not yet received is not counted as available for use.

4.6 Budget and Drop out Data

The form designed to gather these data is a "fill-in-the-blank" type that is oriented to key punching and PPBS format. Business office personnel are asked to complete one form which covers all programs being evaluated. If cost data are not available, that space is left blank; however, zeros are used to denote no cost. A zero cost is treated differently from cost data not available.

4.7 Job Market Analysis: Data Sources and Procedures

The model uses unpublished unemployment insurance and disability insurance premium data reported by industry to HRD. These data are stored by HRD on computer tapes. Additional data covering state, federal and local government employees are gathered from the following sources: Federal employee counts from the ES 202 report; state employee counts are from the State of California Personnel Statistics Quarterly Report; County and municipal government employment counts come from the auditor's office. Additional data sources are used to insure that the total work force in a labor market is considered.

The HRD data on computer tape are processed directly and combined with the other data that have been put on punch cards. The data are stacked by calendar quarters and 20 quarters of history are used to project 20 quarters into the future. The historical data are subjected to a regression analysis to define the projection line: After projections are made, 1.66 standard deviations are applied to define the range of accuracy of the projected data.

A modification of the Bureau of Labor Statistics matrix, which appears as appendix G in bulletin 1606, is available from BLS, Washington, D.C., on computer tape. This matrix is an industry vs. occupation matrix for a beginning and ending period which identifies the ratio of employees in each occupation (DOT) to the total labor force for that industry. The matrix is expanded to three dimensions by the computer to define a unique ratio for each quarter.

The quarterly ratios are then applied to the industry projections. Each occupation (DOT) is summed across all industries to arrive at a total employee count for that occupation.

The U.S. Department of Health, Education and Welfare, Public Health Service, publishes mortality and retirement rate data by occupation. 4/ These rates are applied to the occupation sums to define replacement figures. The ratios are adjusted to account for the differences in mortality and retirement rates for males and females. The ratios are weighted according to the composition of the labor force.

4.8 Follow-up Data

Follow-up data from graduates of vocational programs are gathered on an annual basis. If a sample of graduates is to be surveyed, the sample should be stratified and randomly selected. The sample size should be large enough to establish statistical significance at the .05 level of confidence.

The form for gathering follow-up data is one page in length, organized to facilitate key punching. The data can be gathered by mail or by telephone contact.

4.9 Training Programs, Other Sources

The California State Department of Education gathers vocational education enrollment data through grade 14 for

---

4/ U.S. Department H.E.W., Public Health Service, Vital Statistics - Special Reports published quarterly.

each vocational education program funded by the State Department of Education. These data are available as a computer printout by program for each county.

The State Department of Education computer printout lists training by program according to a coding format in the Vocational Education and Occupations Manual. 5/ These codes must be converted to the DOT codes compatible with the BLS matrix. A DOT code conversions table is listed in the Vocational Education and Occupations Manual.

There is no single source for gathering enrollment data for private institutional training; however, these data may be gathered from individual institutions if deemed necessary for decision making purposes.

5. PILOT SCHOOL: ELK GROVE SENIOR HIGH SCHOOL

Elk Grove Senior High School (grades 10-12) is the only high school in the Elk Grove Unified School District. The student enrollment in school year 1971-72 varied from a peak of 2015 to a low of 1742.

The school district is located in the southeast portion of Sacramento County and largely rural and suburban. There are no data on median family income. On October 1, 1971 the student population was 1983 with ethnic composition by percentage as follows: American Indians (0.3%), blacks (1.5%),

---

5/ U.S. Department of Health, Education and Welfare, Vocational Education and Occupations, U.S. Government Printing Office, Washington, 1969.

Spanish surname (7.4%), oriental (2.1%), Filipino and other minority (1.9%), and white (86.8%).

Dr. Richard D. Sovde was in his second year as principal. At the time the evaluation was made the school had a director of vocational education counseling, Mr. Lou Chirco, and four counselors.

Due to the constraints of time and personnel, only the business education and automotive programs were evaluated.

6. EVALUATION AND RECOMMENDATIONS

The model is fully compatible with the PPBS format and can be applied at all levels of education where vocational education is included in the curriculum. The model can be easily adapted to systems in other states that have expressed their vocational functions in terms and dimensions differently from those found in California.

The goals of the project were met. A computerized model using local data is now available to assist schools and districts to evaluate their vocational education programs. The model considers all vocational functions. The job market analysis function uses the National Industry Occupation Matrix as an interim measure awaiting the development of more localized matrices by the Bureau of Labor Statistics. The model will be fully compatible with the new matrices when they are released.

Recommendations: The model is a new tool for use in the evaluation process. Some educators may not appreciate its full value due to a misunderstanding of how functional

data articulate, i.e., how data from one function has a bearing on, or implications for, another function.

A recommendation is made to implement the model on a test basis to train educators in the use of the total computer based system for program evaluation. The model can be used as a vehicle to train vocational educators in data analysis, i.e., how to properly gather, analyze and synthesize data to make sound educational decisions in planning vocational education programs. A training package should be developed for state-wide use to assist schools in other districts in implementing this evaluation model.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Bloom, Benjamin S. Taxonomy of Educational Objectives: The Classification of Educational Goals Handbook #I: Cognitive Domain. New York: David McKay Company, 1968.

2. _____, David R. Karthwohl, and Bertram B. Masia. Taxonomy of Educational Objectives: The Classification of Educational Goals Handbook #II: Affective Domain. New York: David McKay Company, 1968.

3. Buzzell, Charles H. and Sophie S. Hollander, "Schools Without Failure," School and Society, February, 1972.

4. Byers, Edward E. Writing Performance Goals: Strategy and Prototypes A Manual for Vocational and Technical Educators. Gregg-McGraw Hill.

5. Engel, John. "An Approach to Standardizing Human Performance Assessment," Human Resources Research Organization Professional Paper, October, 1970, pp. 26-70.

6. Greene, Stanley, John Priebe and Richard Morrison. "The 1970 Census of Population Occupation Classification System," The Statistical Reporter, December, 1969.

7. Horton, Robert E. et al. "Guide to Improving Vocational Education Evaluation," Project #9-0326 (U.S. Department H.E.W., Interum report), December, 1970.

8. _____ et al. "Institute for Improving Vocational Education Evaluation," Project #9-0326 (U.S. Department H.E.W., Interum report), December, 1970.

9. Human Resources Development (California), Research and Statistics Division, California Community Labor Market Surveys 1969-70. September, 1970.

10. Lee, Allen, "Improvement and Development of the Organization and Administration of Vocational-Technical Education," Project #7-1327 (U.S. Department H.E.W., Final report), November, 1970.

11. Little, Arthur D. "A Policy and System Study of California Vocational Education," Report prepared for California State Board of Education, 1970.

12. Miller, Ann R. and Susan Klopp. "Statistical Evaluation Report #9," Research Contract #81-40-69-13, February, 1971.

13. Moss, Jerome Jr. "A Hard Look at Our Evaluation Practices," American Vocational Journal, February, 1971.

14. NEA Research Division. "Small Sample Techniques," NEA Research Bulletin, vol. 38, December, 1960, p.99.

15. Pacinelli, Ralph N. Vocational Evaluation and Work Adjustment Services in Manpower Social Welfare and Rehabilitation Programs - Educational Guide Developed from a Conference June, 1970, 1970.

16. President, Executive Office of the. Standard Industrial Classification Manual. Washington, D.C.: U.S. Government Printing Office, 1972.

17. Prince George's County Board of Education. Evaluation of Follow-Through 1968-1969. (Upper Marlboro, M.D.)

18. Starr, Harold et al. A System for State Evaluation of Vocational Education. Research series #58. Columbis Ohio: The Center for Vocational and Technical Education - Ohio State University, May, 1970.

19. U.S. Department H.E.W., Illinois Research and Development Co-ordinating Unit. A Master Plan of Research, Development, and Exemplary Activities in Vocational and Technical Education. Springfield, Illinois, June, 1970.

20. U.S. Department of Labor, Bureau of Employment Security. Dictionary of Occupational Titles. 3rd ed., Washington, D.C.: U.S. Government Printing Office, 1965.

21. _____. Occupational Employment Patterns for 1960 and 1975, Bulletin #1599.

22. _____, Bureau of Labor Statistics. Tomorrow's Manpower Needs. Bulletin #1606, vol. 1, 2, 3, & 4, supplements 1 & 2.

23. Wellman, Frank E. and Normal C. Gysbers. "The Main Question is: Did the Program Make a Difference in a Systematic Approach to State-wide Evaluation of Career Guidance Counseling and Placement," American Vocational Journal. February, 1971

APPENDIX I

Sample Forms
for Data Gathering

CURRICULUM RESOURCES

	Vocational Education Program Number		Number of Classes or Periods

DOT Code Trained	Students Enrolled	DOT Code Trained	Students Enrolled

Item Number	Usable Items on Hand	Required per 10 Students	Required per 50 Students	Required per 100 Students	Name/Description
01.					
02.					
03.					
04.					
05.					
06.					
07.					
08.					
09.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

Course #

EMPLOYER SURVEY FORM

Unemployment Insurance Acct. # SIC Code

This survey refers to the job titles listed below

DOT CODE	Job Title or Description

YES NO Have you ever hired _____ graduates for any
name of school
of these jobs?

Are the following skills required for beginning employment for any of the jobs listed? (check appropriate column)

YES	NO	

List additional requirements on the reverse side.

Course #

COURSE NAME

There are _____ instructional days this school year.

This is the _____ instructional day.

How many students have completed each objective?

Number Students	Behavioral Objectives

School _____

1. Enrolled Grade 9 _____
   Grade 10 _____
   Grade 11 _____
   Grade 12 _____

2. List the name and class number for any V.E. instructor who is taking, or has completed within two years, any in-service or professional advancement training in his field of instruction.

Name	Class number

3. Vocational education program data

Program number	Enrolled, not attending	Expected to graduate

Budget data

Program number	Total budget	Instructional salaries (incl. fringe benefits)	Equipment and operation

4. District total expenditure per high school enrolled pupil _____

5. Number of students who: (estimates)
   attended vocational education promotional lectures _____
   attended vocational education promotional movies _____
   attended vocational education promotional special programs _____
   used VIEW _____

6. Number of parents contacted through vocational education promotional media (circulars, T.V. scripts, newspaper, radio, etc.)

7. Drop outs (by your definition) for the school (a number not a rate) _____

8. Drop outs, district rate _____

9. Number of instructional days this school year _____

10. List of vocational education promotional activities _____

FOLLOW-UP STUDY Code No. _____
GRADUATION CLASS OF _____

☐ YES, I am working (if in the armed forces full time, mark yes)
- ☐ job related to high school training
- ☐ somewhat related to high school training
- ☐ not related at all to high school training

Was the high school training you received a help in your getting a job?
- ☐ YES
- ☐ NO

How much does your high school training help you in your job?
- ☐ a lot
- ☐ some
- ☐ very little if any
- ☐ none whatsoever

The biggest single problem I had in getting a job:
- ☐ lack of training
- ☐ lack of experience
- ☐ age
- ☐ nothing really specific
- ☐ other _____

☐ NO, I am not working
- ☐ cont. school or training not related to high school training
- ☐ cont. school or training related to high school training
- ☐ would like to work but can't find a job
- ☐ not seeking employment

Regardless of your present work would you prefer a job in your high school trained skill?
- ☐ YES
- ☐ NO

How would you rate your high school training?
- ☐ excellent
- ☐ good
- ☐ fair
- ☐ poor
- ☐ unsatisfactory

If unsatisfactory - why?
- ☐ poor instruction
- ☐ poor or improper equipment
- ☐ not related to work in that field
- ☐ no existing jobs in that field

Some of my opinions: (check as many as are appropriate)
If I had it to do over again:
- ☐ I wouldn't take the same training
- ☐ I would take essentially the same training
- ☐ the training was OK for a beginning job
- ☐ my training didn't teach me what I needed to know
- ☐ I learned just enough to want to train further

Write additional comments on the back.

APPENDIX II

Detail Procedures to Gather Population Needs Data

POPULATION NEEDS ANALYSIS

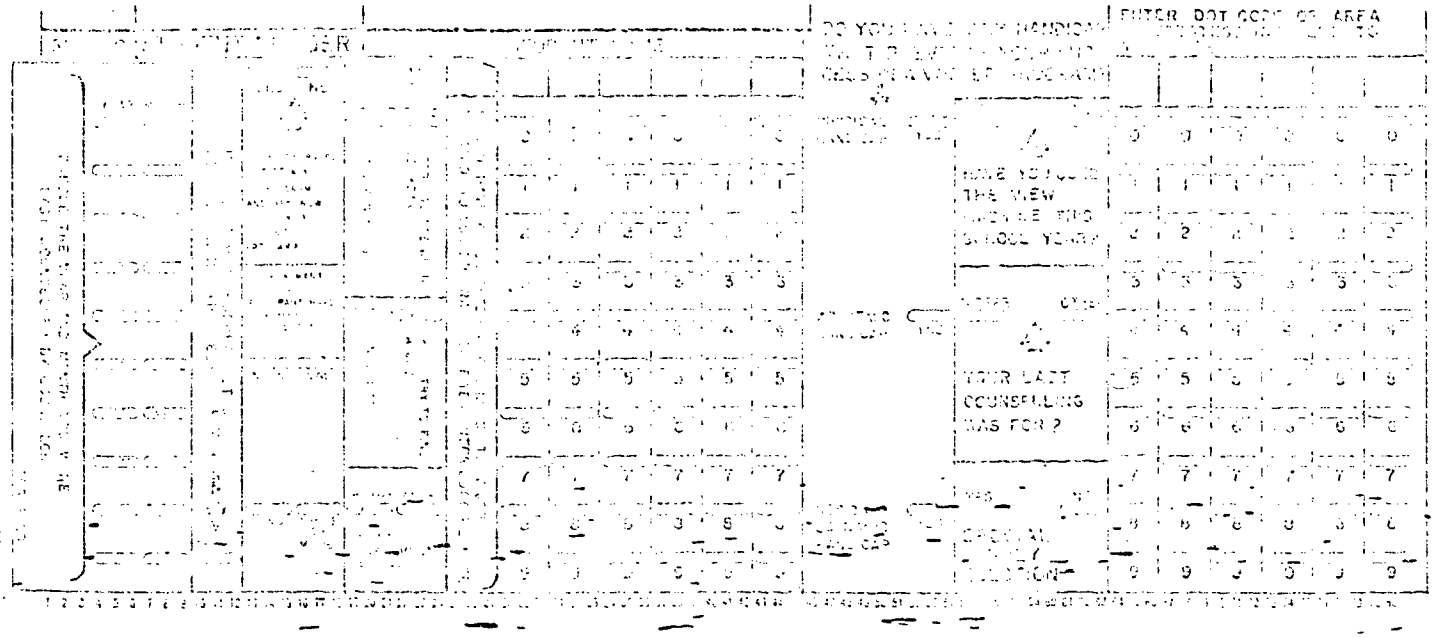
Information necessary to measure the goals of the population needs function is gathered on a mark sense card. Data are also gathered on the card to measure the goals of the counseling function and one aspect of the promotion function. The card is designed to gather 19 discreet pieces of information. A letter of instruction for completing the card is given to the student.

The counselor administering the survey can effectively survey 15 students at a time. The counselor should read each step of the letter of instruction with the student, allowing adequate time for the student to bubble in the correct response.

Most errors occur in recording the DOT codes. DOT codes are listed on a sheet attached to the letter of instruction. The listed codes are limited to those found in the BLS matrix; therefore, extraneous codes will be rejected by the computer. Another area for possible error is in the block terms "intentions after grade 12". There are six choices but the student should bubble only one, as the choices are mutually exclusive.

The counselor should be cautious not to affect the students' answers, especially in the area of "DOT codes of greatest interest". If the student has had adequate career counseling, errors in this area are diminished.

The cards are pre-identified with the student's name and assigned number. Student names and numbers, per se, are not used in this model, but they are included to permit a school or district to use the card data for a comprehensive career education and counseling program.



OCCUPATIONS AND DOT CODES USED WITH NEEDS CARD

0000	Employment total		
1000	Professional, technical, kindred		
1100	Engineers, technical		
1110	Engineers, aeronautical	002.081	
1120	Engineers, chemical	008.081	
1130	Engineers, civil	005.081	
1140	Engineers, electrical	003.081	
1150	Engineers, industrial	012.188	
1160	Engineers, mechanical	007.081	
1170	Engineers, metallurgical	011.081	
1180	Engineers, mining	010.081	
1190	Engineers, sales	204.388	
1199	Other engineers, technical	007.181	Engineers, not elsewhere classified
1200	Medical and other health workers		
1210	Dentists	072.108	
1120	Dietitians and nutritionists	077.168	
1230	Nurses, professional	075.378	
1240	Optometrists	079.108	
1250	Osteopaths	071.108	
1260	Pharmacists	074.181	
1265	Physicians and surgeons	070.000	
1270	Psychologists	045.108	
1280	Technicians, medical and dental	078.381	
1290	Veterinarians	073.108	
1299	Other medical and health workers	079.000	Includes occupations not elsewhere classified, concerned with the health care of humans or animals
1310	Teachers		
1310	Teachers, elementary	092.228	
1320	Teachers, secondary	091.228	
1330	Teachers, college	090.228	
1399	Teachers, other	099.288	Includes occupations in education, not elsewhere classified, concerned with research, administration and teaching
1400	Natural scientists		
1410	Chemists	022.081	
1420	Agricultural scientists	040.081	Agricultural scientists plus foresters and conservationists
1430	Biological scientists	041.081	

1440	Geologists and geophysicists	024.081	
1450	Mathematicians	020.088	
1460	Physicists	023.081	
1499	Other natural scientists	040.000	Includes occupations concerned with the application of science to problems relating to agriculture, horticulture and forestry to include developing methods in cultivation, processing, handling and storing of products: see DOT classifications 040.xxx and 041.xxx
1500	Social scientists		
1510	Economists	050.088	
1520	Statisticians and actuaries	020.188	
1599	Other social scientists	059.088	Miscellaneous social scientists
1600	Technicians, except medical and dental		
1610	Draftsmen	001.281	
1620	Surveyors	018.188	
1630	Air traffic controllers	193.168	
1640	Radio operators	193.282	
1699	Technicians, other	019.281	Technicians, electrical and electronic, technicians, other engineering and physical science and technicians, other
1900	Other professional, technical, kindred		
1910	Accountants and auditors	160.188	
1915	Airplane pilots and navigators	196.283	
1920	Architects	001.081	
1930	Clergymen	120.108	
1935	Designers, except design draftsmen	142.081	
1940	Editors and reporters	132.268	
1945	Lawyers and judges	110.108	
1950	Librarians	100.168	
1960	Personnel and labor relations workers	205.368	
1970	Photographers	143.062	
1980	Social and welfare workers	195.108	
1990	Teachers, workers in arts & entertainment	150.048	Includes actors, actresses, artists and art teachers; athletes, authors; dancers and dance teachers; entertainers, not elsewhere classified; musicians and music teachers; and sports instructors and officials
1999	Professional and technical, kindred	199.000	See DOT classification 199.xxx

2000	Managers, officials, proprietors		
2100	Conductors, railroad	910.868	
2200	Officers, pilots, engineers ship	197.133	
2300	Creditmen	249.368	
2400	Purchasing agents	162.158	Purchasing agents and buyers, not elsewhere classified
2500	Postmasters and assistants	188.168	
2900	Managers, officials, proprietors nec	180.000	See DOT classifications 18x.000
3000	Clerical and kindred workers		
3100	Stenographers, typists, secretaries	203.588	
3200	Office machine operators	216.488	
3900	Other clerical and kindred workers	219.388	
3910	Accounting clerks	219.488	
3920	Bookkeepers, hand	210.388	
3930	Bank tellers	212.368	
3940	Cashiers	211.468	
3950	Mail carriers	233.388	
3970	Postal clerks	232.368	
3980	Shipping and receiving clerks	222.387	
3990	Telephone operators	235.862	
3999	Clerical and kindred nec	249.000	Includes all DOT classifications 249.xxx except 249.368
4000	Sales workers		
4900	Other sales workers nec	290.498	Includes all DOT classifications of all sales catagories. See DOT codes 25x.xxx; 26x.xxx; 27x.xxx; 28x.xxx
5000	Craftsmen, foremen and kindred		
5100	Construction craftsmen		
5110	Carpenters	860.381	
5120	Brickmasons, stone, tile setters	573.884	
5130	Cement and concrete finishers	844.884	
5140	Electricians	824.281	
5145	Excavating, grading road machine operator	850.833	Includes all DOT classifications 85x.883
5150	Painters and paperhangers	840.781	
5160	Plasterers	842.781	
5170	Plumbers and pipefitters	862.381	
5180	Roofers and slaters	866.381	
5190	Structural metalworkers	801.781	
5200	Foremen nec	869.131	Includes DOT codes 86x.131, 86x.132, 86x.133, 86x.134 and all construction trades foremen in 869.13x DOT codes

5300	Metalworking craftsmen except mechanic		
5310	Machinists and related occupations	600.380	
5320	Blacksmiths, forgement, hammermen	610.381	
5325	Boilermakers	805.281	
5330	Heat treaters, annealers, temperers	504.782	
5340	Millwrights	638.281	
5350	Molders, metal (except coremakers)	556.885	
5360	Patternmakers, metal and wood	600.280	Includes DOT 661.281 (wood pttrnmkrs)
5370	Rollers and roll hands	613.782	
5380	Sheet metal workers	804.281	Tinsmiths, coppersmiths and sheet metal workers
5390	Toolmakers, diemakers, setters	601.280	
5400	Mechanics and repairmen		
5410	Air condition, refrigeration mechanic	637.281	
5420	Airplane mechanics and repairmen	621.281	
5430	Motor vehicle mechanics	620.281	
5440	Office machine mechanics	633.281	
5450	Radio and TV mechanics	823.281	
5460	Railroad and car shop mechanic	622.381	
5499	Other mechanics and repairmen	630.884	Also 637.xxx and 639.xxx DOT codes
5600	Printing trades craftsmen		
5610	Compositors and typesetters	650.582	Includes all 650.xxx DOT codes
5620	Electrotypers and stereotypers	974.381	Includes 975.782
5630	Engravers except photoengravers	979.281	
5640	Photoengravers and lithographers	971.381	Includes 971.281
5650	Pressmen and plate printers	651.782	Includes 979.886
5700	Transportation and public utilities craftsmen		
5710	Line and servicemen, telephone and power	821.281	Includes 822.281
5720	Locomotive engineers	910.383	
5730	Locomotive firemen	910.883	
5900	Other craftsmen and kindred workers		
5910	Bakers	526.781	
5915	Cabinetmakers	660.280	
5920	Cranemen, derrickmen, hoistmen	921.883	
5925	Glaziers	865.781	
5930	Jewelers and watchmakers	700.281	Includes all 700.xxx and 715.xxx
5935	Loom fixers	683.280	
5950	Opticians, lens grinders, polishers	713.381	
5970	Inspectors, log and lumber	168.168	
5980	Inspectors, other	609.684	Inspectors of manufactured goods not elsewhere classified
5990	Upholsters	780.381	

5999	Craftsmen and kindred workers nec	977.884	Bookbinders; furriers; decorators and window dressers; millers; motion picture projectionists; piano and organ tuners and repairment; shoemakers and repairers, except factory; stationary engineers, stone cutters and stone carvers; and craftsmen and kindred workers, not elsewhere classified.
6000	Operatives and kindred workers		
6200	Drivers and deliverymen	919.883	
6210	Drivers, bus, truck, tractor	913.463	
6220	Deliverymen, routemen, cab drivers	913.363	
6300	Semiskilled metalworking occupations		
6310	Assemblers, metalworking class A	706.887	Also includes 804.886
6320	Assemblers, metalworking class B	619.380	
6330	Inspectors, metalworking class B	619.281	
6340	Machine tool operators class B	604.280	
6350	Electroplaters	500.380	
6360	Electroplater helpers	500.886	
6370	Furnacemen, smeltermen, pourers	511.885	Includes all metal smelting
6380	Heaters, metal	504.782	
6390	Welders and flame cutters	811.884	
6700	Transportation and public utilities operatives		
6710	Brakemen, switchmen railroad	910.884	
6720	Power station operators	952.782	
6730	Sailors and deckhands	911.887	
6800	Semiskilled textile occupations		
6810	Knitters, loopers and toppers	685.885	
6820	Spinners, textile	557.885	
6830	Weavers, textile	683.782	
6840	Sewers and stitchers mfg	786.782	
6900	Other operatives and kindred		
6910	Asbestos, insulation workers	863.884	
6920	Auto attendants, gas and parking	915.867	
6930	Blasters and powdermen	859.281	
6940	Laundry and dry cleaning operators	369.884	Includes 362.782
6950	Mine operatives, laborers nec	850.781	
6960	Meat cutters, except meat packing	316.884	

6999	Operatives and kindred nec	719.887	Includes apprentices; part of assemblers; boatmen, canalmen, & lock keepers; chainmen, rodmen, and axmen, surveying; part of checkers, examiners, and inspectors, manufacturing; conductors, bus and street railway; dressmakers and seamstresses, except factory; dyers; filers, grinders and polishers, metal; fruit, nut, and vegetable graders and packers, except factory; graders and sorters; manufacturing; milliners; motormen, mine, factory, logging camp, etc; motormen, street subway and elevated railway; oilers and greasers, except auto; packers and wrappers, not elsewhere classified; painters, except construction and maintenance; photographic process workers; sawyers; stationary firemen; and part of operatives and kindred workers, (not elsewhere classified)
7000	Service workers		
7100	Private household workers	306.878	Includes all domestic service of private households
7200	Protective service workers	379.000	
7210	Firemen	373.884	
7220	Policemen, detectives, etc.	375.268	
7230	Guards, watchmen, doorkeepers	372.868	
7300	Food service workers		
7310	Bartenders	312.878	
7320	Cooks except private households	315.381	
7330	Counter and fountain workers	319.878	
7340	Waiters and waitresses	311.878	
7900	Other service workers		
7910	Airline stewards, stewardesses	352.878	
7920	Attendants, hospital and other institutions	355.878	
7930	Charwomen and cleaners	381.887	

7940	Janitors and sextons	382.384	
7950	Nurses, practical	354.878	
7999	Other service workers nec	319.468	Attendants, professional and personal services, not elsewhere classified; attendants, recreation and amusement; barbers; boarding and lodging housekeepers, bootblacks; chambermaids and maids, except private household; elevator operators; hairdressers and cosmetologists; part of housekeepers and stewards, except private household; kitchenworkers, not elsewhere classified, except household; midwives; porters; ushers, recreation and amusement; and service workers, except private household; not elsewhere classified
8000	Laborers, except farm and mien	929.887	
9000	Farmers and farm workers	421.181	Farmers and farm managers, and farm laborers and foremen

APPENDIX III

Detail Procedures on Job Market Analysis

Sample Print-Out Page: Job Market Analysis by SIC
Sample Print-Out Page: Job Market Analysis by DOT

Detail Procedures on Job Market Analysis

The Bureau of Labor Statistics has developed a matrix which defines the ratio of the number of employees in a specific occupation to the total number of all employees within that industry. Two ratios are given, one for a base year and another for a later year. Occupations are aggregated into 161 occupational categories with all possible occupations subsumed under these categories. Industries are aggregated in a like manner into 127 categories.

The matrix is published as appendix G to the Bureau of Labor Statistics' bulletin 1606 and these same data are available on computer tapes. The matrix used in this model lists ratios for a base year of 1970 and projected ratios for the year 1980. The projection procedure developed in this model is dynamic and markedly different from the static procedure outlined in BLS bulletin 1606.

Quarterly ratios are extraced from the matrix by interpolation. The ratios consider the assumptions of technological development, economic growth, unemployment, shifts in population and industry, growth in GNP and by inference from some of these, money policy considerations and international trade. 1/ These ratios are applied to each industry projection to arrive at the individual occupation projection.

1/ A more detailed explanation of the assumptions are contained in BLS bulletin 1606, volume I, appendix A, p. 4.

The data source for industry projections are disability insurance reports and unemployment insurance reports obtained from HRD. Added to these data are employment statistics for those employment units exempted from ES 202 reporting. It will not be necessary to augment ES 202 data after the first quarter, 1972 as California State income tax withholdings will require everyone, including previously exempted and self-employed, to file a wage report.

Appended to each report is a four digit Standard Industrial Classification (SIC) code. Like SIC codes are summed to arrive at the total number of employees per industry. In building the history data the computer program aggregated industries in the identical manner that BLS aggregated them into the 127 categories in the matrix.

Twenty quarters of historical data are subjected to a regression analysis to create a projection line 20 quarters into the future. As a means of determining a numerical range for each quarterly projection the model assumes a normal distribution of the data points about the least squares regression line. The model uses 1.66 standard deviations on either side of the mean to define the numerical limits to 90.3% of the cases. For industries with highly volatile or cyclical employment practices the standard deviation will be quite large.

The BLS ratios for an industry are applied to the predicted number of employees in that industry at a specific point in time. Data for an occupation are then summed

across all industries to arrive at the total predicted employment in that occupation for that period.

Unemployment and disability insurance data in California are coded by county, therefore, the data can be separated by county, or counties can be combined to arrive at a defined labor market area. If it is found that the BLS ratios are significantly different from the actual ratios in a local industry the ratios are changed to reflect localized conditions.

This job market analysis is specifically designed for vocational education and identifies by job title the change in employment likely to occur each year for 1, 2, 3 and 5 years into the future. The sub-system does not attempt to reduce or refine the data for those persons who are simultaneously employed in two or more jobs. The model predicts total jobs within a specified labor market area.

A Note on ES 202 Data

ES 202 data (unemployment insurance) reports are required by federal regulations, therefore, the designation is common to all states and localities. In California an employer with a quarterly payroll of $100 or more must file a report and these reports are compiled at HRD and subsequently stored on computer tapes. These data can be retrieved by county or counties to form a data base for a labor market area.

There are certain categories of employees that are not covered by unemployment compensation and with few exceptions these exempted employees do not presently appear on ES 202 reports. The majority of those not covered by unemployment insurance are state and local government employees, some non-profit organization employees and self-employed persons. Beginning with the second quarter of calendar year 1972 all employee categories will be included in the ES 202 data gathering procedure regardless of whether or not premium payments are made.

In the interim, the additive data must be manually gathered for inclusion in the data base. State employees are reported by county to the State Personnel Department. These reports are available quarterly and list the state employees in each county. County and municipal employee counts must be obtained from each payroll unit or the county auditor. Federal employees appear on the ES 202 report even though the federal government does not pay unemployment insurance premiums.

The federal government has added two final digits to the 91 SIC classification to assign employees to comparable industrial categories. Thus, any SIC 91XX is a federal industry.

The SIC code 9190 includes both federal administrative and postal service employees, with employee groups being separated by a unique 7 digit account number. The first

three digits of the account number are used as a broad category identifier, e.g., postal service account numbers begin with 732 or 733 (prior to 1972 the postal services account numbers began with 435 or 436). Other 91XX classifications are assigned to their proper industrial class by the final two digits, e.g., 9149 would become 4900. The one exception to this procedure is SIC 9161 which is converted to 6011.

Projections are made from these data using a regression analysis technique. For any SIC (industry) the total number of employees can be predicted for any calendar quarter up to five years into the future. The BLS matrix ratios are applied to these projections to arrive at occupational projections within an industry group.

SIC TITLE	********** QUARTER PROJECTION DATA **********											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3241 CEMENT CONCRETE AND PLASTER	1	0	0	0	0	0	0	0	0	0	0	0
PERCENT OF ANNUAL CHANGE	-50.0%				-100.0%				0.0%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	1											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3250 STRUCTURAL CLAY PRODUCTS	384	384	384	384	384	384	384	383	383	383	383	383
PERCENT OF ANNUAL CHANGE	-0.2%				0.0%				-0.2%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	54											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3260 POTTERY AND RELATED PRODUCTS	497	495	493	492	490	488	486	484	483	481	479	478
PERCENT OF ANNUAL CHANGE	-1.3%				-1.4%				-1.4%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	71											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3281 MISC NONMETALLIC AND STONE	44	45	46	47	48	49	50	51	52	53	53	54
PERCENT OF ANNUAL CHANGE	7.3%				9.0%				8.3%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	8											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3312 BLAST FURNACES AND STEEL WKS	0	0	0	0	0	0	0	0	0	0	0	0
PERCENT OF ANNUAL CHANGE	+100.0%				0.0%				0.0%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	0											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3313 OTHER PRIMARY METAL IND	34	26	19	11	3	0	0	0	0	0	0	0
PERCENT OF ANNUAL CHANGE	-48.4%				-91.1%				-100.0%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	68											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3330 PRIMARY NONFERROUS METALS	179	185	192	198	205	211	218	225	231	238	244	251
PERCENT OF ANNUAL CHANGE	17.7%				14.5%				11.4%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	29											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3400 FABRICATED METAL PROD TOTAL	689	709	729	750	770	791	811	832	852	873	893	915
PERCENT OF ANNUAL CHANGE	13.5%				11.7%				10.6%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	216											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3420 CUTLERY HAND TOOLS HARDWARE	13	13	13	13	13	14	14	14	14	14	15	15
PERCENT OF ANNUAL CHANGE	8.3%				0.0%				7.6%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	3											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3440 FABRICATED STRUCTURAL METAL	687	694	700	707	714	721	728	734	741	748	755	762
PERCENT OF ANNUAL CHANGE	4.2%				3.9%				3.7%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	56											
	4-1972	1-1973	2-1973	3-1973	4-1973	1-1974	2-1974	3-1974	4-1974	1-1975	2-1975	3-1976
3490 MISC FABRICATED METAL PROD	85	87	88	90	92	93	95	97	99	100	102	111
PERCENT OF ANNUAL CHANGE	8.9%				8.2%				7.6%			
PROJECTIONS ARE 90.3% PROBABLE WITHIN	28											

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
203.388 STENOGRPHRS TYPISTS SECYS	13487	13556	13638	13728	13827	13926	14026	14125	14225	14325	14425	14962
RATIO 3.0 ANNUAL REPLACEMENT	405				415				427			
ANNUAL CHANGE	347				340				398			
TOTAL GAIN OR LOSS	752				755				825			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
205.368 PERSONNEL AND LBR RELATIONS	1542	1527	1523	1519	1515	1512	1508	1505	1501	1498	1494	1494
RATIO 1.5 ANNUAL REPLACEMENT	23				23				23			
ANNUAL CHANGE	6-				30-				14-			
TOTAL GAIN OR LOSS	17				7-				9			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
210.388 BOOKKEEPERS HAND	2341	2367	2388	2410	2432	2453	2475	2497	2518	2540	2563	2864
RATIO 3.4 ANNUAL REPLACEMENT	80				83				86			
ANNUAL CHANGE	79				91				87			
TOTAL GAIN OR LOSS	159				174				173			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
211.468 CASHIERS	2993	2968	2994	3020	3046	3073	3099	3125	3152	3178	3204	3415
RATIO 3.1 ANNUAL REPLACEMENT	93				94				98			
ANNUAL CHANGE	156				53				105			
TOTAL GAIN OR LOSS	249				147				203			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
212.368 BANK TELLERS	746	747	754	761	769	776	783	791	798	806	813	860
RATIO 3.0 ANNUAL REPLACEMENT	22				23				24			
ANNUAL CHANGE	36				23				29			
TOTAL GAIN OR LOSS	58				46				53			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
216.488 OFFICE MACHINE OPERATORS	2546	2528	2538	2549	2862	2574	2587	2599	2612	2625	2636	2747
RATIO 3.0 ANNUAL REPLACEMENT	76				77				78			
ANNUAL CHANGE	71				16				50			
TOTAL GAIN OR LOSS	147				93				128			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
219.388 OTHER CLERICAL AND KINDRED	36624	36861	37049	37254	37482	37709	37938	38167	38397	38630	38861	39979
RATIO 1.9 ANNUAL REPLACEMENT	696				712				730			
ANNUAL CHANGE	711				858				914			
TOTAL GAIN OR LOSS	1407				1570				1644			

CODE DOT TITLE	4Q-1972	1Q-1973	2Q-1973	3Q-1973	4Q-1973	1Q-1974	2Q-1974	3Q-1974	4Q-1974	1Q-1975	2Q-1975	3Q-1976
219.488 ACCOUNTING CLERKS	1818	1840	1851	1861	1873	1885	1896	1908	1919	1931	1943	1984
RATIO 3.2 ANNUAL REPLACEMENT	58				60				61			
ANNUAL CHANGE	30				55				46			
TOTAL GAIN OR LOSS	88				115				107			

APPENDIX IV

Computer Programs

FUNALL
through
FUNØ5Ø

PROGRAM NAME Report Functions Generator Page 1 of 1 pages

Date	Programmer	System	Apx Run Time
May 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Printer (Report Generator)

Printer Form: Regular Part: 6 LPI: 6

Carriage Tape: Regular Label Output: N/A

Card Reader Input: System Input Data Last Card: "1EOF" columns 1 through 4

Cardpunch Cardtype: N/A Label Output: N/A

SSW1: SSW2:

SSW3: SSW4:

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
"POPDOT-ALL"	1		X	Same	History file
"PROJ5THALL"	2		X	Same	History file
"FUNALLMESG"	3		X	Same	History file
Work Tape	4	X		"HIST-ALLTP"	" "
"FUNALL HIST"	5		X		" "

DISK DRIVES

		Switches in Permit

Special Instructions

If program aborts, dump core and save tack out for programmer

JOB MARKET ANALYSIS PROJECTION SUMMARY TAPE

Tape identification "PROJ5THALL"
1 record per block, 162 characters per record
In sequence by locations 124 - 129 and 1 - 6

LOCATION	TYPE	DESCRIPTION
1 - 6	9(6)	DOT code
7 - 36	X(3Ø)	DOT title
37 - 37	9(1)	Qtr of most current projection data (ES-2Ø2 data)
38 - 39	9(2)	Yr of most current projection data (ES-2Ø2 data)
4Ø - 45	9(6)	Current qtr employment average (ES-2Ø2 data)
46 - 51	9(6)	1st qtr employment projection (no. of employees)
52 - 57	9(6)	5th " "
58 - 63	9(6)	6th " "
64 - 69	9(6)	7th " "
7Ø - 75	9(6)	8th " "
76 - 81	9(6)	9th " "
82 - 87	9(6)	1Øth " "
88 - 93	9(6)	11th " "
94 - 99	9(6)	12th " "
1ØØ - 1Ø5	9(6)	13th " "
1Ø6 - 111	9(6)	14th " "
112 - 117	9(6)	15th " "
118 - 123	9(6)	2Øth " "
124 - 129	S9(6)	5th quarter gain or loss total
13Ø - 135	S9(6)	9th quarter gain or loss total
136 - 141	S9(6)	13th quarter gain or loss total
142 - 147	S9(6)	5th quarter annual change
148 - 153	S9(6)	9th quarter annual change
154 - 159	S9(6)	13th annual change
16Ø - 161	9V9	Replacement ratio for this DOT
162 - 162	X(1)	Record identification, always (J)

Tape identification is "VOCEDMESAG" or "FUNALLMESG"

Record contains 152 characters

Blocked by 1

LOCATION	TYPE	DESCRIPTION OF DATA
1 - 1Ø	X(1Ø)	Program number (will be set to high-values)
11 - 11	X(1)	Function use code (C) = Print in Placement function (P) = Print in Promotion function (R) = Print in Counseling function (S) = Print in Evaluation of Counseling (W) = Print in Needs Survey data (Z) = Print in Follow-up questionnaire
12 - 14	9(3)	Sequence control line number
15 - 146	X(132)	Message to be printed on report
147 - 152	X(6)	I.D. of program that created this message

This tape is sorted on locations 11 through 14 before being input to program FUNALL for processing.

SORT II PARAMETER SPECIFICATIONS

1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19	20 21 22 23	24 25 26 27	28 29 30 31	32	33 34	35	36	37	38	39
PRIMARY INPUT	ALTERNATE INPUT	FIRST WORK	SECOND WORK	THIRD WORK	FOURTH WORK	FIFTH WORK	MERGE WORK	TOTAL NUMBER OF INPUT REELS	INPUT TAPE DIRECTION	NUMBER OF CHARACTERS PER ITEM	NUMBER OF ITEMS PER INPUT RECORD	NUMBER OF ITEMS PER OUTPUT RECORD	PADDING CHARACTER	LABEL INDICATORS	NOT USED	INPUT BLANKS	OUTPUT BLANKS	INPUT PARITY	OUTPUT PARITY
01		02	03	04	05		R01			0162	0001	0001	C	SS					

40 41	42	43	44	45 46 47 48 49 50	51 52	53	54 55 56 57 58 59	60 61 62 63 64 65	66 67 68 69 70 71	72 73 74 75 76 77	78	79 80
ERROR OPTIONS	PRINTER CONTROL UNIT	HALT AFTER MERGE	HIGHEST ADDRESS AVAILABLE TO SORT		COLLATING SEQUENCE	ASCENDING OR DESCENDING SEQUENCED OUTPUT	ADDRESS OF PRESORT HDR TRL OWN CODING	ADDRESS OF PRES. ITEM BY ITEM OWN CODING	ADDRESS OF LAST PASS HDR TRL OWN CODING	ADDRESS OF LAST PASS ITEM BY ITEM OWN CODING	NOT USED	PARAMETER CARD IDENTIFICATION
P	2	R		15		D						S2

2 3 4	5 6	7 8 9 10	11 12	13 14 15 16	17 18	19 20 21 22	23 24	25 26 27 28	29 30	31 32 33 34	35 36	37 38 39 40	41 42
FIRST KEY FIELD	NUMBER OF CHARACTERS 1ST KEY	SECOND KEY FIELD	NUMBER OF CHARACTERS 2ND KEY	THIRD KEY FIELD	NUMBER OF CHARACTERS 3RD KEY	FOURTH KEY FIELD	NUMBER OF CHARACTERS 4TH KEY	FIFTH KEY FIELD	NUMBER OF CHARACTERS 5TH KEY	SIXTH KEY FIELD	NUMBER OF CHARACTERS 6TH KEY	SEVENTH KEY FIELD	NUMBER OF CHARACTERS 7TH KEY
124	06	0001	06										

43 44 45 46	47 48	49 50 51 52	53 54	55 56 57 58	59 60	61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
EIGHTH KEY FIELD	NUMBER OF CHARACTERS 8TH KEY	NINTH KEY FIELD	NUMBER OF CHARACTERS 9TH KEY	TENTH KEY FIELD	NUMBER OF CHARACTERS 10TH KEY	INPUT FILE NAME CHECK	OUTPUT FILE NAME CHANGE
						JAMDOT-028	PROJ5THALL

1 2 3 4 5 6	7 8	9	10 11 12 13 14 15	16 17	18	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
LAST PASS OWN CODING PROGRAM NAME	OWN CODING SEGMENT NAME	SEARCH DIRECTION	NEXT PROGRAM NAME	NEXT PROGRAM SEGMENT NAME	SEARCH DIRECTION	
						SORT JMA ANALYSIS HIST

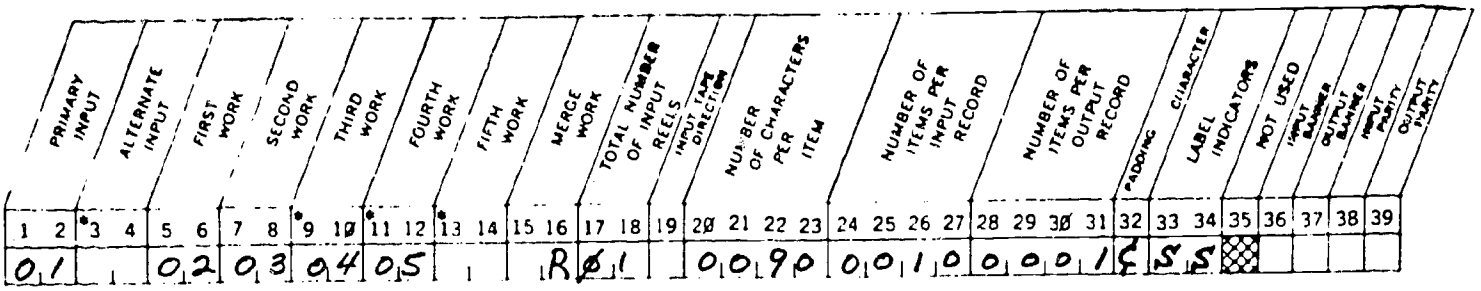
NOTE: IF PARAMETER 3 SPECIFICATIONS ARE NOT USED A BLANK CARD MUST BE PLACED AFTER PARAMETER CARDS. 1 & 2.

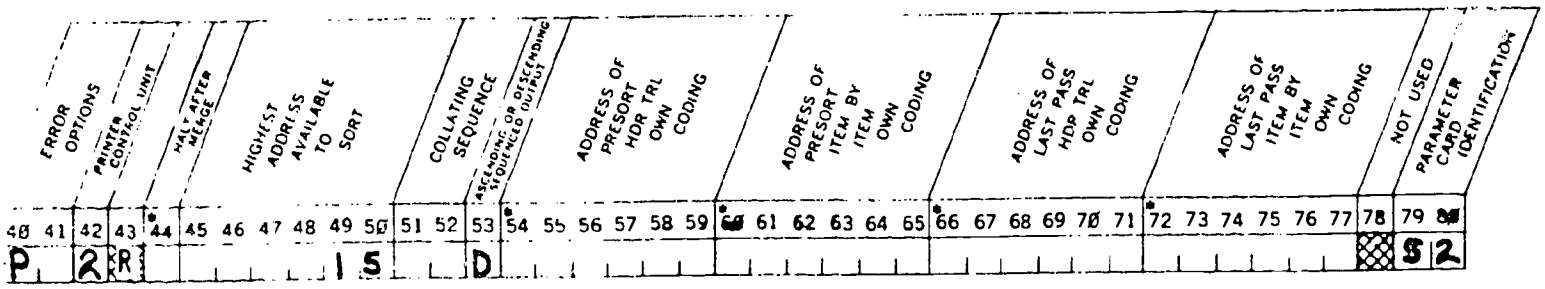
SORT PROGRAM CALL NAME

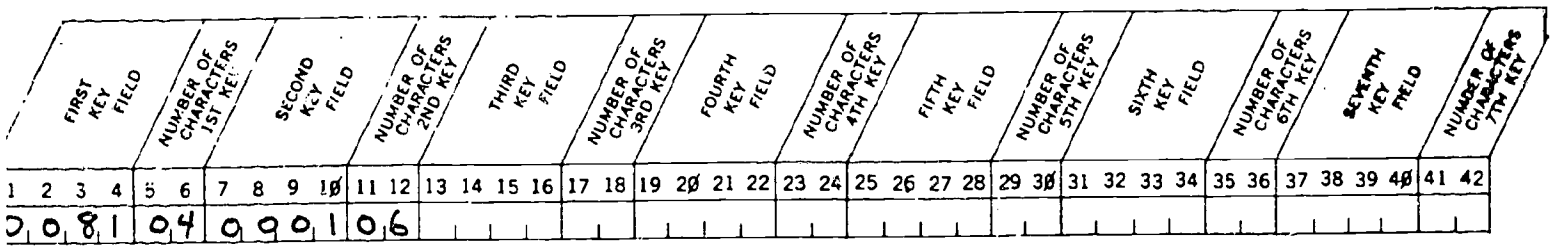
AADS2 000 ( )	AADS2F000 ( )	AADS2VP00 ( )
CBLS2 000 ( )	CBLS2F00 (X)	CBLS2VP00 ( )

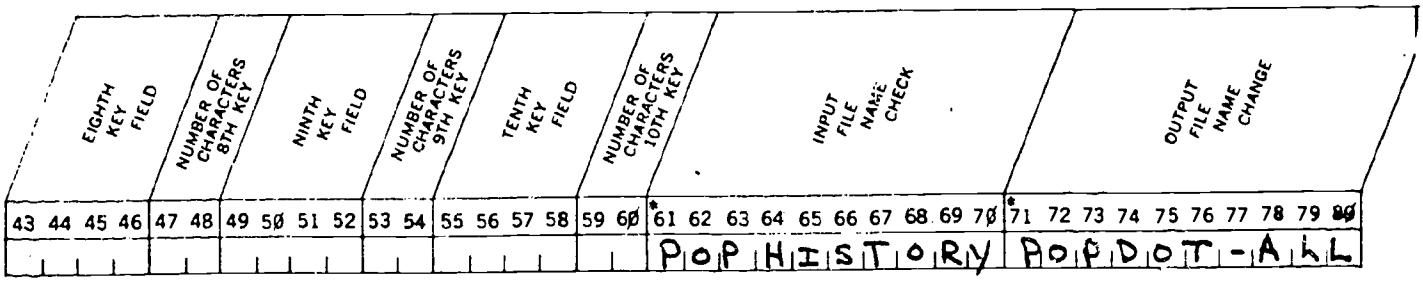
REMARKS: Sort Job Market Analysis History tape output from program FUN028 to sequence by 5th quarter projection value. Output is input to program FUNALL Drive 2.

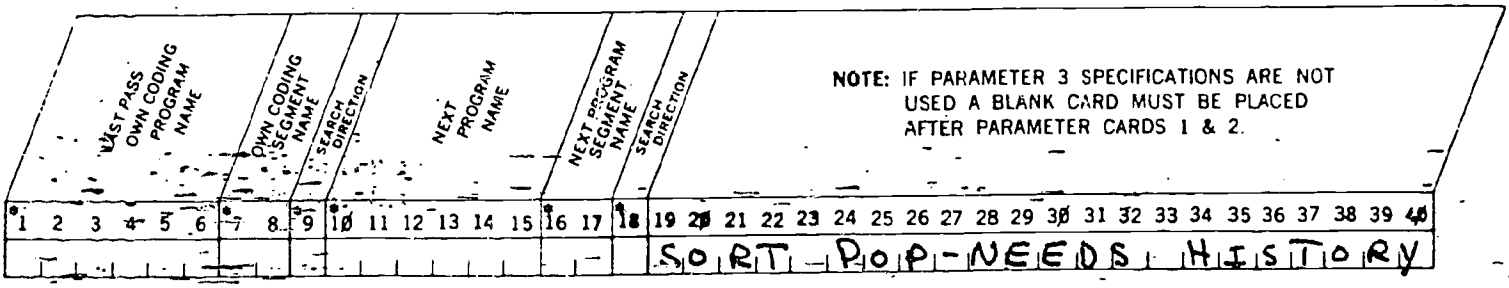
SORT II PARAMETER SPECIFICATIONS











SORT PROGRAM CALL NAME

AADS2 ØØØ ( )	AADS2FØØØ ( )	AADS2VPØØ ( )
CBLS2 ØØØ ( )	CBLS2FØØ ( )	CBLS2VPØØ ( )

REMARKS: Population needs data sorted to Dot Code of major interest of students for input to program FUNALL, drive 1.

SORT II PARAMETER SPECIFICATIONS

PRIMARY INPUT	ALTERNATE INPUT	FIRST WORK	SECOND WORK	THIRD WORK	FOURTH WORK	FIFTH WORK	MERGE WORK	TOTAL NUMBER OF INPUT REELS	INPUT TAPE DIRECTION	NUMBER OF CHARACTERS PER ITEM	NUMBER OF ITEMS PER INPUT RECORD	NUMBER OF ITEMS PER OUTPUT RECORD	PADDING CHARACTER	LABEL INDICATORS	NOT USED	INPUT BUFFERS	OUTPUT BUFFERS	INPUT PARITY	OUTPUT PARITY
1 2	3 4	5 6	7 8	9 10	11 12	13 14	15 16	17 18	19	20 21 22 23	24 25 26 27	28 29 30 31	32	33 34	35	36	37	38	39
01		02	03	04	05		R	02		Ø152	ØØØ1	ØØ16		SS					

ERROR OPTIONS	PRINTER CONTROL UNIT	HALT AFTER MERGE	HIGHEST ADDRESS AVAILABLE TO SORT	COLLATING SEQUENCE	ASCENDING OR DESCENDING SEQUENCED OUTPUT	ADDRESS OF PRESORT HDR TRL OWN CODING	ADDRESS OF PRESORT ITEM BY ITEM OWN CODING	ADDRESS OF LAST PASS HDR TRL OWN CODING	ADDRESS OF LAST PASS ITEM BY ITEM OWN CODING	NOT USED	PARAMETER CARD IDENTIFICATION
Ø 41	42	43 44	45 46 47 48 49 50	51 52	53	54 55 56 57 58 59	60 61 62 63 64 65	66 67 68 69 70 71	72 73 74 75 76 77	78	79 80
2	R		15								S2

FIRST KEY FIELD	NUMBER OF CHARACTERS 1ST KEY	SECOND KEY FIELD	NUMBER OF CHARACTERS 2ND KEY	THIRD KEY FIELD	NUMBER OF CHARACTERS 3RD KEY	FOURTH KEY FIELD	NUMBER OF CHARACTERS 4TH KEY	FIFTH KEY FIELD	NUMBER OF CHARACTERS 5TH KEY	SIXTH KEY FIELD	NUMBER OF CHARACTERS 6TH KEY	SEVENTH KEY FIELD	NUMBER OF CHARACTERS 7TH KEY
2 3 4	5 6	7 8 9 10	11 12	13 14 15 16	17 18	19 20 21 22	23 24	25 26 27 28	29 30	31 32 33 34	35 36	37 38 39 40	41 42
Ø11	Ø4												

EIGHTH KEY FIELD	NUMBER OF CHARACTERS 8TH KEY	NINTH KEY FIELD	NUMBER OF CHARACTERS 9TH KEY	TENTH KEY FIELD	NUMBER OF CHARACTERS 10TH KEY	INPUT FILE NAME CHECK	OUTPUT FILE NAME CHANGE
43 44 45 46	47 48	49 50 51 52	53 54	55 56 57 58	59 60	61 62 63 64 65 66 67 68 69 70	71 72 73 74 75 76 77 78 79 80
						VOCEDMESAG	FUNALLMESG

LAST PASS OWN CODING PROGRAM NAME	OWN CODING SEGMENT NAME	SEARCH DIRECTION	NEXT PROGRAM NAME	NEXT PROGRAM SEGMENT NAME	SEARCH DIRECTION
1 2 3 4 5 6	7 8	9	10 11 12 13 14 15	16 17	18

NOTE: IF PARAMETER 3 SPECIFICATIONS ARE NOT USED A BLANK CARD MUST BE PLACED AFTER PARAMETER CARDS 1 & 2.

19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

SORT MESSAGE TAPES

SORT PROGRAM CALL NAME

AADS2 ØØØ ( )	AADS2FØØØ ( )	AADS2VPØØ ( )
CBLS2 ØØØ ( )	CBLS2FØØ (X)	CBLS2VPØØ ( )

REMARKS: Sort all messages output from Program FUNØ18 and FUNØ5Ø to proper sequence for Input to program FUNALL

SIC Table Layout

Columns	Type	Data Description
1 - 4	9(4)	SIC Code
5 - 34	X(30)	SIC Title
35 - 38	X(4)	Filler (spaces)
39 - 45	9(7)	Number of employees this SIC
46 - 55	X(1Ø)	Filler (spaces)
56 - 61	9(6)	Number of employers this SIC
62 - 79	X(18)	Filler (spaces)
80 - 80	X(1)	Card Code Always a (c)

This table is an output of FUNØ23 and is an input to program FUNALL.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Header Information Card Date July 11, 1972

Job Name: Vocational Educational		Source Documents Used:	Estimated Vol.	Est. Time Hours
Job No. FUNALL	Prog. Card No.			

FREQUENCY:
__ Daily __ Monthly
__ Weekly __ Quarterly
__ Bi-Weekly __ Annual
__ Semi-Monthly X Other

Special Instructions:
Punch one card per school

FUNCTION	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X-SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Program control number	1	5	P	Enter Zeros "ØØØØØ"
2. School Name	6	35	PAS	Name of school
3. Not Used	36	79	S	Not Used
4. Card Identification	80	80	D	Always Zero (Ø)
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

HEADER INFORMATION

School Header Card

Column	Type	Data Description
1 - 5	X(5)	Enter "ØØØØØ"
6 - 35	X(3Ø)	School name
36 - 79	X(44)	Filler (spaces)
8Ø - 8Ø	X(1)	Card ID Always "Ø"

This is the first card of the input data.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Resource Requirements (Header Cards) Date April 28, 1972

Job Name: Vocational Education		Source Documents Used: Resource Requirements input documents.	Estimated Vol.	Est. Time
Job No. FUNALL	Prog. Card No.		20	Hours

FREQUENCY:
- __ Daily
- __ Weekly
- __ Bi-Weekly
- __ Semi-Monthly
- __ Monthly
- __ Quarterly
- X Annual
- __ Other

Special Instructions:

Two different cards are punched from the input documents.

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Vocational Education Program Number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not Used	6	6	S	Enter Spaces
3. Sequence Number	7	8	D	Enter Zeros (ØØ)
4. Number of Classes or Periods	9	1Ø	PAS,RNE	
5. 1st Dot Code Trained	11	16	PAS,SNE	
6. Students enrolled in 1st Dot Trained	17	19	PZ,ZNE	
7. 2nd Dot Code trained	2Ø	25	PAS,SNE	
8. Students enrolled in 2nd Dot Trained	26	28	PZ,ZNE	
9. 3rd Dot Code trained	29	34	PAS,SNE	
10. Students enrolled in 3rd Dot Trained	35	37	PZ,ZNE	
11. 4th Dot Code trained	38	43	PAS,SNE	
12. Students enrolled in 4th Dot Trained	44	46	PZ,ZNE	
13. Description or Name of V/E Program	47	77	PAS,SNE	
14. Optimum class Load	78	79	PAS,SNE	
15. Record Identification Code	8Ø	8Ø	D	Enter (1) in all Cards
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

RESOURCE REQUIREMENTS

Program Number Header Card:

CARD COLUMN	TYPE	DATA DESCRIPTION
1 - 5	9(5)	Vocational Education Program Number
6 - 6	X(1)	Filler (Not Used)
7 - 8	9(2)	Sequence no., must be zeros for this card type
9 - 1Ø	9(2)	Classes or Periods for this course
11 - 16	9(6)	1st DOT Code trained in this Voc. Ed. Program
17 - 19	9(3)	Number of Students enrolled in 1st DOT Code
2Ø - 25	9(6)	2nd DOT Code trained in this Voc. Ed. Program
26 - 28	9(3)	Number of Students enrolled in 2nd DOT Code
29 - 34	9(6)	3rd DOT Code trained in this Voc. Ed. Program
35 - 37	9(3)	Number of Students enrolled in 3rd DOT Code
38 - 43	9(6)	4th DOT Code trained in this Voc. Ed. Program
44 - 46	9(3)	Number of Students enrolled in 4th DOT Code
47 - 77	X(3Ø)	Description or Name of Voc. Ed. Program
78 - 79	9(3)	Optimum Class Load
8Ø - 8Ø	X(1)	Record Identification Code, always (1)

See card type (3) for Resource Requirements Detail Requirements for each course.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Detail Requirements Items Cards Date April 28, 1972

Job Name: Vocational Education	Source Documents Used: Resource Requirements input Documents.	Estimated Vol. 20 Per Form	Est. Time Hours
Job No. FUNALL / Prog. Card No.			

FREQUENCY:
- _ Daily
- _ Weekly
- _ Bi-Weekly
- _ Semi-Monthly
- _ Monthly
- X Quarterly
- _ Annual
- _ Other

Special Instructions: Twenty cards are punched from one input form. Punch only those items that are entered.

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Vocational Education Program Number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not Used	6	6	S	ENTER SPACE
3. Item Number	7	8	PAS	May be 01 thru 20 only
4. Not Used	9	1Ø	S	ENTER SPACES
5. Useable Items on hand	11	13	PAS,SNE	
6. Not Used	14	15	S	ENTER SPACES
7. Items Required Per 10 Students **	16	18	PZ,ZNE	Punch Zeros if blank
8. Item Required Per 5Ø Students **	19	21	PZ,ZNE	Punch Zeros if blank
9. Items Required Per 1ØØ Students **	22	24	PZ,ZNE	Punch Zeros if blank
10. Not Used	25	25	S	ENTER SPACE
11. Description of Resource Item	26	79	P,PAS	
12. Record Identification Code	8Ø	8Ø	D	Enter (3)in all cards
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

** Only one of the items required fields may an entry the other two must be punched as zeros.

If more than one entry is made reject the form and return it to the vocational education department.....

RESOURCE REQUIREMENTS

Detail Requirements Items Card

CARD COLUMN	TYPE	DATA DESCRIPTION
1 - 5	9(5)	Vocational education program number
6 - 6	X(1)	Filler (not used)
7 - 8	9(2)	Sequence number, Ø1 through 2Ø only
9 - 1Ø	X(2)	Filler (not used, enter spaces)
11 - 13	9(3)	Usable items on hand
14 - 15	X(2)	Filler (enter spaces)
16 - 18	9(3)	*Items required per 1Ø students
19 - 21	9(3)	*Items required per 5Ø students
22 - 24	9(3)	*Items required per 1ØØ students
25 - 25	X(1)	Filler (not used, enter space)
26 - 79	X(54)	Description of resource item
8Ø - 8Ø	X(1)	Record identification code, always (3)

*Only one entry may be made in "the items required" locations. If a count is in locations 16 through 18, then the other locations 19 through 24 must be punched as zeros.

One card of this type must be punched for each resource item listed on the input form.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Performance Objective (TEACHER) Date May 11, 1972

Job Name: Vocational Education		Source Documents Used:	Estimated Vol.	Est. Time
Job No. FUNALL	Prog. Card No.	Performance Objective Teachers Only.....		Hours

FREQUENCY:
_ Daily _ Monthly
_ Weekly _ Quarterly
_ Bi-Weekly _ Annual
_ Semi-Monthly X Other

Special Instructions:

Punch One card per Objective

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Vocational Education Program Number	1	5	PAS,RNE	W/B (K45Ø1) etc.
2. Not Used	6	6	S	Enter Space
3. Sequence Number	7	8	D	Enter Ø1 in All Cards
4. Not Used	9	18	S	Enter Spaces
5. Objective Number	19	2Ø	PAS,RNE	Ø1 thru 2Ø only
6. Not Used	21	21	S	Enter Space
7. Number of Students Completed Objectiv	22	24	ZNE,PZ	MUST BE ØØØ Thru 999
8. Not Used	25	79	S	Enter Spaces
9. Card Identification Code	8Ø	8Ø	D	Enter "5" in all cards
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

PERFORMANCE OBJECTIVE TEACHER DATA

CARD COLUMN	TYPE	DATA DESCRIPTION
1 - 5	X(5)	Vocational education program number
6 - 6	X(1)	Filler (not used)
7 - 8	9(2)	Sequence number (Ø1) in all cards
9 - 18	X(1Ø)	Filler (not used)
19 - 2Ø	9(2)	Objective number (Ø1 through 2Ø only)
21 - 21	X(1)	Filler (not used)
22 - 24	9(3)	Number of students completed objective
25 - 79	X(55)	Filler (not used)
8Ø - 8Ø	X(1)	Card identification (5) in all cards

This record is used to count the number of students who have completed each objective for each course by course number and objective number.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: PERFORMANCE OBJECTIVE EMPLOYER DATA Date 5-10-72

Job Name: Vocational Education		Source Documents Used: Performance Objective Employer Survey only	Estimated Vol.	Est. Time Hours
Job No. FUNALL	Prog. Card No.			

FREQUENCY:
- _ Daily
- _ Weekly
- _ Bi-Weekly
- _ Semi-Monthly
- _ Monthly
- _ Quarterly
- _ Annual
- X Other

Special Instructions: Punch one card per objective

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Voc. Ed. Program number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not Used	6	6	S	Enter Space
3. Sequence Number	7	8	D	Enter Ø1 in all cards
4. SIC Code	9	12	PAS,RNE	W/B (991Ø etc.)
5. DOT Code	13	18	PAS,RNE	W/B (281.284 etc.)
6. Objective Number	19	2Ø	PAS,RNE	Ø1 thru 2Ø only
7. Not Used	21	21	S	Enter Space
8. Response Code	22	22	PAS,RNE	Maybe (Y or N) only
9. Not Used	23	29	S	Enter Spaces
10. Ever hired an Elk Grove H.S. graduate	3Ø	3Ø	PAS,RNE	(Y or N) only
11. Not Used	31	31	S	Enter Space
12. Have other requirements	32	32	PAS,RNE	Maybe (Y or N) only
13. Not Used	33	79	S	Enter Spaces
14. Card Identification Code	8Ø	8Ø	D	Enter (6) in all cards
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

PERFORMANCE OBJECTIVE EMPLOYER DATA

CARD COLUMN	TYPE	DATA DESCRIPTION
1 - 5	X(5)	Vocational education program number
6 - 6	X(1)	Filler (not used)
7 - 8	9(2)	Sequence number (is Ø1 in all cards)
9 - 12	9(4)	SIC code
13 - 18	9(6)	DOT code
19 - 2Ø	9(2)	Objective number (Ø1 through 2Ø)
21 - 21	X(1)	Filler (not used)
22 - 22	X(1)	Response code (employer agrees or disagrees with requirement (Y or N) are the only valid codes)
23 - 29	X(7)	Filler (not used)
3Ø - 3Ø	X(1)	Employer has hired Elk Grove H.S. graduates for this DOT code (Y or N)
31 - 31	X(1)	Filler (not used)
32 - 32	X(1)	Have other requirements (Y or N)
33 - 79	X(47)	Filler (not used)
8Ø - 8Ø	X(1)	Record identification code (6) in all cards

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Performance Objective Detail Data Date 5-10-72

Job Name: Vocational Education	Source Documents Used: Performance Objectives Punch from Emp. Survey	Estimated Vol.	Est. Time Hours
Job No. FUNALL / Prog. Card No.			

FREQUENCY: _ Daily _ Monthly _ Weekly _ Quarterly _ Bi-Weekly X Annual _ Semi-Monthly _ Other

Special Instructions: This is one of two card types punched from the same form

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X-SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Voc. ed. program number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not used	6	6	S	Enter space
3. Sequence number	7	8	D	Enter ØØ in all cards
4. Not used	9	18	S	Enter spaces
5. Objective number	19	2Ø	PAS	Ø1 through 2Ø only
6. Continuation code	21	21	P	See Note 1:
7. Description of objective	22	79	PAS	Alpha description
8. Card identification	8Ø	8Ø	D	Enter (8) all cards
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

NOTE 1: The description may require up to 9 cards in order to punch all of the information. Continuation cards will be duplicated through column 20.

The first card should have a 1 in column 21.

The second card will have a 2 in column 21.

The third card will have a 3 in column 21.

If more than 9 cards are needed for any objective reject the form.....

PERFORMANCE OBJECTIVE DETAIL DATA CARD LAYOUT

CARD COLUMN	TYPE	DATA DESCRIPTION
1 - 5	X(5)	Vocational education program number
6 - 6	X(1)	Filler (not used) enter spaces
7 - 8	9(2)	Enter zeros (ØØ)
9 - 18	X(1Ø)	Filler (not used) enter spaces
19 - 2Ø	9(2)	Ø1 through 2Ø only (objective number)
21 - 21	9(1)	Sub sequence number (1 through 9)
22 - 79	X(58)	Description of objective
8Ø - 8Ø	X(1)	Record identification code (8)

The description may require up to nine cards. The first card will have (1) in column 21 and the second card will have a (2), etc. Continuation cards will be duplicated through column 2Ø.

ADDED REQUIREMENTS (EMPLOYERS) FUNALL

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Date

Job Name: Vocational Education		Source Documents Used:	Estimated Vol.	Est. Time
Job No. FUALL	Prog. Card No.	EMPLOYER OBJECTIVE ADDED REQUIREMENTS		Hours

FREQUENCY:
__ Daily __ Monthly
__ Weekly __ Quarterly
__ Bi-Weekly __ Annual
__ Semi-Monthly X Other

Special Instructions:

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. Voc. Ed. Program Number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not Used	6	6	S	Enter Space
3. Sequence Number	7	8	D	ENTER 99 inall cards
4. Not Used	9	18	S	Enter Spaces
5. Added Objective Number	19	2Ø	PAS	Ø1 thru 2Ø Only
6. Continuation Code	21	21	p	See Note 1:
7. Description Of Objective	22	79	PAS	Alpha Description
8. Card Identification Code	8Ø	8Ø	D	Enter (9) in all cards
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

NOTE 1: The description may require up to 9 cards in order to punch all of the information. Continuation cards will be duplicated through column 20.

The first card should have a 1 in column 21.

The second card will have a 2 in column 21.

The third card will have a 3 ~~column~~ 21.

If more than 9 cards are needed for any objective reject the form.....

ADDED REQUIREMENTS (EMPLOYER OBJECTIVE)

CARD COLUMNS	TYPE	DATA DESCRIPTION
1 - 5	X(5)	Vocational education program number
6 - 6	X(1)	Filler (not used)
7 - 8	X(2)	Sequence number (99) in all cards
9 - 18	X(1Ø)	Filler (not used)
19 - 2Ø	9(2)	Objective number (Ø1 through 2Ø only)
21 - 21	9(1)	Continuation code (1 through 9 only)
22 - 79	X(58)	Alpha description of requirement
8Ø - 8Ø	X(1)	Card identification code "9" in all cards

These cards are inputs to program FUNALL and they contain the added requirements by vocational education program number.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: Course Instructional Data Card Date 5-23-72

Job Name: FUNALL	Source Documents Used: V.E. department will supply figures	Estimated Vol.	Est. Time Hours
Job No. / Prog. Card No.			

FREQUENCY:
__ Daily __ Monthly
__ Weekly __ Quarterly
__ Bi-Weekly X Annual
__ Semi-Monthly __ Other

Special Instructions:

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. V.E. program number	1	5	PAS,RNE	W/B (KØØ5Ø)
2. Not used	6	6	S	Enter space
3. Sequence control number	7	8	D	Enter (ØØ) in all cards
4. Not used	9	2Ø	S	Enter spaces
5. Instructional days in this course	21	23	PAS,RNE	Number of days in course
6. Date of data	24	26	PAS,RNE	Date data gathered
7. Not used	27	27	S	Enter space
8. Instructor training status (date)	28	43	PAS,P	See Note 1:
9. Not used	44	79	S	Enter spaces
10. Card identification code	8Ø	8Ø	D	Enter (V) in all cards
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

Note 1: Instructor training status is entered as month (alpha) and year. If no data is submitted for 28 - 43 punch "not current"

COURSE INSTRUCTIONAL DATA CARD

COLUMN	TYPE	DESCRIPTION OF DATA
1 - 5	X(5)	Vocational education program number
6 - 6	X(1)	Filler (not used)
7 - 8	9(2)	Sequence control number, will be (ØØ) in all cards
9 - 2Ø	X(12)	Filler (not used)
21 - 23	9(3)	Instructional days in this course
24 - 26	9(3)	Day data was gathered on (Julian day of the school year)
27 - 27	X(1)	Filler (not used)
28 - 43	X(16)	Instructor training status (month and year). If no date is submitted (Not Current) is punched in this field.....
44 - 79	X(36)	Filler (not used)
8Ø - 8Ø	X(1)	Card identification code (V) in all cards

One of these cards is placed at the end of each vocational education program deck.

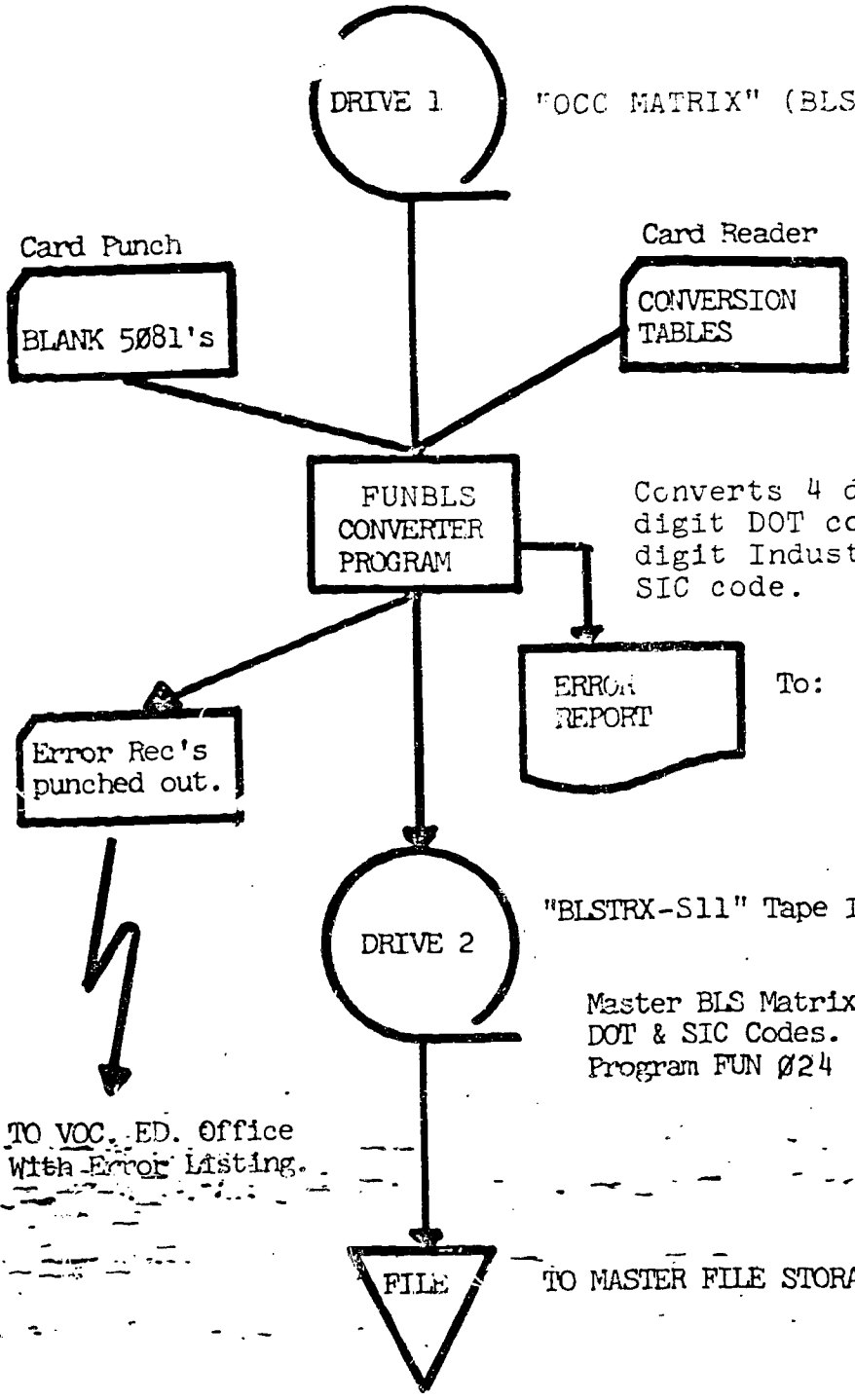
```
PARAMETER CARDS

01  02030405   R01 009000100001¢SS     P 2R     15  D                          S2

008104000106                                                   POPHISTORYPOPDOT-ALL

                  SORT POP-NEEDS HISTORY

INPUT HEADER

1HDR ¢¢¢¢¢      -001 POPHISTORY


:END OF PHASE 01      000120  RECORDS FINAL TAPE    TCU 00 DRV 2¤

:END OF SORT      0000000120  ITEMS   0000 PADDING   000000 DEL ¤
```

```
PARAMETER CARDS

01  02030405   R02 015200010001¢SS     P 2R      5                      S2

001104                                                    VOCEDMESAGFUNALLMESG

               SORT MESSAGE TAPES



INPUT HEADER

1HDR 1HDR 10014-001 VOCEDMESAG     0001020014       2000  E 100700001030014



¦END OF PHASE 01     000116  RECORDS FINAL TAPE    TCU 00 DRV 2¤

¦END OF SOR      0000000116  ITEMS   0000 PADDING   000000 DEL ¤
```

FUNBLS

This job is run once each five years.

This tape is from the U.S. Dept. of Labor, Bureau of Labor Statistics, Washington, D.C.



NOTE: All unmatching DOT & SIC codes will be by-passed by this program. The unmatching records will be listed on the error report and punched into cards, for correction by the Voc. Ed. office.

BLS Matrices 1960-75

Occupational Matrix Data Tape Format

Form

A. The Occupational Matrix tape is a fixed-length, fixed block file comprised of eight 7074 words or seventy-seven 1401/1460 positions.

B. The Blocking Factor = 10.

C. Sequence = Industry by occupation by matrix year.

Magnetic Tape Characteristics

7 - Track
Binary Coded Decimal form
Density - 556 Characters per Inch
Even Parity

Header Label

80 positions, Alpha

Positions	Information
1-4	1 HDR
5-15	Blank
16-19	- 001
20	Blank
21-30	Occ Matrix
31-35	Blank
36-39	- 090
40-45	Blank
46-50	10662
51-80	Blank

Trailer Label

80 positions, Alpha Mode preceded and followed by a Tape Mark

Positions	Information
1-4	1 EOF
5	Blank
6-10	Number of Blocks in File
11-80	Blank

Occupational Matrix Tape Format

7074 Position	1401/1460 Position	Data
	1	(Delta)
0-3	2-5	0005
4-9	6-11	Zeros
10-15	12-17	Industry Code
16	18	Zero
17-20	19-22	Occupational Code
21-29	23-31	Zeros
30	32	"3"
31-32	33-34	Matrix Year
33-39	35-41	Zeros
40-48	42-50	Total Employment
49	51	Zero
50-58	52-60	Ratio of Employment to Total for Occupation (XXX.XXXXXX)
59	61	Zero
60-68	62-70	Ratio of Employment to Total for Industry (XXX.XXXXXX)
69	71	Zero
	72	(Delta)
70-79	73-77	Record Mark Word

Every tenth position signed +

No lEOF on tape

OCCUPATIONAL MATRIX TAPE FORMAT

TAPE I.D. "BLS TRX-S11" BLOCKED BY 5Ø

LOCATION	TYPE	DATA
1 - 6	X(6)	Industry Code
7 - 1Ø	X(4)	Occupational Code (DOT Code)
11 - 12	X(2)	Matrix Year
13 - 21	X(9)	Total Employment
22 - 3Ø	9(3)V(6)	Ratio of employment to Total for Occupation (999V999999)
31 - 39	9(3)V(6)	Ratio of employment to Total for Industry (999V999999)
4Ø - 4Ø	X(1)	Tape Record Identification Code always an (m)

This tape contains the Industry Occupation Employment Matrices for 1960 and 1975.

Sequence is Industry by Occupation by Matrix Year.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: FUNBLS (SIC Code Table) Date 2-3-72

Job Name: VOC. ED. SYSTEM	Source Documents Used:	Estimated Vol.	Est. Time
Job No. FUNBLS / Prog. Card No.	INDUSTRY TITLE LIST TABLE		Hours .30

FREQUENCY:
__ Daily __ Monthly
__ Weekly __ Quarterly
__ Bi-Weekly __ Annual
__ Semi-Monthly XX Other

Special Instructions:
TABLES FOR PROGRAM FUNBLS

FUNCTION	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. INDUSTRY CODE	1	6	PZ,PAS	
2. SIC code	7	1Ø	PZ,PAS	
3.	11	19	S	
4. INDUSTRY TITLES	2Ø	49	PAS	
5.	5Ø	79	S	
6. Card Code	8Ø	8Ø	D	Punch "T" in all cds
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: FUNBLS (DOT Code Table) Date 2-3-72

Job Name: VOC. ED. SYSTEM		Source Documents Used:	Estimated Vol.	Est. Time
Job No. FUNBLS	Prog. Card No.	OCCUPATION TITLE TABLE		Hours

FREQUENCY:
__ Daily __ Monthly
__ Weekly __ Quarterly
__ Bi-Weekly __ Annual
__ Semi-Monthly XX Other

Special Instructions:

TABLE For Program FUNBLS

FUNCTION*	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. DOT CODE	1	4	PAS, PZ	
2. OCCUPATIONAL CODE	5	1Ø	PAS, PZ	
3. INDUSTRY TITLE	11	39	PAS	
4.	4Ø	79	S	
5. Card Code	8Ø	8Ø	D	Punch "0" in all cds
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

SCS DP #20

SORT II PARAMETER SPECIFICATIONS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
0	1			0	2	0	3	0	4	0	5			R	0	1		0	0	4	0	0	0	5	0	0	0	5	0	6	S	S							

40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
		2	R						1	5																													5	2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
2	0	0	7	0	4	0	0	0	1	0	6	0	0	1	1	0	2																								

43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
																		B	L	S	T	R	X	-	0	1	1	B	L	S	T	R	X	-	S	1	1		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
F	U	N	0	2	4			0	0	B	S	O	R	T		B	L	S		D	A	T	A														

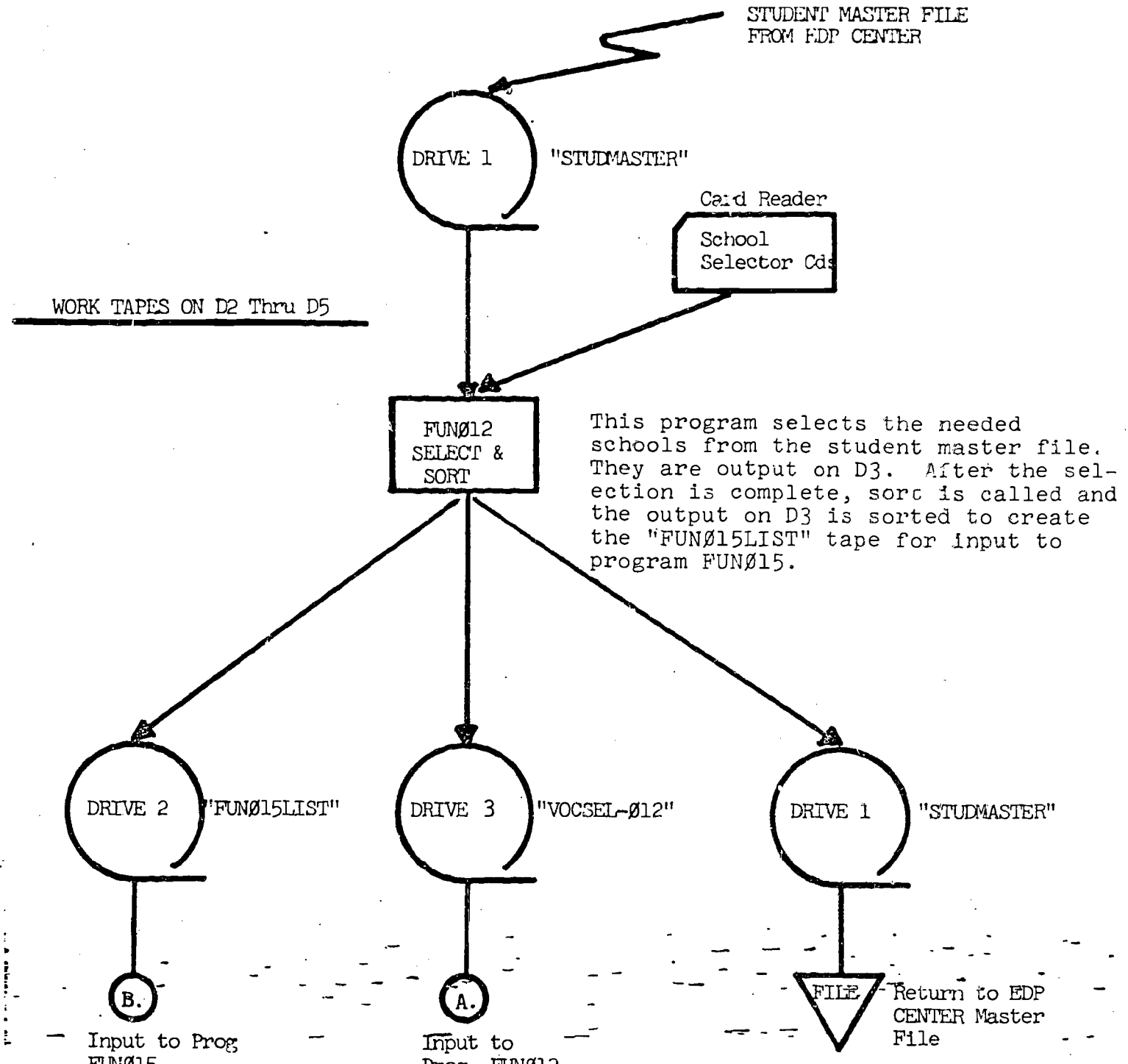
NOTE: IF PARAMETER 3 SPECIFICATIONS ARE NOT USED A BLANK CARD MUST BE PLACED AFTER PARAMETER CARDS 1 & 2.

SORT PROGRAM CALL NAME

AADS2 ØØØ ( )	AADS2FØØØ ( )	AADS2VPØØ ( )
CBLS2 ØØØ ( )	CBLS2FØØ (X)	CBLS2VPØØ ( )

REMARKS: Sort BLS Occupational Matrix Tape to DOT Code and SIC CODE for input to Program FUNØ24 (Sort will call Program FUNØ24 at EOJ)

SELECT & SORT PROGRAM



SEE PROGRAM TACK OUT FOR PROGRAM CONTROL.....

PROGRAM NAME FUNØ12 (Selector & Sort) Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
Jan. 72	Ray Ellis	Voc. Ed. System	

Type Run: Select Schools and Sort for Input to Program FUNØ15

Printer Form: Regular — Part: 1 — LPI: 6

Carriage Tape: Regular — Label Output: N/A

Card Reader Input: Selector Control Cards — Last Card: "1EOF" Columns 1 - 4.

Cardpunch Cardtype: N/A — Label Output: N/A

SSW1 _____ SSW2 _____

SSW3 _____ SSW4 _____

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
"STUDMASTER" *	1		X	Same	Return to EDP
Work Tape	2	X		"FUNØ15LIST"	See Note 1:
Work Tape	3	X		"VOCSEL-Ø12"	See Note 2:
Work Tape	4	X			Scratch
Work Tape	5	X			Scratch

DISK DRIVES

	Switches in Permit

Special Instructions

* Dismount and Hang a Work Tape at end of select routine.

Note 1: After sort is finished the sorted output on D2 is input to program FUNØ15 for punching and listing.

Note 2: At end of select routine this tape is used as input to the sort, after sort it is input to program FUNØ13.

SELECTOR CONTROL CARDS: See selector Control Card layout for punching these cards. "1EOF" for end of file control.

SORT DESCRIPTION

PROGRAM NAME FUNØ12 (SORT)

SOFTWARE NAME CBLS2F (SORT)

MODULES BEING USED 15

FUNCTION: SORT SELECTED DATA

This sort is called at the end of job in program FUNØ12 to sort the selected Student Data for input to program FUNØ15.

Data is sorted to School Number, Record Identification and Student name.

SEQUENCE OF SORT:

	FIELD NAME	SIZE	LOCATION	TYPE
1.	School Number	X(8)	1 - 8	Numeric
2.	Record I.D.	X(1)	175 - 175	Alpha
3.	Student Name	X(2Ø)	19 - 38	Alpha
4.				
5.				
6.				
7.				

INPUT TYPE/NAME "VOCSEL-Ø12"

RECORD SIZE 175 BLOCK SIZE 1Ø

RECORD DESCRIPTION Student History File

DISPOSITION Input to program FUNØ13 after sorting.

OUTPUT NAME "FUNØ15LIST"

RECORD SIZE 175 BLOCK SIZE 1Ø

RECORD DESCRIPTION Selected student data for program FUNØ15

DISPOSITION Input to program FUNØ15 to punch mark sense cards and list.

NEXT PROGRAM CALLED FUNØ15 DIRECTION OF SEARCH Forward

STUDENT MASTER FILE

Positions	Description	Number of Characters
1 - 8	School I.D.	8
(1-2)	County Code	(2)
(3-5)	District Code	(3)
(6-8)	School Code	(3)
9 - 18	Student I.D. Number	10
(9)	Alpha	(1)
(10-18)	Numeric	(9)
19 - 21	Filler	3
22 - 31	Filler	10
32 - 51	Student Name	20
52 - 71	Street Ddress	20
72 - 86	City Name	15
87 - 91	Zip Code	5
92	Student Sex	1
93 - 94	Student Grade Level	2
95 - 109	Filler	15
110 - 114	Birthday	5
(110)	Month	(1)
(111-112)	Day	(2)
(113-114)	Year	(2)
115 - 533	Filler	419
Total number of characters		533

STUDENT MASTER HEADER RECORD

LOCATION	SIZE	DATA
1 - 8	X(8)	School Identification Number
9 - 168	X(160)	Filler, not used
169 - 169	X(1)	Attendance Period
170 - 184	X(15)	School District Name
185 - 199	X(15)	School Name
2ØØ - 2Ø5	X(6)	Report Options Codes (1) Intermediate Marks, in location 2ØØ only (2) Not Enrolled, in location 2Ø1 only (3) Attendance Data, in location 2Ø2 only (4) Variable Credits, in location 2Ø3 only (5) Plus (+) or Minus (-) in location 2Ø4 only (6) Repeat Code, in location 2Ø5 only (¢) High-Values = on, may be in any location
206 - 269	X(64)	Filler, not used
27Ø - 271	X(2)	Attendance Month
272 - 291	X(2Ø)	School Address
292 - 311	X(2Ø)	Calendar Month 1
312 - 311	X(2Ø)	Calendar Month 2
332 - 351	X(2Ø)	Calendar Month 3
352 - 371	X(2Ø)	Calendar Month 4
372 - 391	X(2Ø)	Calendar Month 5
392 - 411	X(2Ø)	Calendar Month 6
412 - 431	X(2Ø)	Calendar Month 7
432 - 451	X(2Ø)	Calendar Month 8
452 - 471	X(2Ø)	Calendar Month 9
472 - 491	X(2Ø)	Calendar Month 10
492 - 511	X(2Ø)	Calendar Month 11
512 - 531	X(2Ø)	Calendar Month 12
532 - 532	X(1)	Ethnic Code
533 - 533	X(1)	Room Code

TAPE I.D. "FUNØ15LIST"

LOCATION	TYPE	DATA
1 - 8	X(8)	School Identification Number
9 - 18	X(1Ø)	Student Identification Number
19 - 38	X(2Ø)	Student Name
39 - 58	X(2Ø)	Student Address (Street)
59 - 73	X(15)	City Name
74 - 78	X(5)	Zip Code
79 - 79	X(1)	Student Sex
8Ø - 81	X(2)	Student Grade Level
82 - 91	X(1Ø)	Student Phone Number
92 - 96	X(5)	Student Birthday Month/Day/Year - X/XX/XX
97 - 1Ø8	X(12)	Birth Place (State or County)
1Ø9 - 128	X(2Ø)	Name of Parent or Guardian
129 - 148	X(2Ø)	Emergency Contact (Person or Street Address)
149 - 158	X(1Ø)	Emergency Phone Number
159 - 159	X(1)	Ethnic Code
16Ø - 173	X(14)	Counselor's Name
174 - 174	X(1)	Filler
175 - 175	X(1)	Record Identification code always (S) for Student Records.

This tape is output from program FUNØ12.

It is input to program FUNØ15 to list and punch the Voc. Ed. mark sense cards.

This tape may be input to program FUNØ13 for sorting to master file sequence.

SELECTOR CONTROL CARDS

COLUMNS	ENTER
1 - 8	School numeric identification
9 - 1Ø	Spaces
11 - 12	Numeric grade to be selected
13 - 14	Next grade for selection
15 - 16	Next grade for selection
17 - 18	Last grade for selection
19 - 8Ø	Spaces

Note: If no grades are entered in columns 11 through 18 all grades for that school will be selected from the Student Master File.

Only one selector control card may be used per school.

A maximum of 1Ø ten selector control cards per run.

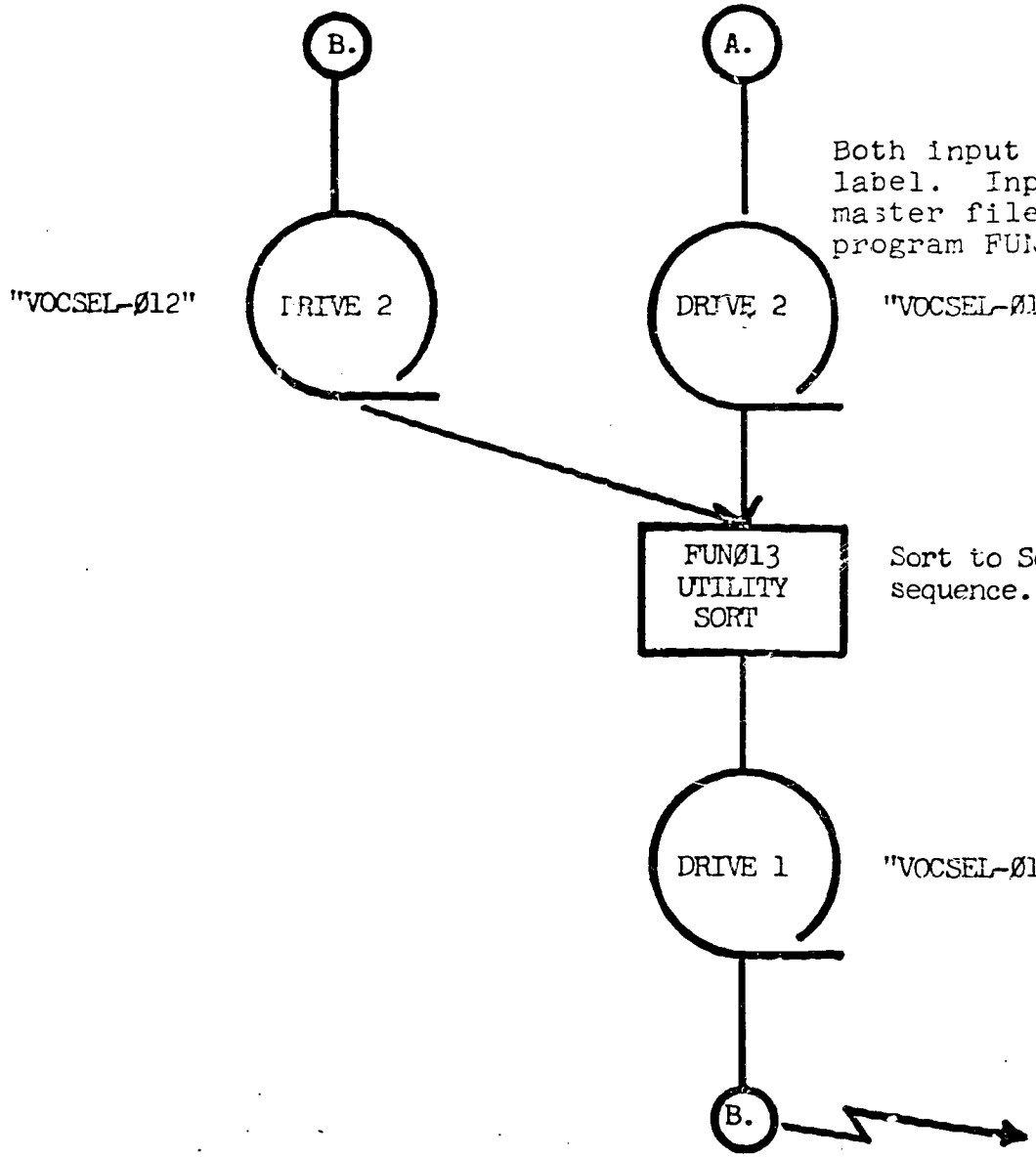
These cards are input to program FUNØ12 for selecting student data to punch in mark sense cards.

LOCATION	SIZE	DATA
1 - 8	X(8)	School Numeric Identification
9 - 23	X(15)	School District Name
24 - 38	X(15)	School Name
39 - 58	X(2Ø)	School Address
59 - 174	X(116)	Filler Data (not used)
175 - 175	X(1)	Record Identification Code (H) in all header records.

This is the header record information on tapes "VOCSEL-Ø12" and "FUNØ15LIST".

This data is extracted from the "STUDMASTER" tape file in program FUNØ12.

(MASTER STUDENT FILE SORT)



JANUARY 2Ø, 1972 (rde)

PROGRAM NAME FUNØ13 (SORT) Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
Jan. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Tape Sort

Printer Form: Regular | Part: 1 | LPI: 6

Carriage Tape: Regular | Label Output: N/A

Card Reader Input: N/A | Last Card:

Cardpunch Cardtype: N/A | Label Output:

SSW1: | SSW2:

SSW3: | SSW4:

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X		Save
Work Tape	1	X		"VOCSEL-Ø12"	History File
"VOCSEL-Ø12" **	2		X	Same	Back Up Tape
Work Tape	3	X			SCRATCH
Work Tape	4	X			SCRATCH
Work Tape	5	X			SCRATCH

DISK DRIVES

	Switches in Permit

Special Instructions

** There may be more than one reel of input to this program, the sorted output is the Student Master File by School Number and Student Number.

SEE SYSTEM FLOW CHARTS AND PROGRAM CONTROL

SORT DESCRIPTION

PROGRAM NAME FUNØ13 (SORT)

SOFTWARE NAME (CBLS2F)

MODULES BEING USED 15

FUNCTION: SORT STUDENT MAS

Sort Student Master File to School and Student Number file sequence.

SEQUENCE OF SORT:

	FIELD NAME	SIZE	LOCATION	TYPE
1.	School Number	X(3)	6 - 8	Alpha
2.	Student Number	X(1Ø)	9 - 18	Alpha
3.				
4.				
5.				
6.				
7.				

INPUT TYPE/NAME "VOCSEL-Ø12"

RECORD SIZE 175 BLOCK SIZE 1Ø

RECORD DESCRIPTION Student Master File

DISPOSITION Backup to output tape on drive 1.

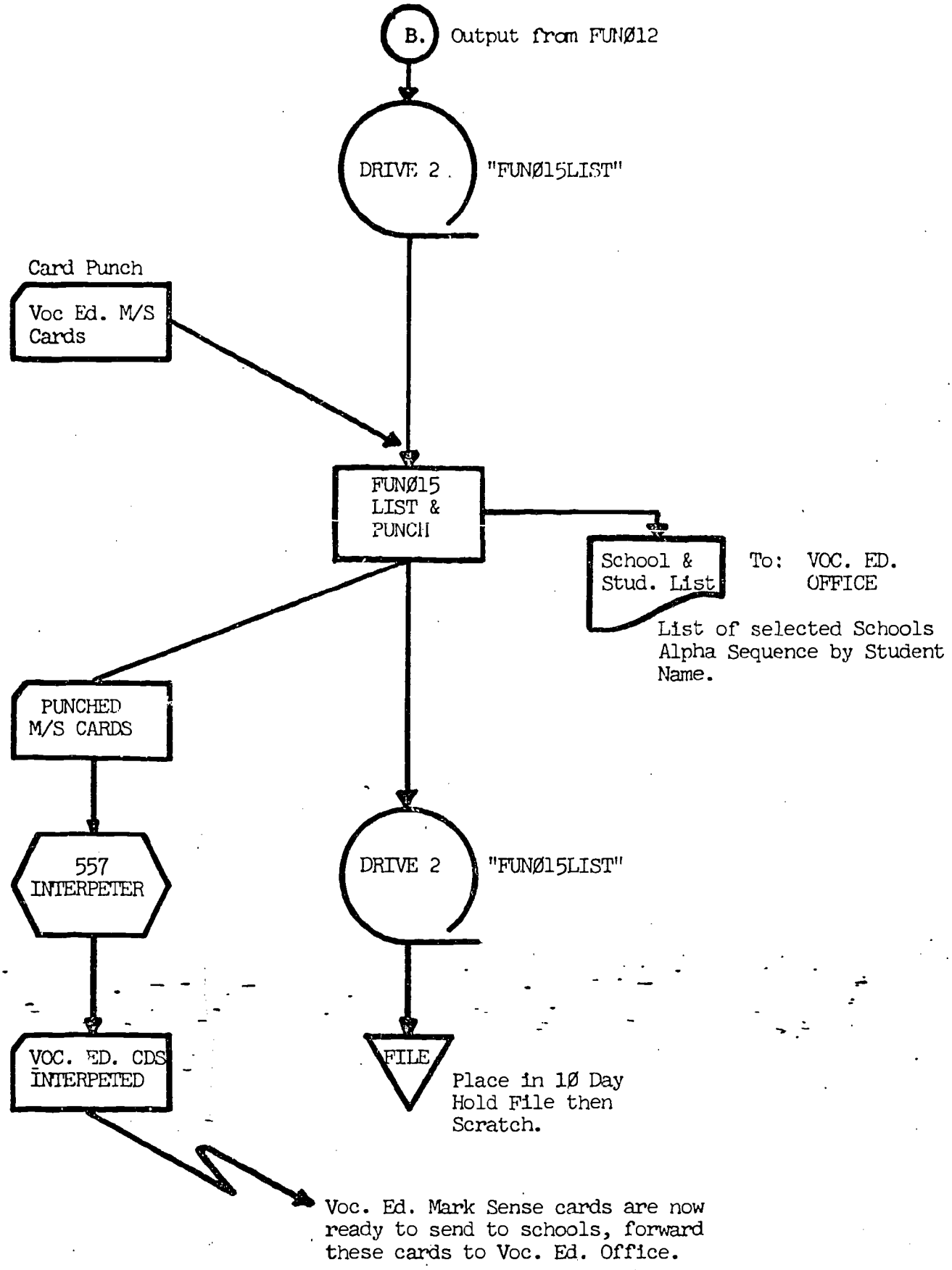
OUTPUT NAME "VOCSEL-Ø12"

RECORD SIZE 175 BLOCK SIZE 1Ø

RECORD DESCRIPTION Student Master File

DISPOSITION New student master file, to master file storage

NEXT PROGRAM CALLED FUNØ14 DIRECTION OF SEARCH Forward


B.
Output from FUN012
DRIVE 2
"FUN015LIST"
Card Punch
Voc Ed. M/S Cards
FUN015 LIST & PUNCH
School & Stud. List
To: VOC. ED. OFFICE
List of selected Schools Alpha Sequence by Student Name.
PUNCHED M/S CARDS
557 INTERPETER
DRIVE 2
"FUN015LIST"
VOC. ED. CDS INTERPETED
FILE
Place in 10 Day Hold File then Scratch.
Voc. Ed. Mark Sense cards are now ready to send to schools, forward these cards to Voc. Ed. Office.

PROGRAM NAME FUNØ15 (Punch & List) Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
Jan. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Card Punch & List

Printer Form: Regular Part: 1 LPI: 6

Carriage Tape: Regular Tape Label: N/A

Card Reader Input: N/A Last Card: N/A

Cardpunch Cardtype: Blank mark sense cards Label Output: SEE NOTE 1

SSW1 _____ SSW2 _____

SSW3 _____ SSW4 _____

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
	1				
"FUNØ15LIST" *	2		X	Same	1Ø day file
	3				
	4				
	5				

DISK DRIVES

		Switches in Permit

Special Instructions

NOTE 1: Punched Mark Sense Cards go to 557 for interpreting. Use 6Ø-6Ø Panel. Upper line only.

* The input tape is output from Program FUNØ12 Drive 2 after sort.

VOCATIONAL EDUCATION DATA GATHERING MARK SENSE CARD

COLUMNS	DATA	DESCRIPTION
1 - 3	X	ol Identification (last 3 characters only)
4 - 4	X(1)	Filler, space
5 - 14	X(1Ø)	Student Identification Number
15 - 34	X(2Ø)	Student Name (last name, first name, middle initial)
35 - 8Ø	X(46)	Filler, space

These mark sense cards are punched by program FUNØ15.

They go to the 557 interpreter for interpreting on the 6Ø-6Ø panel, upper line only.

Forward to Voc. Ed. office for distribution.

VOCATIONAL EDUCATION DATA GATHERING MARK SENSING CARD

MARK SENSE COLUMN	CARD PUNCH	MARK SENSE POSITION	DATA
2	Ø	197Ø	The year student was last counseled.
2	1	1971	
2	2	1972	
2	3	1973	
2	4	1974	
2	5	1975	
2	6	1976	
2	7	1977	
2	8	1978	
2	9	1979	
3	Ø	Sept.	The month student was last counseled by counselor.
3	1	Oct.	
3	2	Nov	
3	3	Dec.	
3	4	Jan.	
3	5	Feb.	
3	6	Mar.	
3	7	Apr.	
3	8	May	
3	9	June	

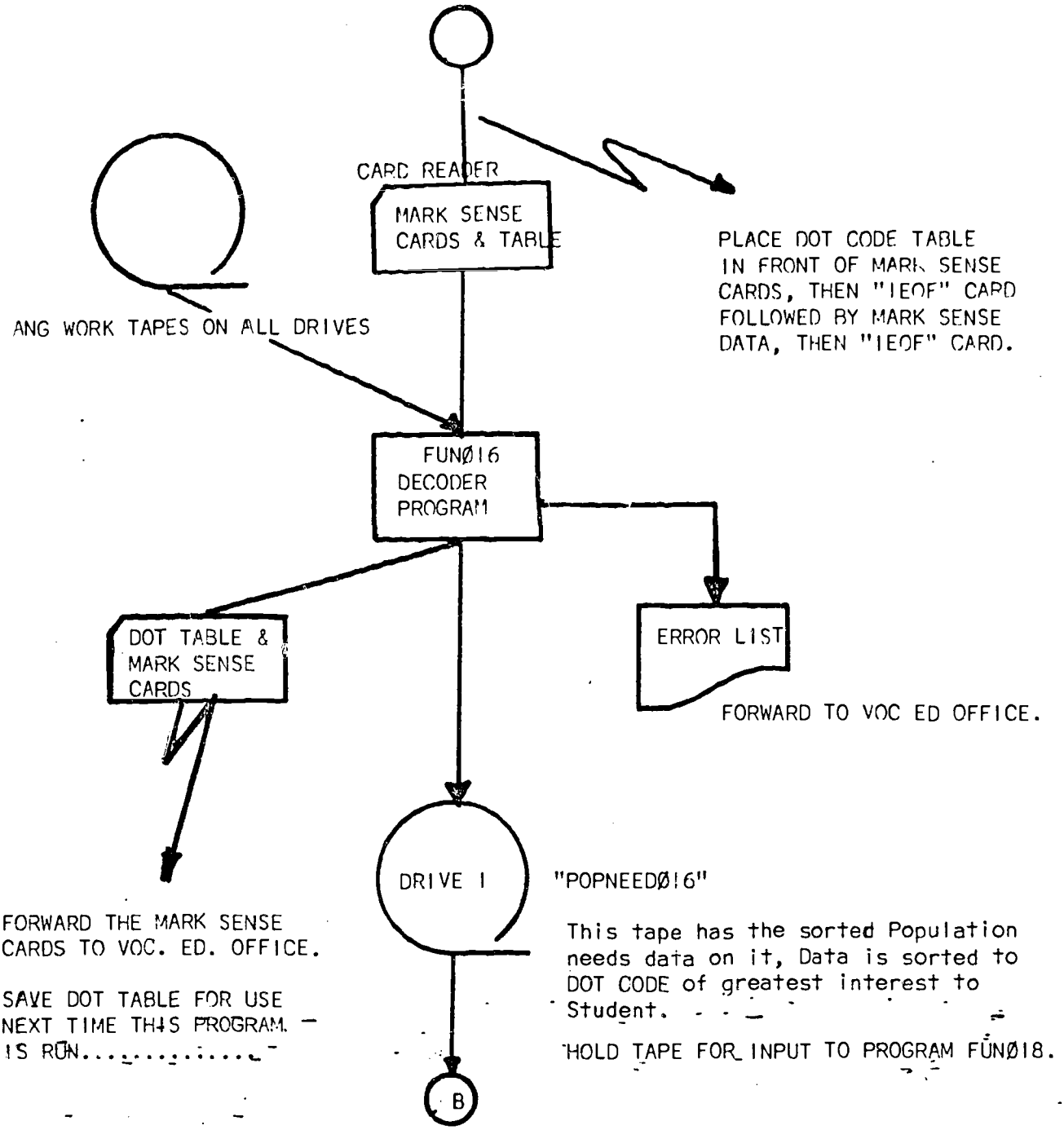
MARK SENSE COLUMN	CARD PUNCH	MARK SENSE POSITION	DATA
4	9	Dropped	Student has dropped out of school
5	11	Yes	Student has dropped out of a V.E. program and is now back in a V.E. program
6	11	No	Student has NOT DROPPED out of a V.E. program
5	5	None	In how many V.E. programs has student been enrolled
6	5	One	Student has been enrolled in one (1) V.E. program
5	8	Two	Student has been enrolled in two (2) V.E. programs
6	8	Three or more	Student has been enrolled in three or more V.E. programs
7	Ø	Yes	Student intentions after grade 12 is to train for a job
7	4	Yes	Student is undecided about intentions after grade 12
7	8	Military	Student will enter the military service after grade 12
8	Ø	Yes	Student will enter college within one year after grade 12
8	4	Yes	Student will try and find a job after grade 12
8	8	Other	Student will enter government service other than military.

MARK SENSE COLUMN	CARD PUNCH	MARK SENSE POSITION	DATA
10	Ø thru 9	Ø thru 9	First digit of DOT code
11	Ø thru 9	Ø thru 9	Second digit of DOT code
12	Ø thru 9	Ø thru 9	Third digit of DOT code
13	Ø thru 9	Ø thru 9	Fourth digit of DOT code
14	Ø thru 9	Ø thru 9	Fifth digit of DOT code
15	Ø thru 9	Ø thru 9	Sixth digit of DOT code
18	Ø	Yes	Student has a Physical Handicap
18	4	Yes	Student has an Academic Handicap
18	8	Yes	Student has a Socio-economic Handicap
19	Ø	Yes	Student has used the VIEW machine this school year
21	Ø	No	Student has NOT used the VIEW machine this school year
19	4	Career	Students last counseling was for career counseling only
21	4	Other	Students last counseling was other than career counseling
19	8	Yes	Special Survey Question answered Yes
21	8	No	Special Survey Question answered No

MARK SENSE COLUMN	CARD PUNCH	MARK SENSE POSITION	DATA
22	Ø thru 9	Ø thru 9	First digit of DOT code
23	Ø thru 9	Ø thru 9	Second digit
24	Ø thru 9	Ø thru 9	Third digit
25	Ø thru 9	Ø thru 9	Fourth digit
26	Ø thru 9	Ø thru 9	Fifth digit
27	Ø thru 9	Ø thru 9	Sixth digit

Mark Sense Columns 2[illegible] through 27 contain the DOT code of the area of greatest interest [illegible] student. If no DOT code is entered zeros are inserted by the computer.

VOC ED MARK SENSE CARD DECODER PROGRAM



NO PROGRAM CALL IS GIVEN AT END OF JOB.....

If the error listing has been checked the output tape is input to program FUNØ18. If corrected cards are rerun this program, if they do this all other previous data is void.

PROGRAM NAME FUNØ16 Page 1 of 1 pages

Date	Programmer	System	Apx Run Time
Mar. 72	Ray Ellis	Voc. Ed. System	

Type Run: Card to Tape and Sort

Printer Form: Regular | Part: 1 | LPI: 6

Carriage Tape: Regular | Label Output: Error List of M/S Cards

Card Reader Input: SEE NOTE 1: | Last Card: "1EOF" Columns 1 thru 4.

Cardpunch Cardtype: N/A | Label Output: N/A

SSW1: | SSW2:

SSW3: | SSW4:

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X		Save
Work Tape	1	X		"POPNEEDØ16"	To Prog. FUNØ18
Work Tape	2	X			SCRATCH
Work Tape	3	X		"MSDATA-Ø16"	Input to Sort
Work Tape	4	X			SCRATCH
Work Tape	5	X			SCRATCH

DISK DRIVES

	Switches in Permit

Special Instructions

NOTE 1: Cards are input as follows:

1. DOT code table in sequence by DOT code, last card is a "1EOF" for EOF.
2. V.E. Mark Sense cards, use a "1EOF" for last card End of File.

Drive 3 "MSDATA-Ø16" is scratched after sort is finished.....

Tape Identification "POPNEEDØ16"

10 Records per block, 59 Characters per record

Population Needs Mark Sense Data Base, this tape is input to program FUNØ18, it is in sequence by location 49 through 54.

LOCATION	TYPE	DESCRIPTION
1 - 3	9(3)	School Number
4 - 13	X(1Ø)	Student Number
14 - 33	X(2Ø)	Student Name
34 - 35	9(2)	Year Student was last counselled
36 - 36	X(1)	Month student was last counselled (Ø - 9) 0 = Sept., 1 = Oct., etc., 9 = June
37 - 37	X(1)	Dropped school Code (Y=Yes, N=No, Space=No reponse)
38 - 38	X(1)	Student intentions after grade 12. 1=will train for a job 2=will enter college within 1 year 3=student is undecided; assume if no mark 4=will try to find a job 5=will go into govt. service (MILITARY) 6=will go into govt. service (OTHER) Space=No response
39 - 44	X(6)	DOT Code, matching job after grade 12, this DOT Code is related to the V.E. training received.
45 - 45	X(1)	Has Handicap that prevents success in V.E. Prog. 1=Yes has a physical handicap 2=Yes has an academic handicap 3=Yes has a socio-economic handicap Space=No response
46 - 46	X(1)	Used VIEW Machine this year Y=Yes N=No Space=No response
47 - 47	X(1)	Last Counselling was for C=Career O=Other Space=No response
48 - 48	X(1)	Special Survey Question Y=Yes N=No Space=No response

LOCATION	TYPE	DESCRIPTION
49 - 54	9(6)	DOT Code of area of greatest interest to student
55 - 55	X(1)	Has dropped out of V.E. program but is now back in the program Y=Yes N=No Space=No response
56 - 56	X(1)	How many V.E. programs has student been enrolled Ø=None 1=One 2=Two 3=Three or more space=No response
57 - 58	X(2)	Grade of student: 10, 11, 12
59 - 59	X(1)	Record I.D. (*)

INSTRUCTIONS

JOB NAME: Punch Voc. Ed. M/S

JOB NO. Card 5

CTRL. PANEL NO. OPERATION NAME: Voc. Ed. M/S

OP. CODE: Panel

FREQUENCY:

- DAILY
- WEEKLY
- BI WEEKLY
- SEMI MONTHLY
- MONTHLY
- QUARTERLY
- ANNUALLY
- OTHER

DUE-IN		DUE OUT	
TIME	DATE	TIME	DATE
When Rec.		As AP	

ESTIMATED VOLUME: 1,000

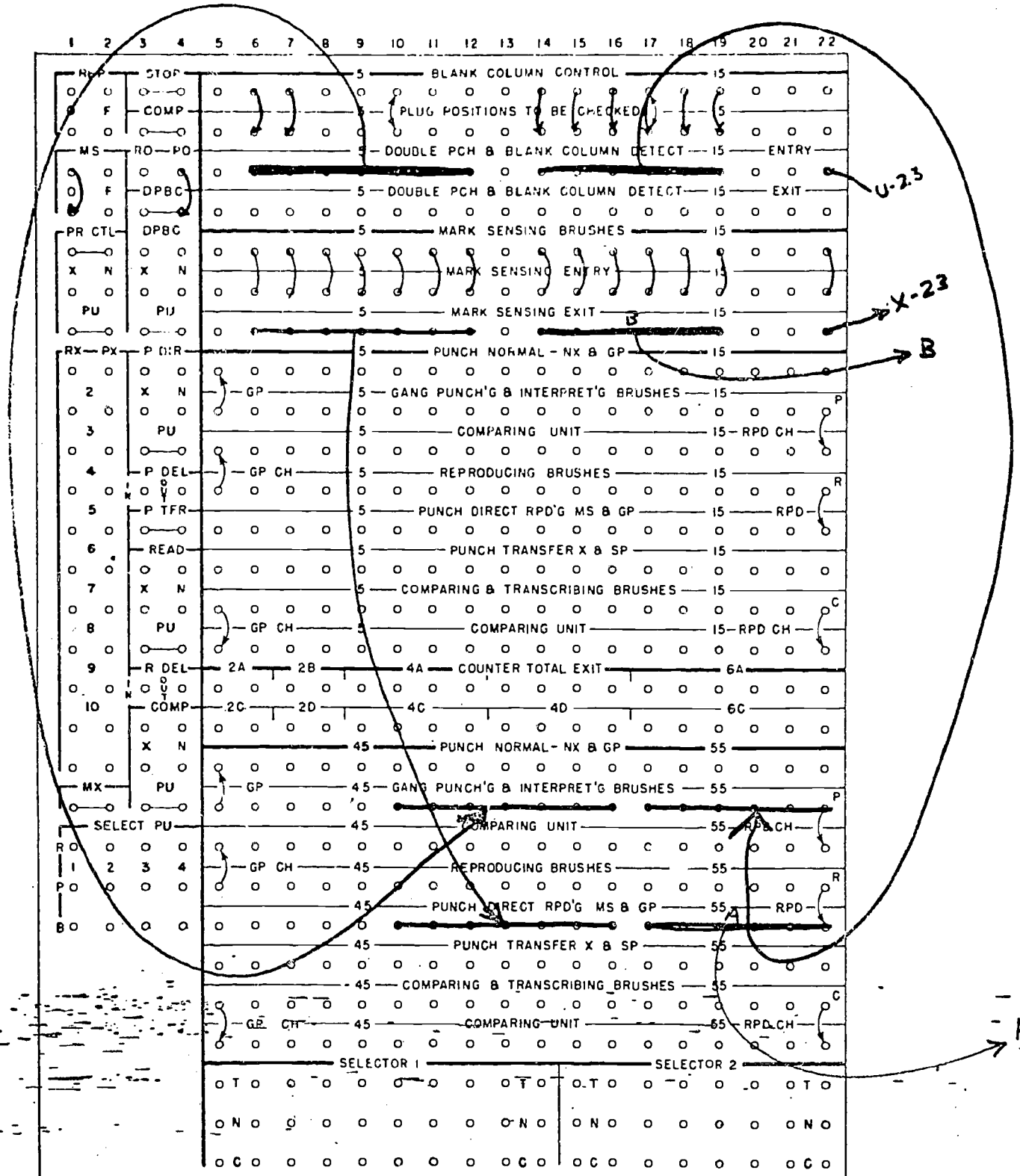
ESTIMATED TIME: HOURS TENTHS

CARDS USED: Voc. Ed. Cards

RECEIVED FROM: Voc. Ed.

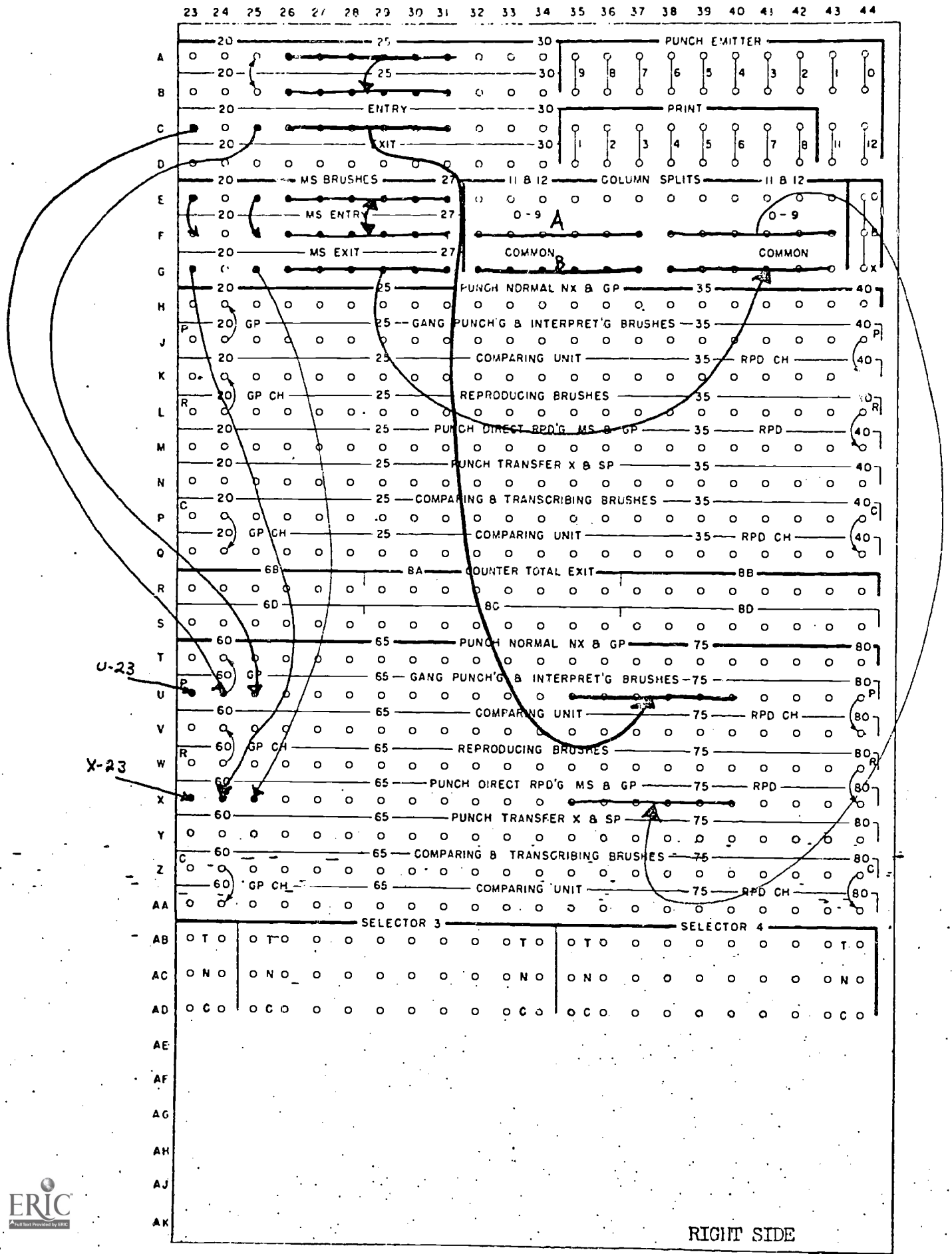
OPERATION

- [ ] REPRODUCE
- [ ] GANG PUNCH
- [ ] DPBCD
- [ ] COMPARE
- [ ] INTERSPERSED G. P.
- [ ] END PRINT
- [ ] SUMMARY PUNCH
- [X] M. S. PUNCH



519 DOCUMENT-ORIGINATING MACHINE
CONTROL PANEL

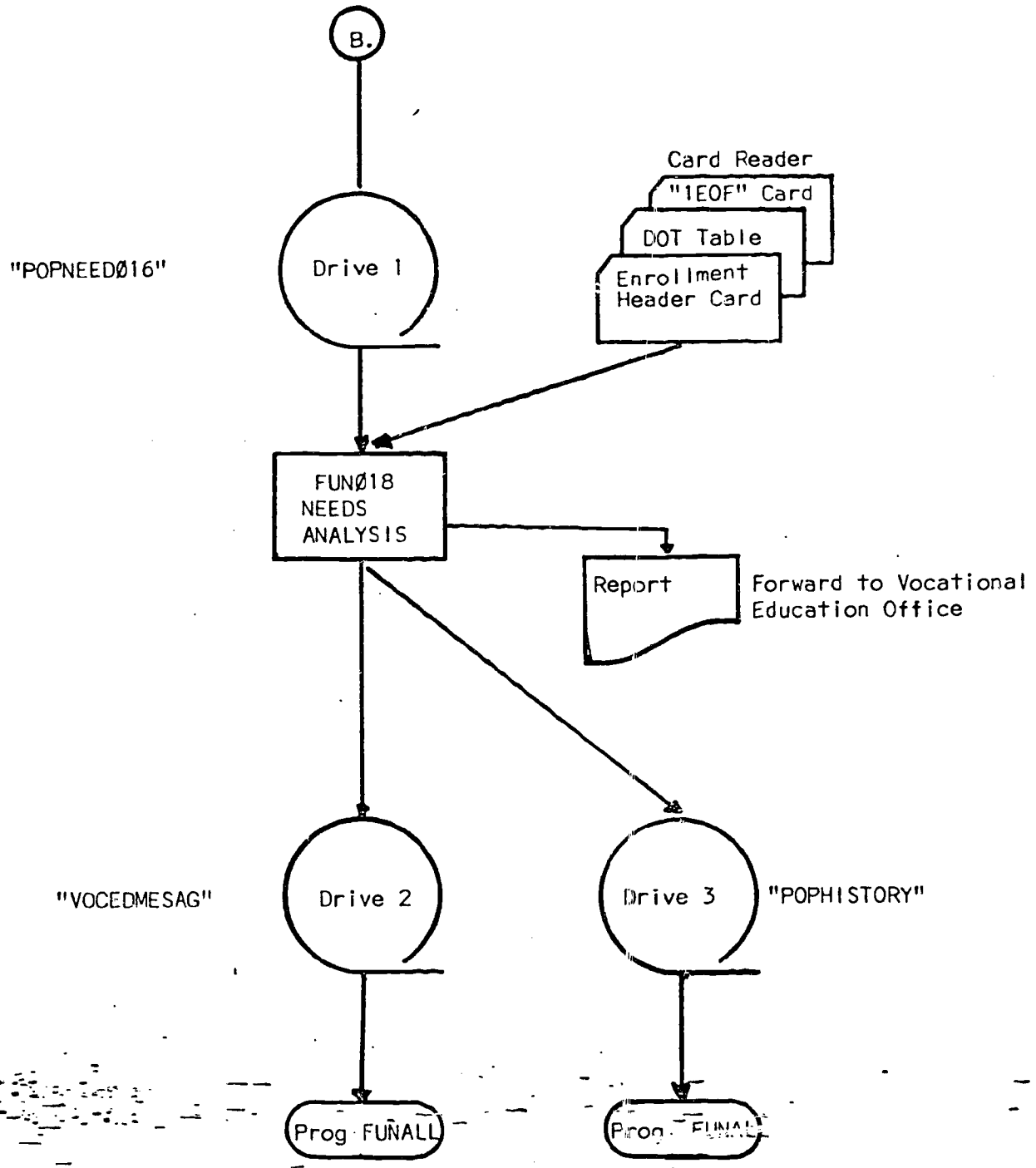
LEFT SIDE


23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
PUNCH EMITTER
9 8 7 6 5 4 3 2 1 0
PRINT
1 2 3 4 5 6 7 8 11 12
ENTRY
EXIT
MS BRUSHES
MS ENTRY
MS EXIT
11 & 12 COLUMN SPLITS
11 & 12
0 - 9
A
COMMON
B
0 - 9
COMMON
PUNCH NORMAL NX & GP
GP
GANG PUNCH'G & INTERPRET'G BRUSHES
COMPARING UNIT
RPD CH
GP CH
REPRODUCING BRUSHES
PUNCH DIRECT RPD'G MS & GP
RPD
PUNCH TRANSFER X & SP
COMPARING & TRANSCRIBING BRUSHES
COUNTER TOTAL EXIT
6B
8A
8B
6D
8C
8D
PUNCH NORMAL NX & GP
GANG PUNCH'G & INTERPRET'G BRUSHES
COMPARING UNIT
RPD CH
REPRODUCING BRUSHES
PUNCH DIRECT RPD'G MS & GP
RPD
PUNCH TRANSFER X & SP
COMPARING & TRANSCRIBING BRUSHES
SELECTOR 3
SELECTOR 4
U-23
X-23
RIGHT SIDE

519 Mark Sense card punching instructions:

Mark Sense Location	Card Column
2	46
3	47
4	48
5	49
6	5Ø
7	51
8	52
1Ø	53
11	54
12	55
13	56
14	57
15	58
18	59
19	6Ø
21	61
22	71
23	72
24	73
25	74
26	75
27	76

POPULATION NEEDS ANALYSIS PROGRAM



Drive 2 & 3 are input to sorts before being processed by Program FUNALL, See program for sort instructions...

File "POPNEEDØ16" input tape in the History file.

PROGRAM NAME FUNØ18 Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
May 72	HCR	Voc. Ed. System	
Type Run	Tape to Tape		

Printer Form: Regular | Part: 1 | LPI: 6
Carriage Tape: Regular | Label Output: Population Needs Analysis Report

Card Reader Input: *See Note 2 | Last Card: "1EOF" Columns 1 through 4

Cardpunch Cardtype: N/A | Label Output: N/A

SSW1: | SSW2:
SSW3: | SSW4:

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X		Leave mounted
"POPNEEDØ16"	1		X	Same	History file
Work Tape	2	X		VOCEDMESAG	To sort FUNALL
Work Tape	3	X		"POPHISTORY"	To FUNALL
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

1. Run under monitor 'Q'
2. Deck Setup
   A. School header ('H' in cc 80)
   B. DOT code table and enrollment in order cc 1 - 6 ('E' in cc 80)
3. No program call is given at end of job

DOT CODE ENROLLMENT CARD

COLUMN	TYPE	DESCRIPTION
1 - 6	999V999	DOT Code
7 - 36	X(3Ø)	DOT Title
37 - 59	X(23)	Filler (Spaces)
6Ø - 63	9(4)	Number of students enrolled in this DOT Code for school being processed (actual count)
64 - 69	X(6)	Filler (Spaces)
7Ø - 73	9(4)	Enrollment count (Number of students enrolled in this DOT Code area wide)
74 - 79	X(6)	Filler (Spaces)
8Ø - 8Ø	X(1)	Card Identification Code (E)

This table is in sequence by DOT Code

Header record on tape identification "POPNEEDØ16"

Blocked by 1Ø, 59 characters per block

LOCATION	TYPE	DESCRIPTION
1 - 13	X(13)	Filler of spaces
14 - 43	X(3Ø)	Filler of (Total records written count)
44 - 48	9(5)	Record written, number of mark sense cards processed
49 - 58	X(1Ø)	Filler of spaces
59 - 59	X(1)	Record identification code (A)

This record is sorted to the front of tape "POPNEEDØ16"

This tape is output from program FUNØ16, it is input to program FUNØ18

Tape identification is "POPHISTORY"

Record contains 9Ø characters

Blocked by 1

LOCATION	TYPE	DESCRIPTION OF DATA
1 - 6	X(6)	DOT code
7 - 36	X(3Ø)	Title - Title of DOT code
37 - 4Ø	9(4)	Students in training for this DOT code (labor market area)
		All counts from location 41 through 84 are Inferred Counts
41 - 44	9(4)	Category "A" - College training within one year
45 - 48	9(4)	Category "B" - Any student intention other than (Category "A")
49 - 52	9(4)	Category "C-1" - Have a Physical handicap
53 - 56	9(4)	Category "C-2" - Have an Academic handicap
57 - 6Ø	9(4)	Category "C-3" - Have a Socio-economic handicap
		Indicate work after high school but are not enrolled in a vocational education program or have never been enrolled and do not intend to go to college.
61 - 64	9(4)	Category "B"
65 - 68	9(4)	Category "C-1"
69 - 72	9(4)	Category "C-2"
73 - 76	9(4)	Category "C-3"
77 - 8Ø	9(4)	Students who have not taken a vocational education class - All category ("A" & "B")
81 - 84	9(4)	Total of location 41 - 44 and 45 - 48 (Categories "A" and "B")
85 - 88	9(4)	Students in training in this DOT code at this school
89 - 89	X(1)	Training code: (O)=Over training in this DOT code; (U)=Under training in this DOT code; (E)=Training is O.K. for this DOT code
9Ø - 9Ø	X(1)	Record identification code (@) symbol

This tape is output from program FUNØ18, it is input to program FUNALL after sorting. See program FUNALL for processing of this data.....

Tape identification is "VOCEDMESAG"

Record contains 152 characters

Blocked by 1

LOCATION	TYPE	DESCRIPTION OF DATA
1 - 1Ø	X(1Ø)	Program number (will be set to high-values)
11 - 11	X(1)	Function use code (C) = Print in Placement Function (P) = Print in Promotion Function (R) = Print in Counseling Function (S) = Print in Evaluation of Counseling (W) = Print in Needs Survey Data (Z) = Print in Follow-up Questionnaire
12 - 14	9(3)	Sequence control line number
15 - 146	X(132)	Message to be printed on report
147 - 152	X(6)	Program I.D. that created this message

This tape is sorted on locations 11 through 14 before being input to program FUNALL for processing.

CARD PUNCHING OR VERIFYING INSTRUCTIONS

CARD NAME: School/District Enrollment Header Date 5/72

Job Name: Vocational Education	Source Documents Used:	Estimated Vol.	Est. Time Hours
Job No. FUN 18 / Prog. Card No.			

FREQUENCY
- Daily
- Weekly
- Bi-Weekly
- Semi-Monthly
- Monthly
- Quarterly
- Annual
- Other

Special Instructions:

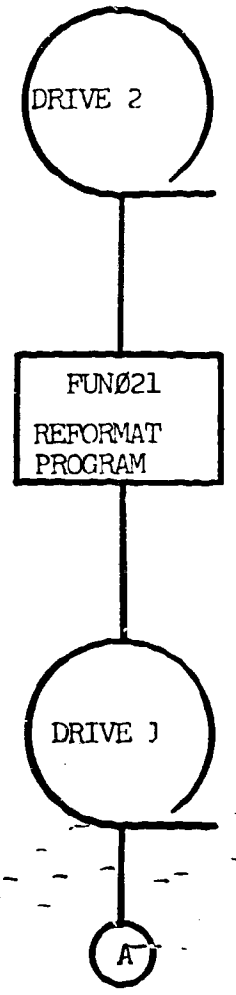
FUNCTION	SYMBOL
DUPLICATE	D
PUNCH	P
SKIP	S
X SKIP	XS
VERIFY	V
SELF NO CK	CK

Card Field	Columns From	Columns To	Function	Remarks
1. School or District name	1	15	LJ	
2. Enrollment count	16	20	RJ, PZ	
3. Card code	80	80		'H' Always
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
Total Key Strokes Per Card --			Section	Page

PROGRAM FUNØ21

The input is purchased from HRD (202 report) it lists the number of employees for each month in a quarter, the SIC code is the location of the employees.

When an ES 2Ø2 tape is received from the state of California, it must be passed through this program before it is processed by any other program within this system.



"ES-2Ø2 BCD" From State of California

THIS PROGRAM REFORMATS THE 2Ø2 DETAIL DATA TO PROPER FORMAT FOR INPUT TO CONVERTER PROGRAM FUNØ23.

"ES2Ø2-DATA" Reformated ES-2Ø2 data tape ready for input to Program FUNØ23

PROGRAM NAME FUNØ21 Page ____ of ____ pages

Date	Programmer	System	Apx Run Time
Jan. 72	Ray Ellis	Voc. Ed. System	5 min.

Type Run: Tape to Tape Conversion (Convert ES 2Ø2 Tapes to Honeywell Format)

Printer Form	Regular	Part 1	LPI 6
Carriage Tape	Regular	Label Output	N/A

Card Reader Input	N/A	Last Card	N/A

Cardpunch Cardtype	N/A	Label Output	N/A

SSW1	SSW2
SSW3	SSW4

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X		Master File
Work Tape	1	X		"ES2Ø2-DATA"	To Prog. FUNØ23
"ES-2Ø2 BCD"	2			Same	History File
	3				
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

* The input tapes to this program are received from the state of California

All ES 2Ø2 tapes must be processed by this program before they are input to other programs within the V.E. system.

Program FUNØ21:

ES 2Ø2 Tape Converter

Program Logic:

ES 2Ø2 unemployment insurance data is received from the State of California on a quarterly basis for input to this program. This data is in BCD code, unbannered, even parity, blocked by ten records per block and 85 characters per record.

This program reads the input data and converts it to Honeywell code. Information needed for input to the Job Market Analysis function is extracted by this program and reformated into the proper tape record format. The reformated data is input to program FUNØ23 for conversion to the proper SIC codes and summarizing of the employee counts for use by the Job Market Analysis programs.

INPUT	DATA
Drive 1	Work tape
Drive 2	"ES-2Ø2-BCD" This is the BCD ES-2Ø2 tape from the State of California, tape is ready to reformat as received

OUTPUT	DATA
Drive 1	"ES-2Ø2-DATA" Reformated ES-2Ø2 data ready for input to program FUNØ23
Drive 2	"ES-2Ø2-BCD" Unemployment Insurance data BLS tape to history file, hold for 3 months then scratch

ES-2Ø2 Detail Tape from State of California

Fixed length data records, 85 characters per data record.

Ten (1Ø) records per block. Even parity, no banner character

Record identification "ES-2Ø2-BCD"

This tape is input to program FUNØ21.

LOCATION	TYPE	DESCRIPTION
1 - 7	X(7)	Account number
8 - 9	X(2)	County code
1Ø - 13	X(4)	Industry - SIC
14 - 16	X(3)	Quarter (YYQ) 1=1st qtr., 2=2nd, 3=3rd,etc.
17 - 17	X(1)	Card code
18 - 19*	X(2)	Tax rate*
2Ø - 2Ø	X(1)	Record code
21 - 26	X(6)	1st month employees (signed data) positive value
27 - 32	X(6)	2nd month employees (signed data) positive value
33 - 38	X(6)	3rd month employees (signed data) positive value
39 - 47*	X(9)	Total wages (signed)*
48 - 56*	X(9)	Taxable wages UI-DI (signed)*
57 - 65*	X(9)	Taxable wages DI (signed)*
66 - 74*	X(9)	Employer contributions (signed)*
75 - 83*	X(9)	VP wages (signed)*
84 - 84	X(1)	Size code
85 - 85*	X(1)	Record mark, will be at symbol (@) in all records*

NOTE ALL (*) positions are not used at this time by function Ø2Ø

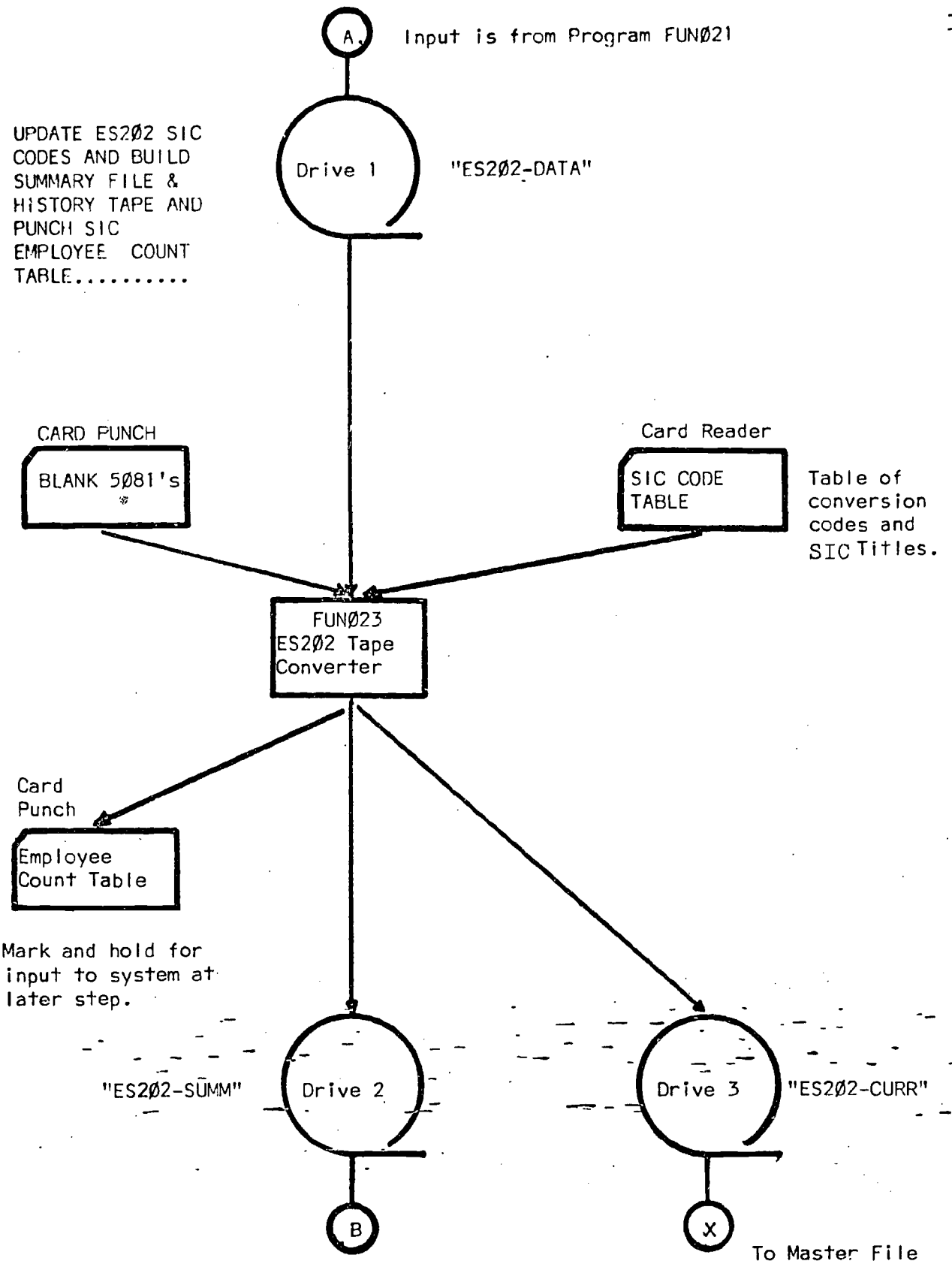
ES-2Ø2 DETAIL TAPE OUTPUT FROM FUNCTION PROGRAM FUNØ21

Tape Identification "ES-2Ø2-DATA"

Fifty (5Ø) records per block, 4Ø characters per record

LOCATION	TYPE	DESCRIPTION
1 - 7	9(7)	Account number
8 - 9	X(2)	County code
1Ø - 13	X(4)	Industry -SIC code-
14 - 16	X(3)	Quarter data (YYQ) 1=1st qtr., 2=2nd qtr., 3=3rd qtr., etc., 197Ø is coded as (7Ø) in location 14 and 15
17 - 17	X(1)	Card code
18 - 18	X(1)	Record code
19 - 24	9(6)	1st month employees (number of employees)
25 - 3Ø	9(6)	2nd " " " " "
31 - 36	9(6)	3rd " " " " "
37 - 37	X(1)	Size code
38 - 39	X(2)	Filler, not used at this time
4Ø - 4Ø	X(1)	Record identification code always an (S)

This tape is output from program FUNØ21, Drive 1.....


A
Input is from Program FUNØ21
UPDATE ES2Ø2 SIC CODES AND BUILD SUMMARY FILE & HISTORY TAPE AND PUNCH SIC EMPLOYEE COUNT TABLE.....
Drive 1
"ES2Ø2-DATA"
CARD PUNCH
BLANK 5Ø81's
Card Reader
SIC CODE TABLE
Table of conversion codes and SIC Titles.
FUNØ23 ES2Ø2 Tape Converter
Card Punch
Employee Count Table
Mark and hold for input to system at later step.
"ES2Ø2-SUMM"
Drive 2
Drive 3
"ES2Ø2-CURR"
B
X
Summary of SIC Employee counts for input to Program FUNØ26..
To Master File Storage

PROGRAM NAME FUNØ23 Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
Mar. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Tape Conversion of SIC codes and Sort call.

Printer Form: Regular 11 by 14 Part: 1 LPI: 1

Carriage Tape: Regular Label Output: N/A

Card Reader Input: SIC Code Table Last Card: "1EOF" in columns 1 - 4

Cardpunch Cardtype: Blank 5Ø81's Label Output: ES-2Ø2 Employer Table to File

SSW1 _____ SSW2 (on) Punch ES2Ø2 Table

SSW3 (on) Re-call FUNØ23 at end of sort SSW4 _____

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
ES-2Ø2-DATA	1		X	Same	File History Hold
Work Tape	2	X		"ES-2Ø2-SUMM"	To Prog. FUNØ26
Work Tape	3	X		"ES-2Ø2-CURR"*	To: Master File
Work Tape	4	X		"ES-2Ø2-WORK"*	Input to Sort
Work Tape	5	X		Same	SCRATCH

DISK DRIVES

	Switches in Permit

Special Instructions

*At EOJ Sort (CBLS2F) is called to sort the output on Drive 4 to SIC code sequence for creation of the "ES-2Ø2-CURR" tape.

OUTPUT ON DRIVE 2 IS INPUT TO PROGRAM FUNØ26

If SSW-3 is on
FUNØ26 IS CALL AT END OF SORT ***DUMP CORE IF THIS PROGRAM ABORTS***

ES-2Ø2 SUMMARY AVERAGE TAPE

Tape identification "ES2Ø2-SUMM"

1 record per block, 43 characters per record

LOCATION	DATA	DESCRIPTION
1 - 4	9(4)	SIC code -Industry code-
5 - 34	X(3Ø)	SIC title -Title of this industry-
35 - 35	9(1)	Quarter code (1=1st, 2=2nd, 3=3rd, 4=4th)
36 - 37	9(2)	Year of data base (7Ø=197Ø, 75=1975, etc.)
38 - 43	9(6)*	Employee average count for this quarter for this SIC code

*This is a count of all the months in the quarter added together then divided by three (3) to get a quarterly average for the three month period for each SIC code.

THIS TAPE IS INPUT TO PROGRAM FUNØ26 (Job Market Analysis)

Tape sequence is by SIC code.

There will be only one tape record for each SIC code.

SORT DESCRIPTION

PROGRAM NAME FUNØ23 (Sort)

SOFTWARE NAME CBLS2F

MODULES BEING USED 15

FUNCTION:

Sort output data on drive 1 program FUNØ23 to account number, SIC code, quarter codes and year.

SEQUENCE OF SORT:

	FIELD NAME	SIZE	LOCATION	TYPE
1.	Account number	X(7)	1 - 7	Numeric
2.	SIC code	X(4)	1Ø - 13	Numeric
3.	Quarter code	X(1)	16 - 16	Alpha
4.	Year	X(2)	14 - 15	Numeric
5.				
6.				
7.				

INPUT TYPE/NAME "ES2Ø2-WORK"

RECORD SIZE 35 BLOCK SIZE 5Ø

RECORD DESCRIPTION ES2Ø2 Work Tape

DISPOSITION - Scratch tape after sorting

OUTPUT NAME "ES2Ø2-CURR"

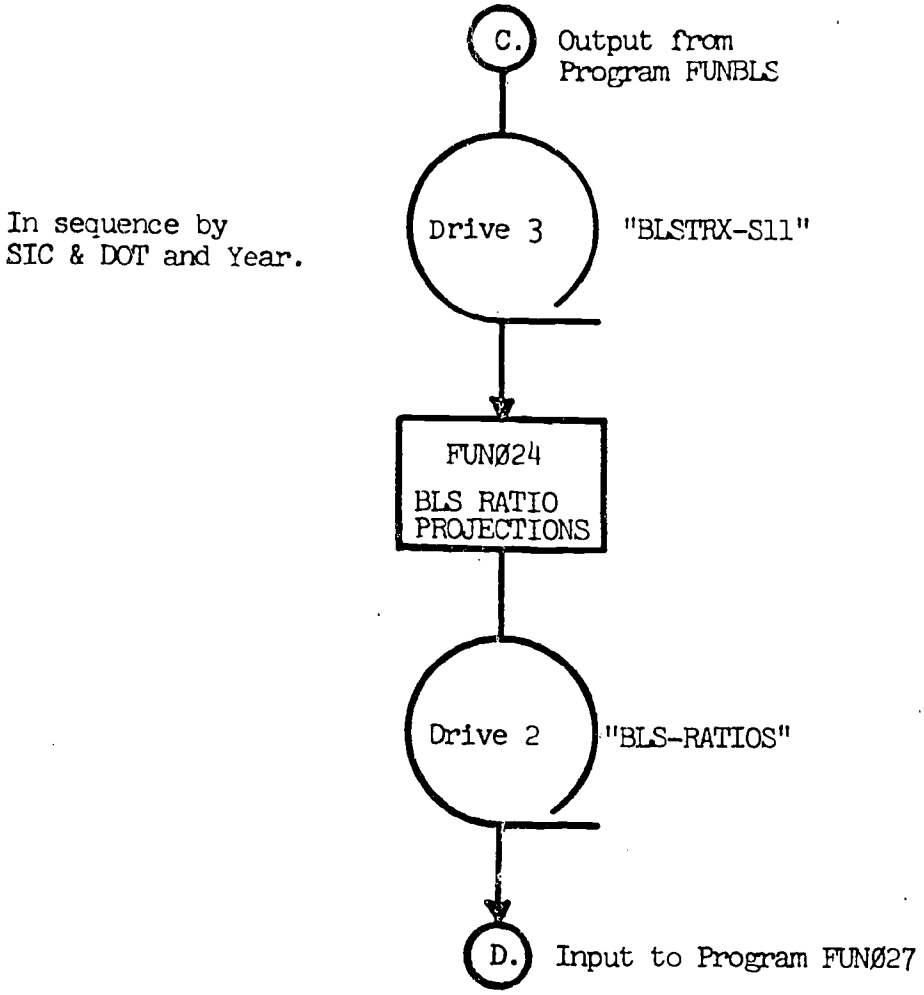
RECORD SIZE 35 BLOCK SIZE 5Ø

RECORD DESCRIPTION Current ES-2Ø2 Data file

DISPOSITION To master file storage.

NEXT PROGRAM CALLED FUNØ26 DIRECTION OF SEARCH Forward

FUNØ24 (BLS RATIO PROJECTION PROGRAM)



This program projects the BLS Ratio Factor to be used for each quarter projection.

PROGRAM NAME FUNØ24 Page 1 of 1 pages

Date	Programmer	System	Apx Run Time
Feb. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to tape.

Printer Form: Regular Part: 1 LPI: 6

Carriage Tape: Regular Label Output: N/A

Card Reader Input: N/A Last Card: N/A

Cardpunch Cardtype: N/A Label Output: N/A

SSW1 SSW2

SSW3 SSW4

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
	1				
SCRATCH	2	X		"BLS-RATIOS"	To prog. FUNØ27
"BLSTRX-S11"	3		X	Same	Backup to D2
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

Tape identification "BLS-RATIOS"

Blocked by 1ØØ

This tape has the quarter projection (Factor) for each DOT code and SIC code.

It is in sequence by SIC, DOT and year.

LOCATION	TYPE	DESCRIPTION
1 - 6	X(6)	DOT code
7 - 1Ø	X(4)	SIC code
11 - 12	X(2)	Starting matrix year
13 - 21	S9(3)V9(6)	Starting matrix year ratio value for this SIC
22 - 3Ø	S9(3)V9(6)	Quarter adjustment value (Factor)

Input tape is "BLSTRX-S11" tape output from program FUNBLS

----THIS TAPE IS INPUT TO PROGRAM FUNØ27----

OCCUPATIONAL MATRIX TAPE FORMAT
Master File Tape

Tape identification "BLSTRX-S11"

Blocked by 5Ø records per block

LOCATION	TYPE	DATA
1 - 6	9(6)	DOT code
7 - 1Ø	9(4)	SIC code
11 - 12	9(2)	Matrix year (6Ø or 75 only)
13 - 21	9(9)	Total employment
22 - 3Ø	9(3)V(6)	Ratio of employment to total for occupation
31 - 39	9(3)V(6)	Ratio of employment to total for SIC code
4Ø - 4Ø	X(1)	Tape record identification code always "L"

This tape is output from program FUNØ11

Sort SIC, DOT, year

SORT DESCRIPTION

PROGRAM NAME Sort

SOFTWARE NAME CBLS2F

MODULES BEING USED 15

FUNCTION: Sort

Sort BLS data output by program FUNBLS to correct sequence for input to program FUNØ24.

SEQUENCE OF SORT:

	FIELD NAME	SIZE	LOCATION	TYPE
1.	SIC code	X(4)	7 - 1Ø	Alpha
2.	DOT code	X(6)	1 - 6	Alpha
3.	Matrix year	X(2)	11 - 12	Alpha
4.				
5.				
6.				
7.				

INPUT TYPE/NAME BLSTRX-Ø11

RECORD SIZE 4Ø BLOCK SIZE 5Ø

RECORD DESCRIPTION Occupational matrix tape

DISPOSITION To master file storage

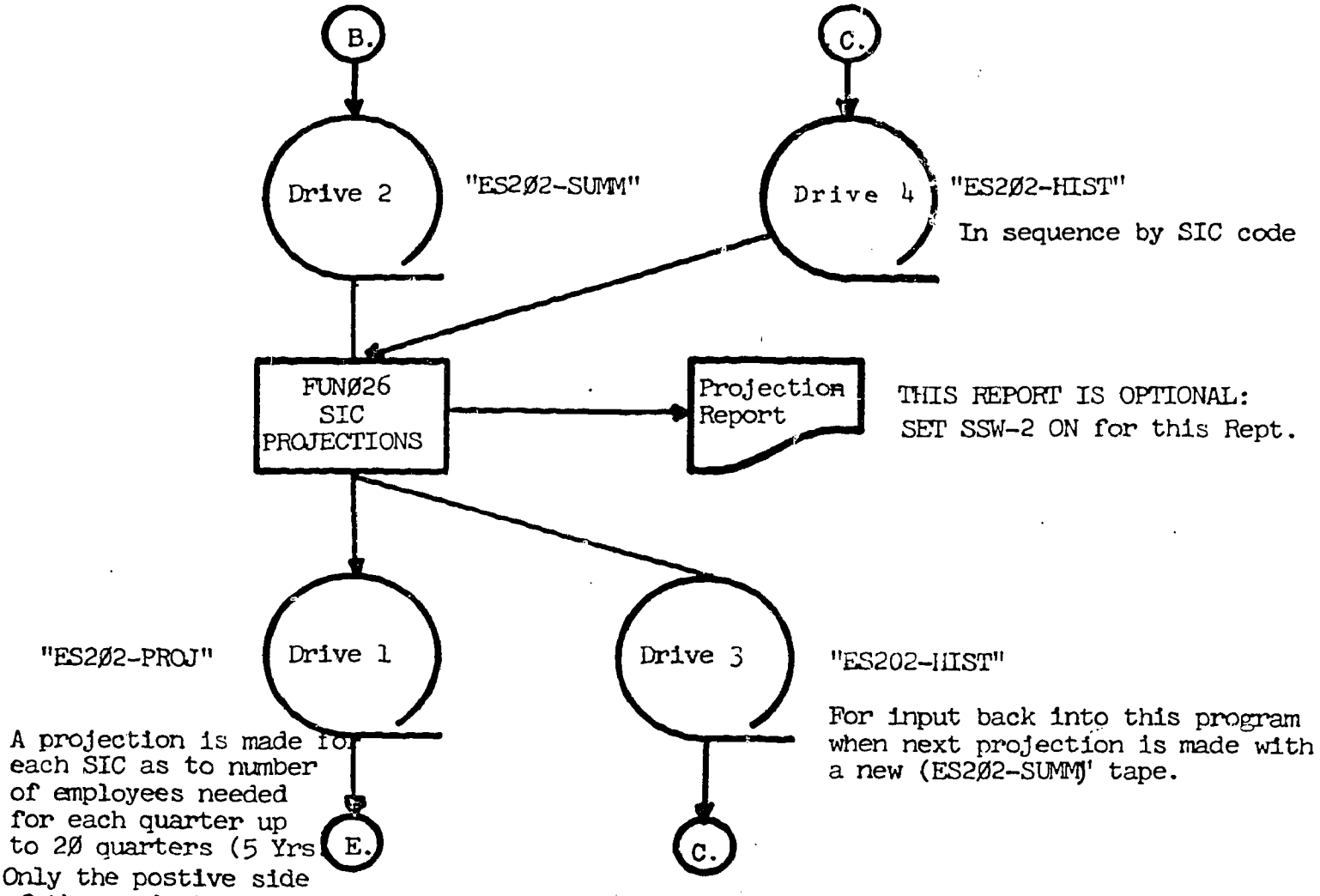
OUTPUT NAME BLSTRX-S11

RECORD SIZE 4Ø BLOCK SIZE 5Ø

RECORD DESCRIPTION Sorted occupational matrix tape

DISPOSITION Input to program FUNØ24

EXT PROGRAM CALLED FUNØ21 DIRECTION OF SEARCH Forward


B.
C.
Drive 2
"ES2Ø2-SUMM"
Drive 4
"ES2Ø2-HIST"
In sequence by SIC code
FUNØ26
SIC
PROJECTIONS
Projection
Report
THIS REPORT IS OPTIONAL:
SET SSW-2 ON for this Rept.
"ES2Ø2-PROJ"
Drive 1
Drive 3
"ES202-HIST"
For input back into this program
when next projection is made with
a new (ES2Ø2-SUMM)' tape.
A projection is made for
each SIC as to number
of employees needed
for each quarter up
to 2Ø quarters (5 Yrs.)
Only the postive side
of the projection is
written on tape.
E.
C.

PROGRAM NAME FUNØ26 Page ____ of ____ pages

Date	Programmer	System	Apx Run Time
Feb. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Tape SIC Projection Program

Printer Form	Regular	Part	LPI 6
Carriage Tape	Regular	Label Output	N/A

Card Reader Input	N/A	Last Card	N/A

Cardpunch Cardtype	N/A	Label Output	N/A

SSW1		SSW2	(on) for report listing
SSW3		SSW4	

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q) 0			X	Same	Save
Work tape	1	X		"ES2Ø2-PROJ"	Input to FUNØ27
"ES2Ø2-SUMM"	2		X	Same	History file
Work tape	3	X		"ES2Ø2-HIST"	See Note 1
"ES2Ø2-HIST"	4		X	Same	History file
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

Note 1: The output on drive 3 is the new input to drive 2 when the next ES-2Ø2 projection is made, these tapes are received on a quarterly basis.

See program logic sheet for detail on this program

JOB MARKET ANALYSIS PROJECTION HISTORY TAPE

Tape identification "ES2Ø2-HIST"

Block contains 1 record. Record contains 128 characters.

LOCATION	TYPE	DESCRIPTION
1 - 4	9(4)	SIC code
5 - 5	9(1)	Quarter code (1=1st, 2=2nd,3=3rd quarter)
6 - 7	9(2)	Year of last input date (ES-2Ø2 data)
8 - 13	9(6)	2Øth qtr. hist. ave. (actual count) ES-2Ø2 data
14 - 19	9(6)	19th " " "
2Ø - 25	9(6)	18th " " "
26 - 31	9(6)	17th " " "
32 - 37	9(6)	16th " " "
38 - 43	9(6)	15th " " "
44 - 49	9(6)	14th " " "
5Ø - 55	9(6)	13th " " "
56 - 61	9(6)	12th " " "
62 - 67	9(6)	11th " " "
68 - 73	9(6)	1Øth " " "
74 - 79	9(6)	9th " " "
8Ø - 85	9(6)	8th " " "
86 - 91	9(6)	7th " " "
92 - 97	9(6)	6th " " "
98 - 1Ø3	9(6)	5th " " "
1Ø4 - 1Ø9	9(6)	4th " " "
11Ø - 115	9(6)	3rd " " "

"ES2Ø2-HIST" Tape (cont.)

LOCATION	TYPE	DESCRIPTION
116 - 121	9(6)	2nd qtr. hist. ave. (actual count) ES-2Ø2 data
122 - 127	9(6)	1st " " "
128 - 128	X(1)	Record identification code, always (%) symbol

This tape is used by program FUNØ26 only. Itis the history file used to project the number of employees.

Tape sequence is by SIC code.

All data is shifted as each new quarters data is input, data in the 1st quarter will be moved to the 2nd quarter on the new history tape output on drive three.

Location 122 - 127 contains the most current history data, the same data may be found on the "ES2Ø2-SUMM" tape input on drive two to this program.

ES-2Ø2 PROJECTION TAPE

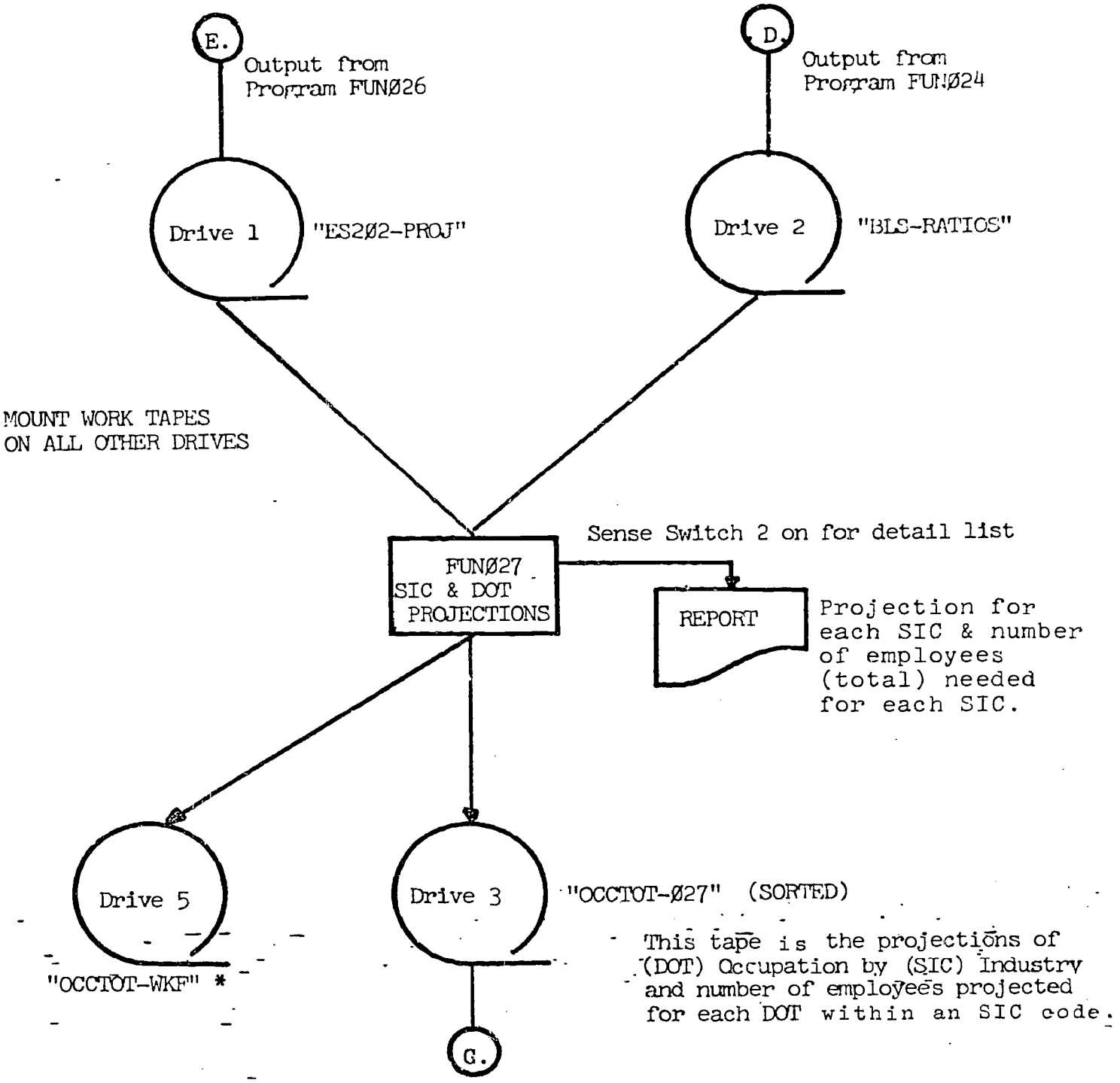
Tape identification "ES2Ø2-PROJ"

1 record per block, 128 characters per record

Output from program FUNØ26, input to program FUNØ27

LOCATION	TYPE	DESCRIPTION
1 - 4	9(4)	SIC code
5 - 34	X(3Ø)	SIC title
35 - 35	X(1)	Base qtr of the most current projection data
36 - 37	9(2)	Base yr of the most current projection data (ES-2Ø2 data)
38 - 43	9(6)	Current number of employees, as of base qtr and base yr
44 - 49	9(6)	1st qtr projection from base yr and qtr
5Ø - 55	9(6)	5th " "
56 - 61	9(6)	6th " "
62 - 67	9(6)	7th " "
68 - 73	9(6)	8th " "
74 - 79	9(6)	9th " "
8Ø - 85	9(6)	10th " "
86 - 91	9(6)	11th " "
92 - 97	9(6)	12th " "
98 - 1Ø3	9(6)	13th " "
1Ø4 - 1Ø9	9(6)	14th " "
11Ø - 115	9(6)	15th " "
116 - 121	9(6)	2Øth " "
122 - 127	9(6)	Standard deviation factor
128 - 128	X(1)	Record identification code, always a (P)

There are 126 SIC codes, there should be a total of 126 records on this tape.



* Sort (CBLS2F) is called at EOJ to sort output on drive 5 to create the "OCCTOT-Ø27" on drive 3 for input to program FUNØ28.

PROGRAM NAME FUNØ27 Page 1 of _____ pages

Date	Programmer	System	Apx Run Time
Mar. 72	Ray Ellis	Voc. Ed. System	

Type Run
Tape to Tape (Projection of Occupation by Industry) & Sort.

Printer Form	Regular	Part 6	LPI 6
Carriage Tape	Regular	Label Output	N/A

Card Reader Input	N/A	Last Card	N/A

Cardpunch Cardtype	N/A	Label Output	N/A

SSW1	SSW2 *(on) list detail data
SSW3	SSW4

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
"ES2Ø2-PROJ"	1		X	Same	History file
BLS-RATIOS	2		X	Same	History file
Scratch tape	3	X		"OCCTOT-Ø27"	To prog. FUNØ28
Scratch tape	4	X		Same	Scratch
Scratch tape	5	X		"OCCTOT-WKF"*	Input to sort

DISK DRIVES

		Switches in Permit

Special Instructions

*Drive 5 is used as a work file to output the DOT by SIC projections. At EOJ sort (CBLS2F) is called to sort drive 5 into the proper sequence for input to program FUNØ28. Scratch tapes must be mounted on other drives at this time.

*Set SSW 2 on only when requested by programmer

JOB MARKET ANALYSIS PROJECTION OF SIC CODES BY DOT CODE

Tape identification "OCCTOT-Ø27"

1Ø records per block, 128 characters per record

In sequence by DOT by SIC code

LOCATION	TYPE	DESCRIPTION
1 - 4	9(4)	SIC code
5 - 1Ø	9(6)	DOT code
11 - 4Ø	X(3Ø)	SIC title
41 - 41	9(1)	Base qtr of the most current projection data
42 - 43	9(2)	Base yr of the most current projection data
44 - 49	9(6)	Current number of employees, as of the base yr and qtr
5Ø - 55	S9(4)V99	1st qtr projection (no. of employees needed)
56 - 61	"	5th " "
62 - 67	"	6th " "
68 - 73	"	7th " "
74 - 79	"	8th " "
8Ø - 85	"	9th " "
86 - 91	"	1Øth " "
92 - 97	"	11th " "
98 - 1Ø3	"	12th " "
1Ø4 - 1Ø9	"	13th " "
11Ø - 115	"	14th " "
116 - 121	"	15th " "
122 - 127	"	2Øth " "
128 - 128	X(1)	Record identification code, always (T)

This tape is input to program FUNØ28

Projected needs are based on the most current projection data

SORT DESCRIPTION

PROGRAM NAME FUNØ27 (Sort)

SOFTWARE NAME CBLS2F

MODULES BEING USED 15

FUNCTION:

Sort the output on drive 5 "OCCTOT-WKF" to DOT and SIC code sequence for input to program FUNØ28 for processing.

SEQUENCE OF SORT:

	FIELD NAME	SIZE	LOCATION	TYPE
1.	DOT code	9(6)	5 - 1Ø	Numeric
2.	SIC code	9(4)	1 - 4	Numeric
3.				
4.				
5.				
6.				
7.				

INPUT TYPE/NAME "OCCTOT-WKF"

RECORD SIZE 128 BLOCK SIZE 1Ø

RECORD DESCRIPTION Detail DOT code projections

DISPOSITION Scratch after sort is finished

OUTPUT NAME "OCCTOT-Ø27"

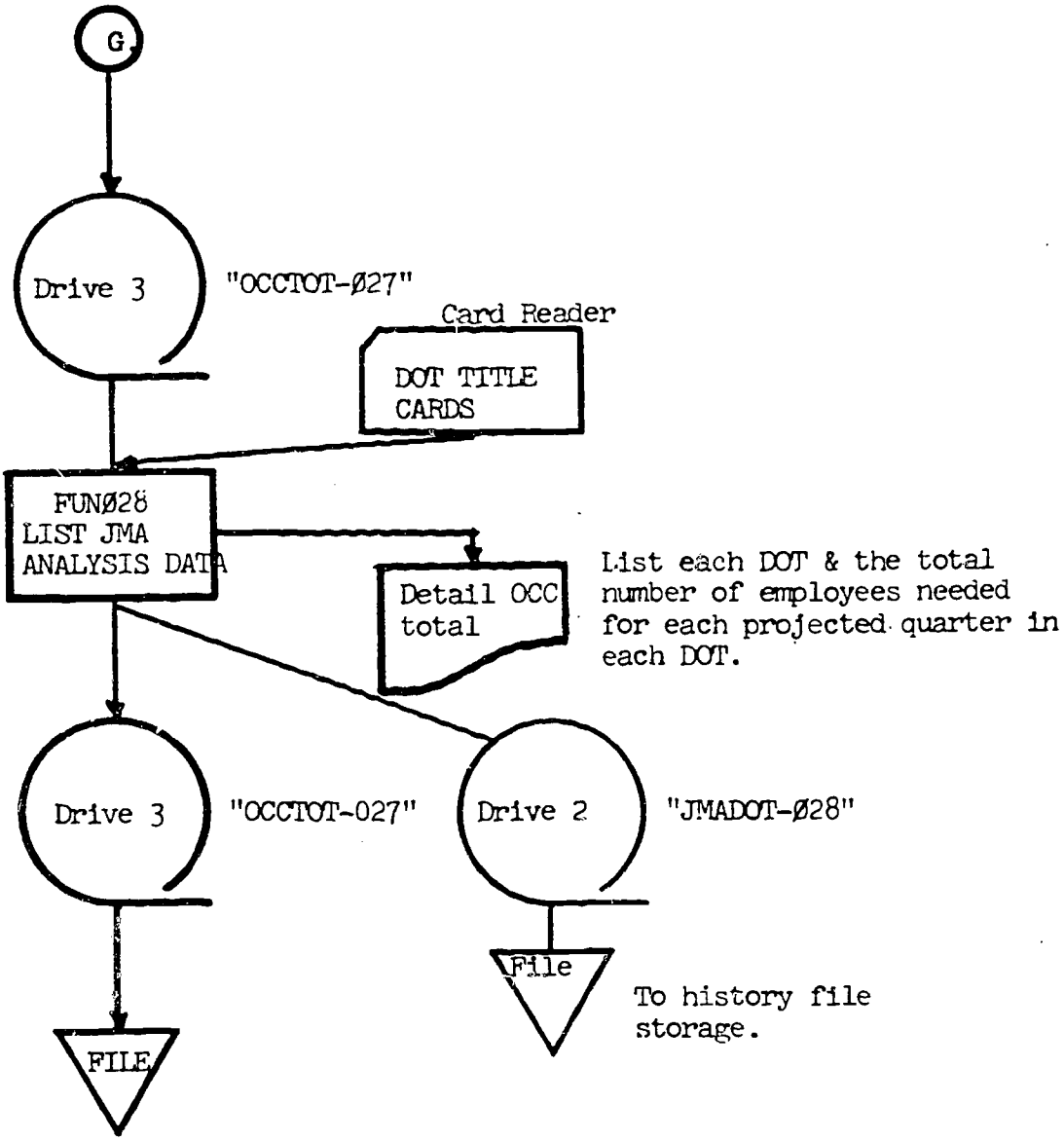
RECORD SIZE 128 BLOCK SIZE 1Ø

RECORD DESCRIPTION Sorted DOT code projections

DISPOSITION Input to program FUNØ28 drive 3

NEXT PROGRAM CALLED FUNØ28 DIRECTION OF SEARCH Forward

FUNØ28 (JOB MARKET ANALYSIS DETAIL LIST)



To history hold file.

PROGRAM NAME FUNØ28 Page 1 of ____ pages

Date	Programmer	System	Apx Run Time
Feb. 72	Ray Ellis	Voc. Ed. System	

Type Run: Tape to Printer (Job Market Analysis Detail List).

Printer Form: Regular Part: 6 LPI: 6

Carriage Tape: Regular Label Output: N/A

Card Reader Input: DOT title table Last Card: "1EOF" in columns 1 through 4

Cardpunch Cardtype: N/A Label Output: N/A

SSW1 _____ SSW2 _____

SSW3 _____ SSW4 _____

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
	1				
Work Tape	2	X		"JMADOT-Ø28"	History file
"OCCTOT-Ø27"	3		X	Same	History file
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

Output tape on drive 2 is the summary history of the projections for all DOT codes. Place in history file.

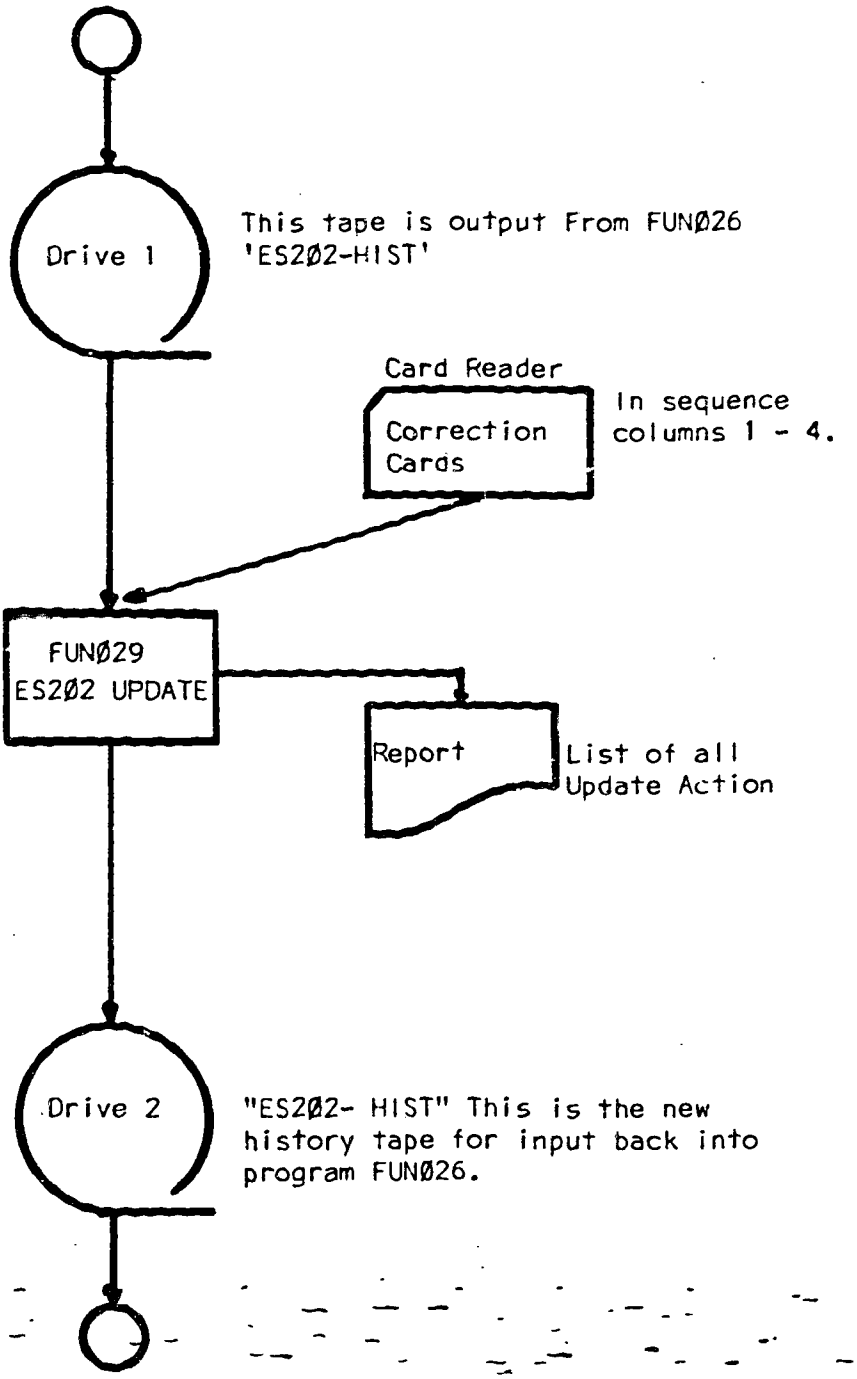
JOB MARKET ANALYSIS SUMMARY TAPE BY DOT CODE

Tape identification "JMADOT-Ø28"
1 record per block, 162 characters per record
In sequence by DOT code

LOCATION	TYPE	DESCRIPTION
1 - 6	9(6)	DOT code
7 - 36	X(3Ø)	DOT title
37 - 37	9(1)	Qtr of most current projection data (ES-2Ø2 data)
38 - 39	9(2)	Yr of most current projection data (ES-2Ø2 data)
4Ø - 45	9(6)	Current qtr employment average (ES-2Ø2 data)
46 - 51	9(6)	1st qtr employment projection (no. of employees)
52 - 57	9(6)	5th " "
58 - 63	9(6)	6th " "
64 - 69	9(6)	7th " "
7Ø - 75	9(6)	8th " "
76 - 81	9(6)	9th " "
82 - 87	9(6)	1Øth " "
88 - 93	9(6)	11th " "
94 - 99	9(6)	12th " "
1ØØ - 1Ø5	9(6)	13th " "
1Ø6 - 111	9(6)	14th " "
112 - 117	9(6)	15th " "
118 - 123	9(6)	2Øth " "
124 - 129	S9(6)	5th quarter gain or loss total
13Ø - 135	S9(6)	9th " " "
136 - 141	S9(6)	13th " " "
142 - 147	S9(6)	5th quarter annual change
148 - 153	S9(6)	9th "
154 - 159	S9(6)	13th "
16Ø - 161	9V9	Replacement ratio for this DOT
162 - 162	X(1)	Record identification, always (J)

This tape is the Job Market Analysis Summary of employment needs by DOT code

UPDATE ES-2Ø2 HISTORY TAPE



PROGRAM NAME FUNØ29 (Update ES-2Ø2 History) Page 1 of 1 pages

Date	Programmer	System	Apx Run Time
May 72	Ray Ellis	Voc. Ed. System	:10

Type Run: Tape to Tape Correction Via Card Input

Printer Form: Regular Part: 1 LPI: 6

Carriage Tape: Regular Label Output: N/A

Card Reader Input: ES-2Ø2 History Correction Data Last Card: "1EOF" Columns 1 through 4

Cardpunch Cardtype: N/A Label Output: N/A

SSW1 SSW2

SSW3 SSW4

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT (Vis Q)	0		X	Same	Save
"ES2Ø2-HIST"*	1		X	Same	History file
Scratch Tape	2	X		"ES2Ø2-HIST"**	Prog. FUNØ26
	3				
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

*This tape is the ES-2Ø2 history data to be corrected, it was output from program FUNØ26

**This is the new ES-2Ø2 history tape for input back into program FUNØ26

The date of the ES-2Ø2 history tape output on drive 2 has been changed to the previous quarter exp., 2-71 would become 1-71...

SIC Correction Card Layout for Corrections to History Tape

COLUMNS	DATA	DATA DESCRIPTION
1 - 4	9(4)	SIC code to be corrected
5 - 8	9(4)	1st quarter correction value
9 - 12	9(4)	18th " "
13 - 16	9(4)	17th " "
17 - 2Ø	9(4)	16th " "
21 - 24	9(4)	15th " "
25 - 28	9(4)	14th " "
29 - 32	9(4)	13th " "
33 - 36	9(4)	12th " "
37 - 4Ø	9(4)	11th " "
41 - 44	9(4)	1Øth " "
45 - 48	9(4)	9th " "
49 - 52	9(4)	8th " "
53 - 56	9(4)	7th " "
57 - 6Ø	9(4)	6th " "
61 - 64	9(4)	5th " "
65 - 68	9(4)	4th " "
69 - 72	9(4)	3rd " "
73 - 76	9(4)	2nd " "
77 - 8Ø	9(4)	1st " "

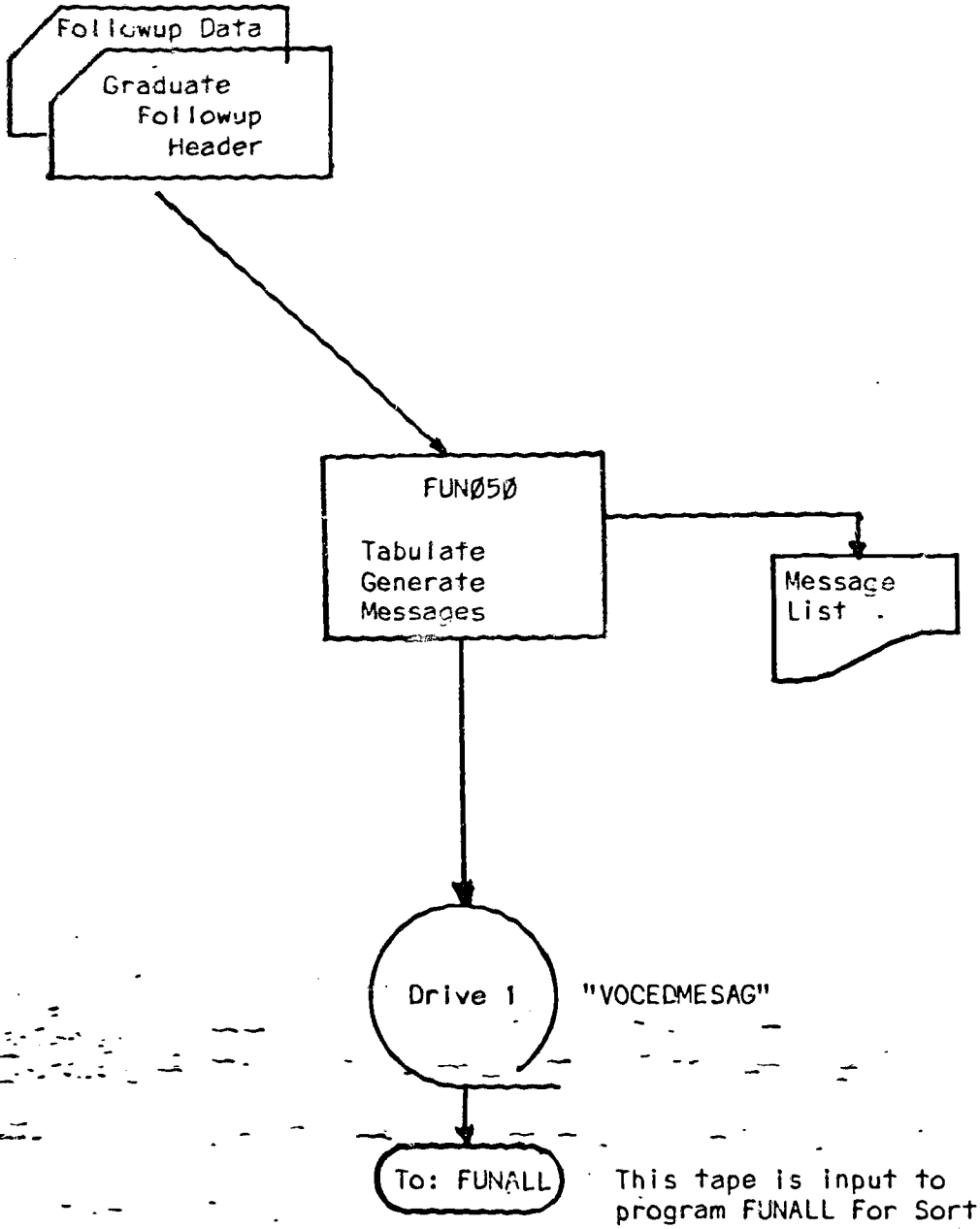
*Enter the value to be added or subtracted from the current value in locations 5 through 8Ø for each quarter (use 11 zone over punch for negative values)

Enter spaces of the value is, to remain the same (no change in data)

Enter zeros to reset the current values to zeros.

Enter (¢) high-values to reset any quarter to high-value (no data)

PROCESS GRADUATE FOLLOWUP DATA



Tabulate generat messages

PROGRAM NAME FUNØ5Ø Page 1 of 1 pages

Date	Programmer	System	Apx Run Time
May 72	HCR	Voc. Ed. System	

Type Run: Card to Tape, Printer

Printer
Form Standard 14 7/8 x 11 Part 1 LPI 6
Carriage
Tape Standard Label
Output

Card Reader
Input See Note 2 Last
Card "1EOF" (cc 1-4)

Cardpunch
Cardtype Label
Output

SSW1 SSW2
SSW3 SSW4

TAPE DRIVES

Label Input	Drive	Permit	Protect	Label Output	Disposition
VOCSYS BRT	0		X		Leave mounted
Work	1	X		VOCEDMESAG	To sort FUNALL
	2				
	3				
	4				
	5				

DISK DRIVES

	Switches in Permit

Special Instructions

1. Run under monitor 'Q'
2. Deck setup
   A. Graduate follow-up header ('H' in cc 4)
   B. Graduate follow-up data ('G' in cc 4)
3. No program call given at EOJ

Graduate Follow-up Header Card

Column	Type	Data Description
1 - 3	X(3)	Not used (spaces)
4 - 4	X(1)	Card code "H" always
5 - 8	9(4)	Number of graduates (current year)
9 - 10	9(2)	Current year (1971 = 71)
11 - 14	9(4)	Number of graduates prior year
15 - 16	9(2)	Prior year (197Ø = 7Ø)
17 - 8Ø	X(64)	Not used (spaces)

Graduate Follow-up Data

Column	Type	Data Description
1 - 3	9(3)	Survey number
4 - 4	X(1)	Card Code "G" always
5 - 6	X(2)	Not used (spaces)
7 - 45	X(39)	Item Responses (39 answers Boxes) 1 - digit fields 1 = selected box Space = not selected box
46 - 80	X(41)	Not used (spaces)

Tape identification is "VOCEDMESAG"

Record contains 152 characters

Blocked by 1

LOCATION	TYPE	DESCRIPTION OF DATA
1 - 1Ø	X(1Ø)	Program number (will be set to high-values)
11 - 11	X(1)	Function use code (C) = Print in Placement function (P) = Print in Promotion function (R) = Print in Counseling function (S) = Print in Evaluation of Counseling (W) = Print in Needs Survey data (Z) = Print in Follow-up questionnaire
12 - 14	9(3)	Sequence control line number
15 - 146	X(132)	Message to be printed on report

This tape is sorted on locations 11 through 14 before being input to program FUNALL for processing.

-DOT-	TITLE	MR
001081	ARCHITECTS	24
001281	DRAFTSMEN	08
002081	ENGINEERS AERONAUTICAL	07
003081	ENGINEERS ELECTRICAL	10
005081	ENGINEERS CIVIL	19
007081	ENGINEERS MECHANICAL	14
007181	OTHER ENGINEERS TECHNICAL	13
008081	ENGINEERS CHEMICAL	09
010081	ENGINEERS MINING	14
011081	ENGINEERS METALLURGICAL	12
012189	ENGINEERS INDUSTRIAL	11
018189	SURVEYORS	12
019281	TECHNICIANS OTHER	11
020089	MATHEMATICIANS	04
020189	STATISTICIANS AND ACTUARIES	16
022081	CHEMISTS	11
023081	PHYSICISTS	07
024081	GEOLOGISTS AND GEOPHYSICISTS	09
040000	OTHER NATURAL SCIENTISTS	09
040081	AGRICULTURAL SCIENTISTS	15
041081	BIOLOGICAL SCIENTISTS	10
045108	PSYCHOLOGISTS	08
050088	ECONOMISTS	15
059088	OTHER SOCIAL SCIENTISTS	14
070000	PHYSICIANS AND SURGEONS	10
071108	OSTEOPATHS	10
072108	DENTISTS	10
073109	VETERINARIANS	20
074181	PHARMACISTS	28
075378	NURSES PROFESSIONAL	30
077168	DIETITIANS AND NUTRITIONISTS	13
078381	TECH MEDICAL AND DENTAL	11
079000	OTHER MEDICAL AND HEALTH WKR	25
079108	OPTOMETRISTS	10
090229	TEACHERS COLLEGE	33
091229	TEACHERS SECONDARY	31
092229	TEACHERS ELEMENTARY	29
099229	TEACHERS OTHER	32
100168	LIBRARIANS	13
110108	LAWYERS AND JUDGES	29
120108	CLERGYMEN	26
132268	EDITORS AND REPORTERS	19
142081	DESIGNERS EXC DESGN DRAFTSMN	15
143062	PHOTOGRAPHERS	16
150048	TEACHRS WKRS IN ARTS ENTRMNT	30
160189	ACCOUNTANTS AND AUDITORS	31
162158	PURCHASING AGENTS	18
168168	INSPECTORS LOG AND LUMBER	21
180000	MGRS OFFICIALS PROP NEC	21
188168	POSTMASTERS AND ASSISTANTS	38
193168	AIR TRAFFIC CONTROLLERS	30
193282	RADIO OPERATORS	30
195108	SOCIAL AND WELFARE WORKERS	17
196283	AIRPLANE PILOTS AND NAVIGTRS	30
197133	OFFICERS PILOTS ENGINRS SHIP	21
199000	PROF TECHNICAL KINDRED NEC	13

Dot Code	Title		MR
203588	STENOGRPHRS TYPISTS SECYS		30
204388	ENGINEER, SALES	A	33
205368	PERSONNEL AND LBR RELATIONS		15
210388	BOOKKEEPERS HAND		34
211468	CASHIERS		31
212368	BANK TELLERS		30
216488	OFFICE MACHINE OPERATORS		30
219388	OTHER CLERICAL AND KINDRED		19
219488	ACCOUNTING CLERKS		32
222387	SHIPPING AND RECEIVING CLRKS		27
232368	POSTAL CLERKS		28
233388	MAIL CARRIERS		29
235862	TELEPHONE OPERATORS		33
249000	CLERICAL AND KINDRED NEC		33
249368	CREDITMEN		16
250000	OTHER SALES WORKERS NEC		33
290499	SALES WORKERS (ALL)		33
306378	PRIVATE HOUSEHOLD WORKERS		49
311878	WAITERS AND WAITRESSES		26
312878	BARTENDERS		30
315381	COOKS EXC PRIVATE HOUSEHOLDS		34
316864	MEAT CUTTERS EXC MEAT PACKNG		20
319468	OTHER SERVICE WORKERS NEC		35
319878	COUNTER AND FOUNTAIN WORKERS		30
352978	AIRLINE STEWRDS STEWARDESSES		70
354878	NURSES PRACTICAL		43
355878	ATTENDANTS HOSP AND OTH INST		32
369884	LNDRY AND DRY CLEANING OPRS		21
372868	GUARDS WATCHMEN DOORKEEPERS		43
373884	FIREMEN		30
375268	POLICEMEN DETECTIVES ETC		14
381387	CHARWOMEN AND CLEANERS		30
382884	JANITORS AND SEXTONS		46
421181	FARMERS AND FARM WORKERS		32
500380	ELECTROPLATERS		18
500386	ELECTROPLATER HELPERS		18
504782	HEAT TREATRS ANNEALRS TEMPRS		18
511885	FURNACEMN SMELTERMN POURERS		16
526781	BAKERS		21
556885	MOLDERS METAL EXC COREMKRS		16
557885	SPINNERS TEXTILE		26
573884	BRICKMASONS STONE TILE STTRS		13
600280	PATTERNMAKERS-METAL AND WOOD		20
600380	MACHINISTS AND RELATED OCCUP		20
601280	TOOLMAKERS-DIEMAKERS SETTERS		18
* 604280	MACHINE TOOL OPERS CLASS B		25 (by R.D.E.)
609684	INSPECTORS OTHER		32
610381	BLACKSMTHS FORGEMN HAMMERMEN		34
613782	ROLLERS AND ROLL HANDS		18
613885	HEATERS METAL		24
619281	INSPECTRS METALWRKNG CLASS B		25
619380	ASSEMBLRS METALWRKNG CLASS B		25
620281	MOTOR VEHICLE MECHANICS		13
621281	AIRPLANE MECH AND REPAIRMEN		10
622381	RAILROAD AND CAR SHOP MECH		27
630884	OTHER MECHANICS AND REPAIRMN		20
633281	OFFICE MACHINE MECHANICS		09
637281	AIR CONDITION, REFIGERATION M		13
638281	MILLWRIGHTS		19

DOT CODE	TITLE	MR
650582	COMPOSITORS AND TYPESETTERS	19
651782	PRESSMEN AND PLATE PRINTERS	15
660280	CABINETMAKERS	26
683280	LOOM FIXERS	17
683782	WEAVERS TEXTILE	26
685885	KNITTERS LOOPERS AND TOPPERS	28
700281	JEWELERS AND WATCHMAKERS	27
706887	ASSEMBLRS METALWRKNG CLASS A	25
713381	OPTICNS LENS GRINDRS POLSHRS	17
719887	OPERATIVES AND KINDRED NEC	15
780381	UPHOLSTERERS	28
786782	SEWERS AND STITCHERS MFG	36
801781	STRUCTURAL METALWORKERS	25
804281	SHEET METAL WORKERS	15
805281	BOILERMAKERS	21
811884	WELDERS AND FLAME CUTTERS	25
821281	LINE AND SERVMN TEL AND POWR	09
823281	RADIO AND TV MECHANICS	09
824281	ELECTRICIANS	16
840781	PAINTERS AND PAPERHANGERS	25
842781	PLASTERERS	17
844884	CEMENT AND CONCRETE FINISHRS	15
850781	MINE OPERATIVES LABORERS NEC	25
850883	EXCAVATING GRADING MACH OPRS	13
859281	BLASTERS AND POWDERMEN	15
860381	CARPENTERS	23
862381	PLUMBERS AND PIPEFITTERS	18
863884	ASBESTOS INSULATION WORKERS	36
865781	GLAZIERS	12
866381	ROOFERS AND SLATERS	17
869131	FOREMEN NEC	19
910383	LOCOMOTIVE ENGINEERS	44
910868	CONDUCTORS RAILROAD	38
910883	LOCOMOTIVE FIREMEN	13
910884	BRAKEMEN SWITCHMEN RAILROAD	18
911887	SAILORS AND DECKHANDS	14
913363	DELIVERYMN ROUTEMN CAB DRVRS	29
913463	DRIVERS BUS TRUCK TRACTOR	12
915867	AUTO ATTENDANTS GAS AND PKNG	10
921883	CRANEMEN DERRICKMEN HOISTMEN	17
929887	LABORERS EXC FARM AND MINE	32
952782	POWER STATION OPERATORS	20
971381	PHOTOENGRVRS AND LITHOGRPHRS	15
974381	ELECTROTYPRS AND STEREOTYPRS	20
977684	CRAFTSMN AND KINDRD WKRS NEC	33
979281	ENGRAVERS EXC PHOTOENGRAVERS	22

END

DOT CODE COUNT IS 161

SIC CODE TABLE

SIC ********** TITLE **********

0100AGRICULTURE
0800FORESTRY
0900FISHERIES
1000METAL MINING
1100COAL MINING
1300CRUDE PETROLEUM AND NAT GAS
1400NONMETALLIC MINING QUARRYING
1500CONSTRUCTION
2010MEAT PRODUCTS
2020DAIRY PRODUCTS
2030CANNING PRESERVING FREEZING
2040GRAIN MILL PRODUCTS
2050BAKERY PRODUCTS
2080BEVERAGE INDUSTRIES
2090OTHER FOOD PRODUCTS
2100TOBACCO MANUFACTURES
2211YARN THREAD AND FABRIC MILLS
2250KNITTING MILLS
2260DYEING FINISHING TEXTILES
2270FLOOR COVERING EXC HARD SURF
2290MISC TEXTILE MILL PRODUCTS
2311APPAREL AND ACCESSORIES
2390MISC FAB TEXTILE PRODUCTS
2411LOGGING CAMPS AND CONTRACTRS
2420SAWMILLS AND WOOD PROD
2500FURNITURE AND FIXTURES
2610PULP PAPER AND BOARD MILLS
2650PAPERBOARD CONTAINERS BOXES
2660ALL OTHER PAPER PRODUCTS
2711NEWSPAPERS
2721PRINTING EXC NEWSPAPERS
2822SYNTHETIC FIBERS
2830DRUGS AND MEDICINE
2850PAINTS AND VARNISHES
2890MISC CHEMICAL PRODUCTS
2911PETROLEUM REFINING
2990OTHER PETROL AND COAL PROD
3010RUBBER PRODUCTS
3070MISC PLASTIC PRODUCTS
3111LEATHER TANNING FINISHING
3140FOOTWEAR EXCEPT RUBBER
3150ALL OTHER LEATHER PRODUCTS
3211GLASS AND GLASS PRODUCTS
3241CEMENT CONCRETE AND PLASTER
3250STRUCTURAL CLAY PRODUCTS
3260POTTERY AND RELATED PRODUCTS
3281MISC NONMETALLIC AND STONE
3312BLAST FURNACES AND STEEL WKS
3313OTHER PRIMARY METAL IND
3330PRIMARY NONFERROUS METALS
3400FABRICATED METAL PROD TOTAL
3420CUTLERY HAND TOOLS HARDWARE
3440FABRICATED STRUCTURAL METAL
3490MISC FABRICATED METAL PROD

3522FARM MACHINERY AND EQUIPMENT
3530MISCELLANEOUS MACHINERY
3570OFFICE MACHINERY
3600ELECTRICAL MACHINERY
3710MOTOR VEHICLES AND EQUIPMENT
3720AIRCRAFT AND ENGINES
3730SHIP BOATBUILDING AND REPAIR
3740RAILROAD OTHER TRANSP EQUIP
3811INSTRUMENTS EXCEPT CLOCKS
3870WATCHES AND CLOCK DEVICES
3900MISCELLANEOUS MANUFACTURING
4000RAILROADS
4111LOCAL TRANSIT INTERURBAN BUS
4124TAXIS
4210TRUCKING
4220WAREHOUSING
4400WATER TRANSPORTATION
4500AIR TRANSPORTATION
4600PIPELINES
4700TRANSPORTATION SERVICES
4811TELEPHONE
4821TELEGRAPH
4830RADIO AND TV
4911ELECTRIC GAS AND STEAM
4941WATER AND IRRIGATION
4950SANITARY SERVICES
5000WHOLESALE TRADE TOTAL ADDED
5010MOTOR VEHICLES AND EQUIPMENT
5020DRUGS AND CHEMICALS
5030DRY GOODS AND APPAREL
5040GROCERIES AND RELATED PROD
5060ELECT GOODS HARDWRE PLUMBING
5080MACHINERY AND EQUIPMENT
5090MISC WHOLESALE TRADE
5100RETAIL TRADE TOTAL ADDED
5200BLDG MATERIALS FARM EQUIPMNT
5311OTHER GENERAL MERCHANDISING
5330LIMITED PRICE STORES
5400FOOD AND DAIRY STORES
5510AUTO AND ACCESSORY DEALERS
5541GAS STATIONS
5600APPAREL AND ACCESSORIES
5700FURNITURE FURNISHINGS APPL
5800EATING AND DRINKING PLACES
5912DRUG STORES
5920OTHER RETAIL STORES
6011BANKS AND CREDIT AGENCIES
6200STOCK BROKERS INVESTMENT CUS
6300INSURANCE COMPANIES
6511REAL ESTATE
7000HOTELS OTHER LODGING PLACES
7210LAUNDRIES CLEANERS VALET SER
7220OTHER PERSONAL SERVICES
7311ADVERTISING AGENCIES
7321OTHER MISC BUSINESS SERVICES
7500AUTO REPAIR SERVICES
7620OTHER REPAIR SERVICES
7800MOTION PICTURES AND THEATERS
7900MISC ENTERTAINMNT RECREATION

8001HOSPITALS
80710THER MEDICAL AND HEALTH SER
8111LEGAL SERVICES
8200EDUCATIONAL SERVICES
8600NONPROFIT MEMBERSHIP ORGANIZ
8661WELFARE AND RELIGIOUS ORGAN
8800PRIVATE HOUSEHOLDS
8911ENGINEERING AND ARCHITEC SER
8931ACCOUNTING BOOKKEEPING SER
8999ALL OTHER PROFESSIONAL SER
9120POSTAL SERVICE
91900THER FEDERAL PUBLIC ADMIN
9200STATE PUBLIC ADMINISTRATION
9300LOCAL PUBLIC ADMINISTRATION

*** TABLE COUNT 127 *******

SAMPLE SIZE TABLE RECORD

COLUMN	TYPE	DESCRIPTION
1 - 7	9(7)	Number of input cards
8 - 1Ø	9(3)	Number of input cards requried for sample to be valid
11 - 79	X(69)	Filler (spaces)
8Ø - 8Ø	X(1)	Card identification code (S)

This table is in sequence on columns 1 through 7.

TABLE FOR DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION

---N---*S*	
0000010010	0000800260
0000015014	0000850265
0000020019	0000900269
0000025024	0000950274
0000030028	0001000278
0000035032	0001100285
0000040036	0001200291
0000045040	0001300297
0000050044	0001400302
0000055048	0001500306
0000060052	0001600310
0000065056	0001700313
0000070059	0001800317
0000075063	0001900320
0000080066	0002000322
0000085070	0002200327
0000090073	0002400331
0000095076	0002600335
0000100080	0002800338
0000110086	0003000341
0000120092	0003500346
0000130097	0004000351
0000140103	0004500354
0000150108	0005000357
0000160113	0006000361
0000170118	0007000364
0000180123	0008000367
0000190127	0009000368
0000200132	0010000370
0000210136	0015000375
0000220140	0020000377
0000230144	0030000379
0000240148	0040000380
0000250152	0050000381
0000260155	0075000382
0000270159	0100000384
0000280162	
0000290165	
0000300169	
0000320175	
0000340181	
0000360186	
0000380191	
0000400196	
0000420201	
0000440205	
0000460210	
0000480214	
0000500217	
0000550226	
0000600234	
0000650242	
0000700248	
0000750254	

APPENDIX V

Sample Evaluation

Sample Print-Out Pages: Business Machines
Sample Print-Out Pages: Student Needs

PROGRAM NUMBER C-4504 BUS MACHINES

CIRRICULUM RESOURCES AND ANCILLARY SERVICES

NUMBER OF CLASS PERIODS 4 AVERAGE STUDENTS PER PERIOD 25 OPTIMUM CLASS LOAD 20

DOT	TITLE	ENROLLED	NEED TRAINING
249.000	CLERICAL AND KINDRED NEC	100	19
216.488	OFFICE MACHINE OPERATORS	0	12
	-TOTAL-	100	31

#	RESOURCES ITEM	ACTUAL ON HAND	REQUIRED NEED	PER STUDENT REQUIRED	PERCENTAGE UTILIZED
01	DITTO (MANUAL)	1	3	1/10	250%
02	GESTETNER MIMEOGRAPH	1	3	1/10	250%
03	ELECTRIC TYPEWRITER	6	13	5/10	208%
04	MANUAL TYPEWRITER	5	3	1/10	50%
05	10-KEY CALCULATOR	8	10	4/10	125%
06	PRINTING CALCULATOR	4	5	2/10	125%
07	FULL-KEY CALCULATOR	1	3	1/10	250%
08	BOOKKEEPING MACHINE	1	3	1/10	250%
09	KEY-DRIVEN CALCULATOR	3	3	1/10	83%
10	ROTARY CALCULATOR	5	3	1/10	50%
11	ELECTRONIC CALCULATOR	3	5	2/10	167%
12	ADDO-FAX COPIER	0	3	1/10	0%
13	DICTAPHONES	1	5	2/10	500%

NOTE: One course (C-4504) trains for both these DOT codes 249.000, 216.488

PROGRAM NUMBER C-4504 BUS MACHINES

JOB PERFORMANCE REQUIREMENTS

EMPLOYERS RESPONDING TO SURVEY BY SIC CODE

SIC	TITLE	COUNT
2090	OTHER FOOD PRODUCTS	2
5080	MACHINERY AND EQUIPMENT	1
5311	OTHER GENERAL MERCHANDISING	1
5510	AUTO AND ACCESSORY DEALERS	1
6300	INSURANCE COMPANIES	1
	-TOTAL-	6

REQ #	CURRENT OCCUPATION REQUIREMENTS	% AGREE.	W VALUE
01	CAPABLE OF ADDING A TOTAL OF 100 STROKES PER MINUTE ON THE 10 KEY & PRINTING CALCULATOR	33	• .00
02	CAPABLE OF ADDING A TOTAL OF 80 STROKES PER MINUTE ON A FULL-KEY MACHINE	00	• .00
03	CAPABLE OF COMPLETING 60 TO 80 EXERCISES PER HOUR ON A ROTARY CALCULATOR	16	• .00
04	PROFICIENT IN TYPING	66	• .00
05	PROFICIENT IN USING DUPLICATING MACHINES	83	• .00
06	KNOW FUNDAMENTAL PROCESSES OF ARITHMETIC	83	• .00
07	CORRECT GRAMMATICAL CONSTRUCTION IN ORAL AND WRITTEN COMMUNICATION	66	• .00
08	KNOWLEDGE AND UNDERSTANDING OF THE FREE ENTERPRISE SYSTEM	16	• .00

ADDITIONAL REQUIREMENTS -FEED BACK FROM EMPLOYERS THIS YEAR-

A01 SPELLING

A02 ACCURACY IN TYPING

EMPLOYER FEED BACK LAST YEAR

-NONE-

PROGRAM NUMBER C-4804 BUS MACHINES

PROGRAM PLANNING AND REVIEW

TOP 10 DOT CODES INCREASING MORE THAN
216.488 OFFICE MACHINE OPERATORS
249.000 CLERICAL AND KINDRED NEC
BASED ON 5TH QUARTER PROJECTION DATA.

DOT CODE	OCCUPATION	TOTAL JOB OPENINGS PROJECTED 5TH QTR	9TH QTR	13TH QTR
219.388	OTHER CLERICAL AND KINDRED	1,407	1,570	1,644
180.000	MGRS OFFICIALS PROP NEC	1,378	1,669	1,389

TOTAL COST OF THIS PROGRAM (EXCLUDING ADMINISTRATIVE OVERHEAD)

INSTRUCTIONAL SALARIES	$ 0	
EQUIPMENT AND OPERATION	$ 0	
	$ 0	TOTAL

COST PER VOC. ED. GRADUATE $ 0

TRAINING FROM ALL OTHER SOURCES	COUNT	
216.488 OFFICE MACHINE OPERATORS	750	
249.000 CLERICAL AND KINDRED NEC	0	
	750	-TOTAL-

TOTAL JOBS IMMEDIATELY AFTER GRADUATION	COUNT	
216.488 OFFICE MACHINE OPERATORS	147	
249.000 CLERICAL AND KINDRED NEC	1,134	
	1,281	-TOTAL-

1281 JOBS AVAILABLE MINUS 750 IN TRAINING AREA WIDE 531 SURPLUS JOBS

COST AS PERCENT OF ADA EXPENDITURE --CANNOT EVALUATE *DATA NOT AVAILABLE*

NEEDS SURVEY DATA	LAST YEAR	THIS YEAR	CHANGE
216.488 OFFICE MACHINE OPERATORS	0	12	12
249.000 CLERICAL AND KINDRED NEC	0	19	19
-TOTALS-	0	31	31
SURPLUS JOBS	0	531	531

PROGRAM NUMBER C-4504 BUS MACHINES

PROGRAM PLANNING AND REVIEW

AREA OF INTEREST OF 12TH GRADE STUDENTS WHO WILL ENTER THE LABOR MARKET AND VOCATIONAL TRAINING IS NOT AVAILABLE (TOP TEN ONLY)

DOT CODE	OCCUPATION	NUMBER
000.000	NO INTEREST	211
150.048	TEACHRS WKRS IN ARTS ENTRMNT	113
352.878	AIRLINE STEWRDS STEWARDESSES	71
375.268	POLICEMEN DETECTIVES ETC	70
079.000	OTHER MEDICAL AND HEALTH WKR	64
091.228	TEACHERS SECONDARY	57
075.378	NURSES PROFESSIONAL	57
040.000	OTHER NATURAL SCIENTISTS	51
040.081	AGRICULTURAL SCIENTISTS	50
319.468	OTHER SERVICE WORKERS NEC	47

PROGRAM NUMBER C-4504 BUS MACHINES

RECRUITMENT

DOT	TITLE	ENROLLED THIS SKILL	DESIRE THIS SKILL	JOBS AVABILABLE THIS SKILL
216.488	OFFICE MACHINE OPERATORS	0	12	147
249.000	CLERICAL AND KINDRED NEC	100	19	1134
	-TOTALS-	100	31	1281

STUDENTS WHO INDICATE WORK AFTER HIGH SCHOOL BUT ARE NOT ENROLLED IN A VOCATIONAL EDUCATION PROGRAM.

DOT	TITLE	NOT ENROLLED	ACADEMIC	SOCIO-ECONOMIC	PHYSICAL
216.488	OFFICE MACHINE OPERATORS	0	0	0	0
249.000	CLERICAL AND KINDRED NEC	6	0	0	0
	-TOTALS-	6	0	0	0

UNFILLED CLASS SPACES 20 DROP OUT DATA *DATA NOT AVAILABLE*

PROGRAM NUMBER C-4504 BUS MACHINES

PLACEMENT

	GRADUATES 1971		GRADUATES 1970		
EMPLOYED IN SKILL OR RELATED SKILL	85	19.3	00	.0	
IN ADVANCED TRAINING	53	12.0	00	.0	
RETRAINING IN OTHER FIELDS	61	13.9	00	.0	
RETRAINING AT COLLEGE LEVEL	00	.0	00	.0	NO DATA
WORKING IN JOBS UNRELATED TO TRAINING	142	32.3	00	.0	

PROGRAM NUMBER C-4504 BUS MACHINES

INSTRUCTION

	INSTRUCTIONAL OBJECTIVE	STUDENTS COUNT	PERCENT COMPLETED
01	CAPABLE OF ADDING A TOTAL OF 100 STROKES PER MINUTE ON THE 10 KEY & PRINTING CALCULATOR	35	35%
02	CAPABLE OF ADDING A TOTAL OF 80 STROKES PER MINUTE ON A FULL-KEY MACHINE	25	25%
03	CAPABLE OF COMPLETING 60 TO 80 EXERCISES PER HOUR ON A ROTARY CALCULATOR	45	45%
04	PROFICIENT IN TYPING	30	30%
05	PROFICIENT IN USING DUPLICATING MACHINES	25	25%
06	KNOW FUNDAMENTAL PROCESSES OF ARITHMETIC	45	45%
07	CORRECT GRAMMATICAL CONSTRUCTION IN ORAL AND WRITTEN COMMUNICATION	0	0%
08	KNOWLEDGE AND UNDERSTANDING OF THE FREE ENTERPRISE SYSTEM	0	0%

176 INSTRUCTIONAL DAYS DATA GATHERED ON THE 171 INSTRUCTIONAL DAY

PROGRAM NUMBER C-4504 BUS MACHINES

EVALUATION

INSTRUCTOR TRAINING FOR THIS COURSE AUGUST 1971

DOT CODE	JOB OPENINGS
216.488 OFFICE MACHINE OPERATORS	147
249.000 CLERICAL AND KINDRED NEC	1134

RESOURCES ARE ALIGNED TO JOB MARKET

RESOURCES ARE NOT ALIGNED TO MEET STUDENT NEEDS -TRAINING IN UNDESIRED SKILLS-

EVIDENCE INDICATES THESE INSTRUCTIONAL OBJECTIVES ARE IMPROPER OR MISALIGNED

REQ #	INSTRUCTIONAL OBJECTIVE	% AGREE	W VALUE
01	CAPABLE OF ADDING A TOTAL OF 100 STROKES PER MINUTE ON THE 10 KEY & PRINTING CALCULATOR	33	+ .00
02	CAPABLE OF ADDING A TOTAL OF 80 STROKES PER MINUTE ON A FULL-KEY MACHINE	0	+ .00
03	CAPABLE OF COMPLETING 60 TO 80 EXERCISES PER HOUR ON A ROTARY CALCULATOR	16	+ .00
08	KNOWLEDGE AND UNDERSTANDING OF THE FREE ENTERPRISE SYSTEM	16	+ .00

SAMPLE SIZE IS 6, SHOULD BE 48 FOR .05 LEVEL OF SIGNIFICANCE.
SAMPLE IS NOT CONSIDERED SIGNIFICANT AT THE .05 LEVEL.

RESCOURCES MORE THAN 100% UTILIZED

01 DITTO (MANUAL)	HAVE	1	NEED	3	250% UTILIZED
02 GESTETNER MIMEOGRAPH	HAVE	1	NEED	3	250% UTILIZED
03 ELECTRIC TYPEWRITER	HAVE	6	NEED	13	208% UTILIZED
05 10-KEY CALCULATOR	HAVE	8	NEED	10	125% UTILIZED
06 PRINTING CALCULATOR	HAVE	4	NEED	5	125% UTILIZED
07 FULL-KEY CALCULATOR	HAVE	1	NEED	3	250% UTILIZED

PROGRAM NUMBER C-4504 BUS MACHINES

EVALUATION

08 BOOKKEEPING MACHINE	HAVE	1	NEED	3	250% UTILIZED
11 ELECTRONIC CALCULATOR	HAVE	3	NEED	5	167% UTILIZED
13 DICTAPHONES	HAVE	1	NEED	5	500% UTILIZED

EXCESS RESOURCES

04 MANUAL TYPEWRITER	HAVE	5	NEED	3	50% UTILIZED
10 ROTARY CALCULATOR	HAVE	5	NEED	3	50% UTILIZED

TOTAL PROMOTION IS NOT REACHING ALL STUDENTS RECONSIDER PARENT ORIENTED VOCATIONAL EDUCATION PROMOTION PROGRAM

ET DATA NOT AVAILABLE IN PROPER FORM FOR EVALUATION OF COST EFFECTIVENESS

DROP OUT DATA IS NOT SUFFICENT TO EVALUATE THE PROBLEM

UNDER-RECRUTING CLASSES ARE NOT FILLED

NOT RECRUITING STUDENTS WHO NEED TRAINING IN THIS SKILL

RECRUTING STUDENTS IN THE WRONG FIELD

PROGRAM NUMBER C-4504 BUS MACHINES

PROMOTION

USED VIEW 87 (4.3 %)

107 STUDENTS INTEND TO ENTER WORLD OF WORK AFTER HIGH SCHOOL BUT ARE NOT ENROLLED IN ANY VOCATIONAL EDUCATION PROGRAM-PROMOTION MISSED THESE STUDENTS (5.3 %)

9 STUDENTS HAVE NO CAREER INDICATED BUT ARE GOING TO COLLEGE, PROMOTION MISSED THESE STUDENTS (.4 %)

PROGRAM NUMBER C-4504 BUS MACHINES

COUNSELING

COUNSELED FOR CAREER	401	(20.7 %)
USED VIEW	87	(4.5 %)
ENROLLED IN MORE THAN ONE PROGRAM	569	(29.4 %)

THIS MAY BE A PROBLEM AREA - COULD BE COUNSELOR, STUDENT INSTRUCTOR OR ENVIRONMENT

NUMBER OF STUDENTS -

REQUIRE EDUCATION BEYOND GRADE 12 FOR CAREER CHOSEN	805	(41.6 %)
REQUIRE VOCATIONAL TRAINING	1126	(58.3 %)
PHYSICAL HANDICAP	26	(1.3 %)
HAVE ACADEMIC HANDICAP	99	(5.1 %)
SOCIO-ECONOMIC HANDICAP	59	(3.0 %)
HAVE DROPPED OUT OF VOC. ED BUT ARE BACK IN PROGRAM	115	(5.9 %)
HAVE DROPPED OUT OF VOC. ED AND NOT YET RE-ENROLLED	741	(38.3 %)

38.3 % DROP OUTS NOT RE-ENROLLED

NOTE - THIS MAY NEVER BE ZERO. CHECK INDIVIDUAL CIRCUMSTANCES TO INSURE CORRECT COUNSELING

GRADE 12 STUDENTS UNDECIDED AS WHAT TO DO AFTER GRADE 12	98	(5.0 %)
GRADE 12 STUDENTS UNDECIDED AS TO CAREER	68	(3.5 %)
GRADUATES OF LAST YEAR NOT PLACED IN TRAINED SKILL	316	(72.4 %)

---------- EVALUATION OF COUNSELING ----------

PERCENTAGE OF AREA UNEMPLOYMENT IS 6.6% AS OF 1ST QUARTER OF 1972.

VOC. ED. GRADUATES UNEMPLOYED	176	(40.0 %)

COUNSELING NOT CONSIDERED EFFECTIVE FOR 3.5 % OF GRADUATING STUDENTS. (UNDECIDED AS TO CAREER).

NOT ALL GRADUATING STUDENTS ARE PREPARED FOR THEIR ROLE IN THE WORLD OF WORK	169	(8.7 %)

PROGRAM NUMBER C-4504 BUS MACHINES

NEEDS SURVEY DATA

DATE COUNSELED - ACTUAL COUNTS TOTAL COUNSELED 1125 (58.2 %)

SCHOOL/DISTRICT	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
ELK GROVE	134	118	144	106	191	214	130	26	39	23

POPULATION ESTIMATES BASED UPON SAMPLE

SCHOOL OR DISTRICT	DROP RE-ENROLLMENT YES	DROP RE-ENROLLMENT NO	VOC ED NUMBER PROGRAMS ZERO	VOC EDUC ENROLLMENT ONE	VOC EDUC ENROLLMENT TWO	VOC EDUC ENROLLMENT 3 OR MORE	INTENTIONS AFTER GRADE 12 COLLEGE	TRAIN FOR JOB	FIND JOB	GOVT. SERVICE	MILITARY SERVICE	UNDECIDED
ELK GROVE	115	741	236	580	385	183	805	294	263	23	104	438

PERCENTAGE OF STUDENTS IDENTIFIED AS % OF ADA IS 64.37 %

NEEDS HAVE BEEN IDENTIFIED SUFFICIENTLY FOR PROGRAM TO BE CONSIDERED EFFECTIVE AT THE .05 LEVEL

CODE DOT TITLE STUDENTS IN TRAINING
000.000 NO INTEREST 00

		STUDENTS SUBTOT	SAMPLED TOTALS		NEEDS OF ALL STUDENTS SUBTOTALS	TOTALS
CATEGORY -A- POST SECONDARY EDUCATION						
	ENTER COLLEGE	36	2.89%		56	
	-TOTAL		36	2.89%		56
CATEGORY -B- REQUIRE V. E. TRAINING						
	TRAIN FOR JOB	11	.88%		17	
	TRY TO FIND JOB	23	1.85%		36	
	GOVERNMENT SERVICE	3	.24%		5	
	MILITARY SERVICE	10	.80%		16	
	UNDECIDED	53	4.26%		82	
	-TOTAL		100	8.04%		155
CATEGORY -C- SPECIAL PROBLEMS						
C1.	PHYSICAL HANDIC	1	.08%		2	
C2.	ACADEMIC HANDIC	12	.96%		19	
C3.	SOCIOECONOMIC H	3	.24%		5	
	-TOTAL		16	1.28%		25
	-----DOT TOTALS-----		136	10.94%		211

STUDENT NEEDS FOR TRAINING IN THIS SKILL ARE NOT BEING MET (-)

CODE DOT TITLE
249.000 CLERICAL AND KINDRED NEC

STUDENTS IN TRAINING
193

		STUDENTS SAMPLED SUBTOT	TOTALS		NEEDS OF ALL STUDENTS SUBTOTALS	TOTALS
CATEGORY -A- POST SECONDARY EDUCATION						
	ENTER COLLEGE	4	.32%		6	
	-TOTAL		4	.32%		6
CATEGORY -B- REQUIRE V. E. TRAINING						
	TRAIN FOR JOB	1	.08%		2	
	TRY TO FIND JOB	2	.16%		3	
	GOVERNMENT SERVICE		%			
	MILITARY SERVICE		%			
	UNDECIDED	5	.40%		8	
	-TOTAL		8	.64%		12
CATEGORY -C- SPECIAL PROBLEMS						
C1.	PHYSICAL HANDIC		%			
C2.	ACADEMIC HANDIC	1	.08%		1	
C3.	SOCIOECONOMIC H	1	.08%		2	
	-TOTAL		2	.16%		3
	-----DOT TOTALS-----		12	.96%		19

TRAINING IN THIS SKILL MAY NOT BE ALIGNED TO STUDENT NEEDS (+)

CODE DOT TITLE STUDENTS IN TRAINING
SUMMARY 00

		STUDENTS SAMPLED SUBTOT	TOTALS	NEEDS OF ALL STUDENTS SUBTOTALS	TOTALS
CATEGORY -A-	POST SECONDARY EDUCATION				
	ENTER COLLEGE	518	41.67%	805	
	-TOTAL		518 41.67%		805
CATEGORY -B-	REQUIRE V. E. TRAINING				
	TRAIN FOR JOB	189	15.20%	294	
	TRY TO FIND JOB	169	13.59%	263	
	GOVERNMENT SERVICE	15	1.20%	23	
	MILITARY SERVICE	70	5.63%	109	
	UNDECIDED	282	22.68%	438	
	-TOTAL		725 58.32%		1126
CATEGORY -C-	SPECIAL PROBLEMS				
C1.	PHYSICAL HANDIC	17	1.36%	26	
C2.	ACADEMIC HANDIC	64	5.14%	99	
C3.	SOCIOECONOMIC H	38	3.05%	59	
	-TOTAL		119 9.[illegible]%		185
	-----DOT TOTALS-----		1243 100.00%		1931