DOCUMENT RESUME

ED 115 864 CE 005 702

TITLE	Field Test Results of the MISOE [Management Information System for Occupational Education] Census Data System Fall Reports. CDS Document No. 8.
INSTITUTION	Management and Information System for Occupational Education, Winchester, Mass.
SPONS AGENCY	Massachusetts State Dept. of Education, Boston. Div. of Occupational Education.
PUB DATE	Jun 74
NOTE	91p.; For related documents, see ED 062 553; ED 068 646-647; ED 072 225; ED 072 228; ED 072 303-304; CE 005 687-727
EDRS PRICE	MF-$0.76 HC-$4.43 Plus Postage
DESCRIPTORS	Census Figures; Data Bases; *Data Collection; Demonstration Projects; Educational Objectives; Input Output Devices; *Management by Objectives; *Management Information Systems; Program Effectiveness; *Program Evaluation; Reports; State Programs; *Vocational Education
IDENTIFIERS	CDS; Census Data System; Field Testing; Management Information System Occupational Educa; Massachusetts; MISOE

ABSTRACT

The document describes the process and presents the results of a field test of the Management Information System for Occupational Education (MISOE) Census Data System (CDS) Fall Reports. The data system was designed to collect and store basic census data (mandated State and Federal) for all occupational programs in Massachusetts and to meet all of the current data requirements of the Division of Occupational Education, including the Annual Federal report. CDS structure related programs, enrollments, and costs (input information) to job-entry skills (terminal objectives, or TERMOBS) acquired by program completors in 20 program areas (output information). The overall goal of the field test was to measure the validity and workability of the CDS in Massachusetts school systems, specifically, to test/validate the TERMOBS, the data collection process, and the value of the CDS to local educators. Six school systems were principally involved in the field test. Although cost data was not collected in this field test, the process of collecting program, enrollment, and job-entry skill information in a prescribed format was fully validated. The immediate short-term management benefits offered by the system are outlined. The tables and addenda include all data collected in the test implementation. (AJ)

CDS DOCUMENT #8

FIELD TEST RESULTS

of the

MISOE CENSUS DATA SYSTEM FALL REPORTS

June, 1974

William Kyros, Project Director
John Shaffer, Research Assistant
Census Data System
Management Information System for Occupational Education
College of Management Science
University of Lowell

PREFACE

This document describes the results of the field test of the MISOE Census Data System Fall Reports. The test demonstrated the immediate usefulness of the Fall Reports to the participating schools and the supporting data are included. A video-taped documentary of this field test is available and is referenced in Addendum IV.

As a matter of interest, the documentation pertaining to an evaluation of the initial Census Data System Fall Package by the participating schools and by staff members of the Massachusetts Department of Education is included in Addendum I.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
GOALS AND OBJECTIVES	3
PROCESS	4
A. School Systems	4
B. Contact With Schools	5
RESULTS	7
A. Programs	7
B. Enrollment	7
C. TERMOBs	8
D. Overall Value of Census Data System to the Local Educational Agency	11
CONCLUSIONS	14
TABLES	
Table I — Enrollment by Program by Terminal Objectives	17
Table II — Average Number of TERMOBs Offered per Program by School System	24
Table III — TERMOBs Reviewed, Rated and Validated by School System	26
Table IV — Estimated TERMOB Coverage of Instructional Programs	28
Table V — Department Head Evaluation Summary	29
Table VI — Superintendent Evaluation Summary	30

TABLE OF CONTENTS (CONT.)

		Page
ADDENDA		
Addendum I	- Initial CDS Fall Package Evaluation	32
Addendum II	- TERMOB Frequency by Program	43
Addendum III	- TERMOB Coverage Information by Program	87
Addendum IV	- Fall Package Field Test Video Tape Documentation	90

INTRODUCTION

The MISOE Census Data System (CDS) collects and stores basic census data (mandated State and Federal) for all occupational programs in Massachusetts. It was designed to meet all of the current data requirements of the Division of Occupational Education, including the Annual Federal Report. CDS structure relates programs, enrollments, and costs, (input information), to job-entry skills (TERMOBs) acquired by program completors (output information). By combining mandated data with management data, CDS can reflect the diversity of practice in Occupational Education in Massachusetts. The current system only yields enrollment count by LEA, (not by school), and cannot determine the occupations for which students are studying by grade, since it aggregates students enrolled in a range of grades, thereby preventing determination of effects of program length on program cost and educational outcomes. In contrast, the Census Data System's flexibility provides full program specification by grade, enabling local schools to account for an ever-widening variety of occupational program alternatives. Delineation by student group permits accurate reporting of clustered programs--multiple groups of students simultaneously pursuing different skill configurations within the same program. In addition, CDS enumerates the job-entry skills (TERMOBs) program completors are expected to acquire, and provides determination of program effectiveness by achievement level index, (using TERMOBs) as criteria-referenced tests).

Although the cost data portion (End-of-Year Report) of CDS is still under development, the process of collecting program, enrollment, and job-entry skill information (the Fall Report) in a prescribed format was fully validated in the CDS Fall Report Field Test.

The Census Data System's format was designed to fit into the single department-wide reporting system now being developed by the Department of Education.

The increased quantity and quality of information available from the CDS offers immediate benefits to managers of occupational education at both the state and local level. The totally flexible structure of the Census Data System permits it to accurately reflect practice, and thereby acknowledge and foster innovation, improvement, and progress through better management of occupational education.

This report describes the field test process and its results, and breifly outlines the immediate short-term management benefits offered by the system. The tables and addenda include all data collected in this test implementation, including a memorandum detailing a preceding initial evaluation of CDS by school and Department of Education personnel.

GOALS AND OBJECTIVES

This report deals with the MISOE Census Data System (CDS) Fall Report field test which was conducted in May and June of 1974. The overall goal of the field test was to measure the validity and workability of the Census Data System (CDS) in Massachusetts School Systems. Specifically, the objective was to test/validate the following:

1) Terminal Performance Objectives (TERMOBs) for 19 occupational program areas.

2) Procedures, forms, and the mechanics of the data collection process.

3) Overall value and feasibility of the Census Data System (CDS) to the local educational agency (LEA), including teachers, department heads, and administrators.

PROCESS

A. The School Systems

Six school systems were principally involved in the CDS field test:

1. Shawsheen Valley Regional
2. Nashoba Valley Regional
3. Northeast Metropolitan Regional
4. Brookline
5. Newton
6. Quincy

In addition, the following school systems were represented by one or two program areas:

1. South Middlesex Regional
2. Belmont
3. Medford Vocational Technical
4. Stoneham
5. Greater Lawrence Regional

In order to obtain a more realistic appraisal of the workability of the system, three of the six principal schools chosen had been MISOE laboratory schools previously, while the remaining three schools had had no prior experience with Project MISOE.

MISOE laboratory school systems:

- Newton
- Northeast Metropolitan Regional
- Quincy Vocational Technical

No prior experience with MISOE:

- Brookline
- Nashoba Valley Regional
- Shawsheen Valley Regional

It should be noted that during the field test and the entire data collection process, there was no discernible difference between these two groups of schools in terms of output, understanding, or reaction to the system.

B. Contact With Schools

Contact with the schools was minimal in order to best simulate state-wide implementation on a smaller scale. Contact was therefor divided into three major categories at each school:

1) Introductory Presentation - This presentati n included a brief background explanation of Project MISOE, the CDS system and its potential application and use by the LEA, and a review of Terminal Performance Objectives (TERMOBs).

2) Workshop - This contact was directed to participating teachers or department heads and involved completion of enrollment forms, the validating of instructional and TERMOB division and unit outlines, and the review of TERMOBs (by program) with individual assistance from the MISOE staff.

   a) Post workshop follow-up - Brief trouble shooting sessions were conducted with each teacher or department head to rectify any individual problem areas.

3) Data Collection Conference - This was an informal meeting of teachers and department heads with curriculum coordinators, administrators, and superintendents after completion of systems implementation. A candid appraisal by all concerned was solicited with respect to the overall value of CDS, TERMOB

coverage, the mechanics of the system, etc. The Data Collection Conference was video-taped in all six schools.

RESULTS

A major aspect of the MISOE Census Data System is its structure, whereby input information in terms of programs, enrollment, and costs can be directly related to output information in terms of job-entry skills that program completors are expected to perform. Although cost data was not collected in this field test, the mechanics of collecting program, enrollment, and job-entry skill information in a prescribed format was validated and is discussed below:

A. Programs

The CDS system's means of program identification is the United States Office of Education (USOE) Classification of Occupational Instructional Programs by USOE code numbers. USOE codes provide the detailed specification capability necessary for describing occupational programs in Massachusetts. Field test results showed 100 percent feasibility in both program identification and student group delineation (within a program) using USOE codes. (See Table I)

B. Enrollments

Delineation by student group (the highest order grouping of students receiving identical instruction) provides new information on program organization and curriculum divisions within a program. The mechanics of obtaining enrollment figures (forms, procedures) was found to be 100 percent applicable in all programs.

In Business Education programs as offered in regular high schools, forms have been developed to account for program variability and mobility within a given program.

1) Table I shows the connection that the Census Data System makes between programs, enrollments (input), and job-entry skills (output). Many programs can be described by one student group (all students learning the same type and number of skills). However, in some programs, more than one student group is needed to describe the total program (e.g. Machine Shop Table 1-16). In such cases each student group is listed. Another example of student group delineation is in the stenographic secretarial program (Table 1-7) where one special needs student learning fewer skills comprises an additional student group. (It is noted that the "Total TERMOBs" indicated under each caption in Table I reflects the number of objectives which constituted the original TERMOB file for the given program.*

C. TERMOBs

There was an overwhelmingly favorable reaction by teachers, department heads, and administrators alike to the concept of Terminal Performance Objectives (TERMOBs) expressed as job-entry or marketable skills.

* Table II is included to facilitate making comparisons among all schools in terms of TERMOBs offered by program.

Teachers were especially impressed with the TERMOB's ability to accurately describe the outcomes of their programs.

1) Table III shows the average number of TERMOBs reviewed, rated and validated by each school. Since each TERMOB was individually rated on program relevance (curriculum validity), sub-skill relevance, and clarity, an Overall Value Indicator (OVI) was developed encompassing the above three ratings. OVIs are listed by program on a 5 point scale in Table III. The Overall Value Indicator for all programs was 4.47/5.0 or 89 percent, program relevance (curricula validity) was 4.33/5.0 or 86 percent.

   In general, the Terminal Performance Objectives for the 19 programs were found to be highly accurate descriptors of the kinds of job-entry skills acquired by completors of vocational programs in Massachusetts, as shown by the above figures and Table III.

2) TERMOB coverage of programs varied by program from a low of 46.6 percent to a high of 100 percent. The average coverage for all programs was 79.18 percent. In three programs, several new TERMOB divisions and units and extensive additions were made while there was general

consolidation and additions made where necessary in all but two programs. Table IV shows the percent of TERMOB coverage by program (as of the data collection date of June 30), the number of TERMOBs by program at that time, the number of TERMOBs added by program, and the new percentages of TERMOB coverage by program. Addendum III contains descriptive information to support Table IV.

3) There was a strong connection between TERMOB programs and instructional programs at all schools. However, not all TERMOBs were represented in the instructional program at a given school. One of the forms contained in each TERMOB reporting booklet requested teachers or department heads to list all TERMOBs covered in their instructional program by student group. Addendum II, TERMOB Frequency by Program, shows the frequency with which each TERMOB appears in a given instructional program. Since only three schools were represented in each program, TERMOB frequency data from the CDS field test is of limited value. Variations in ratings of

conditions, performances, and extents cannot be made until the system is computer-operable. However, by crossing TERMOB frequency data on a state-wide basis, each TERMOB in a given program can be rank-ordered, (with component rating of conditions, performances, and extents), according to its frequency of use both regionally and across the state. Yearly updating of this information will show changing patterns of instruction within a program. The potential advantages to the LEA, in terms of curriculum development or revision, are considerable.

D. Overall Value of Census Data System to the Local Educational Agency

In addition to video-taped data collection conferences, (which included superintendents, coordinators, department heads, and teachers) each participating teacher or department head and each superintendent/director returned a questionnaire dealing with their opinions and reqctions to the system and its potential application in their school. The following summarized the information reported in the questionnaire.

a) Value to Teacher

In addition to rating each TERMOB on curriculum validity and ease of understanding (see Table III - Overall Value Indicators), teachers and department heads were asked to rate the TERMOBs collectively for their program on the following questions based on a 5 point scale (5 = 100 percent).

1. The TERMOBs are up-to-date
2. The TERMOBs are comprehensive statements of job-entry skills
3. The TERMOBs would be helpful in developing a teaching strategy
4. The TERMOBs would be helpful in developing a curriculum
5. The TERMOBs provide a logical means of enumerating to an employer the number and extent of skills acquired by individual program completors.

Table V summarizes the teacher/department head response to the above questions by program. It may be condluded from this data that teachers and department heads favorably accept the concept of TERMOBs and indicate that they are of much value and offer many features which would be of benefit to them in the management of their programs.

b) Value to Administration

The Superintendents/Directors and Occupational Coordinators were asked to

respond to a series of questions based on the potential value of the CDS system as a management tool. Table VI is the tabulated response to the superintendent/director's questionnaire. In general, the superintendents responded similarly to the department heads and teachers in that they observed many management benefits offered by the CDS system.

CONCLUSIONS

The MISOE Census Data System field test was successful in terms of its goals. The Terminal Performance Objectives (TERMOBs) for 19 occupaitonal program areas have been revised and extended to achieve virtually full coverage in all areas. (Revised to describe 20 program areas).

The mechanics of the data collection process was found to be 100 percent applicable and the overall value and feasibility of the Census Data System to the local educational agency has been completely documented. A summary of the CDS Fall Package Field Test has been compiled into a 30 minute video-tape presentation for use on a state-wide basis. In addition to the long-term benefits of the system in improving the quality of Occupational Education, the Census Data System's Fall Report offers immediate short-term benefits to managers of Occupational Education at both the state and local level, as briefly outlined below:

(1) Results approach to Education (Management by Objectives).

- Performance Objectives to specify desired educational outcomes by program
- Performance Objectives as a basis for determining program effectiveness (accountability)
- Performance Objectives as a basis for cost justification

(2) Management Tool for Effective Communication

- Guidance - Program summaries by job-entry skill upon which students can make career decisions (school with students)

- Program Development - "State of the Art" job-entry skills utilized to update or develop curriculum and program objectives (school with advisory councils and employers)

- Accurate Reporting - Identification of specialized programs by student group; differing number and types of job-entry skills acquired by different student groups (i.e., special needs, disadvantaged, handicapped) (school with department of education)

The Census Data System's Fall Package is now ready for state-wide implementation.

TABLE I

ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES

TABLE I-1 -- DISTRIBUTIVE EDUCATION PROGRAM

TOTAL TERMOBS: 40

	Belmont*	Brookline		Stoneham
USOE Code	04.0600 04.0300	04.0800 04.0200	04.99	04.0800
Enrollments	38	20	28	19
TERMOBS	40	24	24	40

TABLE I-2 -- PRACTICAL NURSING - Grade 13

TOTAL TERMOBS: 80

	Greater Lawrence	Quincy	Northeast
USOE Code	07.0302	07.0302	07.0302
Enrollments	44	33	28
TERMOBS	85*	83**	80

5* Additional TERMOBS (beyond 100% booklet) included
3** " " " " " "

TABLE I-3 -- OCCUPATIONAL CHILD CARE

TOTAL TERMOBS: 31

	Greater Lawrence	Brookline	Northeast
USOE Code	09.0201 09.0105	09.0201	09.0201
Enrollments	12	12	13
TERMOBS	31	31	31

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES (Cont'd)

TABLE I-4 -- BUSINESS CLUSTER: 75 TERMOBS

ACCOUNTING AND COMPUTING

	Newton	Brookline	
USOE Code	14.0101	14.0100	----
Enrollments	22	20	----
TERMOBS	35	41	----

TABLE I-5 -- BUSINESS CLUSTER: 75 TERMOBS

BUSINESS DATA PROCESSING

	Brookline		Northeast	
USOE Code	14.020201	14.0200	14.0201 14.0202 14.020201	14.0204 14.0203
Enrollments	9	14	16	
TERMOBS	8	10	26	

TABLE I-6 -- BUSINESS CLUSTER: 75 TERMOBS

GENERAL OFFICE

	Newton	Brookline
USOE Code	14.0300	14.0699*
Enrollments	45	25
TERMOBS	42	39

*USOE Code for "Personal Training and Related, other," but interpreted as General Office, clerical training.

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES (Cont'd)

TABLE I-7 -- BUSINESS CLUSTER: 75 TERMOBS

STENOGRAPHIC, SECRETARIAL & RELATED

	Newton	Brookline	Shawsheen	
USOE Code	14.0702	14.0799	14.0700 14.0702 14.0799	14.0901*
Enrollments	19	11	16	1
TERMOBS	40	23	46	41

*Special Education Student Group

TABLE I-8 -- AUTOMOTIVE BODY
TOTAL TERMOBS: 59

	Quincy	Nashoba	Shawsheen
USOE Code	17.0301	17.0301	17.0301
Enrollments	7	13	12
TERMOBS	54	48	46

TABLE I-9 -- AUTOMOTIVE MECHANICS

TOTAL TERMOBS: 56

	Quincy	Nashoba	Shawsheen
USOE Code	17.0302 17.0399	17.0302	17.0302 17.0303
Enrollments	12	13	18
TERMOBS	56	56	56

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES (Cont'd)

TABLE I-10 -- DRAFTING

TOTAL TERMOBS: 45

	Northeast	Brookline	Quincy
USOE Code	17.1300	17.1300	17.1300
Enrollments	14	18	12
TERMOBS	42	33	43

TABLE I-11 -- WOODWORKING

TOTAL TERMOBS: 58

	Quincy	Shawsheen	Nashoba**
USOE Code	17.1001	17.3601 17.10 17.1001	--- --- ---
Enrollments	12	9	---
TERMOBS	58*	46	---

*Based on TERMOB review only, Table I (program coverage) incomplete.
**Participation of Woodworking teacher, (Walter Toney), withdrawn.

TABLE I-12 -- ELECTRICAL

TOTAL TERMOBS: 53

	Shawsheen	Nashoba	Quincy
USOE Code	17.1400	17.1002	17.1401
Enrollments	10	14	42
TERMOBS	36	43	24

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES (Cont'd)

TABLE I-13 -- ELECTRONICS

TOTAL TERMOBS: 55

	QUINCY	SHAWSHEEN*			NASHOBA
USOE Code	17.1502	17.1501	17.1502	17.1503	17.1500
Enrollments	14	2	14	2	7
TERMOBS	44	46	46	48	32

* 3 student groups, learning different numbers and types of job-entry skills (TERMOBS)

TABLE I-14 -- PLUMBING AND PIPEFITTING

TOTAL TERMOBS: 58

	QUINCY	NASHOBA	NORTHEAST
USOE Code	17.1007	17.1007	17.1007
Enrollments	29	10	22
TERMOBS	56	58	55

TABLE I-15 -- GRAPHIC ARTS

TOTAL TERMOBS: 38

	NORTHEAST	BROOKLINE		QUINCY
USOE Code	17.1900	17.1901 17.1902 17.1903 17.1904	17.1901 17.1902 17.1903 17.1904	17.1901 17.1902 17.1903 17.1905 17.1906
Enrollments	17	11	6	10
TERMOBS	31	20	10	21

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL OBJECTIVES (Cont'd)

TABLE I-16 -- MACHINE SHOP

TOTAL TERMOBS: 57

	NASHOBA		QUINCY*	SHAWSHEEN
USOE Code	17.2302	17.2302	17.2302	17.2302
Enrollments	12	2	0	24
TERMOBS	56	36	49	57

* No 12th grade program completors in 1973-74.

TABLE I-17 -- METALWORKING*

TOTAL TERMOBS: 37

	SHAWSHEEN**		QUINCY	NASHOBA
USOE Code	17.2304	17.2305	17.2305	17.2300
Enrollments	16	16	18	3
TERMOBS	26	12	30	32

* comprising both metal fabrication and welding
** differentation of metal fabrication/welding by student group

TABLE I-18 -- COSMETOLOGY

TOTAL TERMOBS: 45

	NORTHEAST	KEEFE	MEDFORD
USOE Code	17.2602	17.2699	17.2602
Enrollments	14	13	15
TERMOBS	30	45	45

TABLE I -- ENROLLMENT BY PROGRAM BY TERMINAL-OBJECTIVES (Cont'd)

TABLE I-19 -- QUANTITY FOODS

TOTAL TERMOBS: '69

	QUINCY	SHAWSHEEN		NORTHEAST	
USOE Code	17.2902 17.2903 17.2999	17.2902 17.2903 17.2901	17.2901	17.2902	17.2901
Enrollments	10	14	2	7	7
TERMOBS	68	61	6	49	*

* not available

TABLE 11: AVERAGE NUMBER TERMOBS OFFERED PER PROGRAM

BY SCHOOL SYSTEM

SCHOOL SYSTEMS

PROGRAM	SHAWSHEEN	BROOKLINE	NASHOBA	NEWTON	NORTHEAST	QUINCY	GTR. LAWRENCE	BELMONT	STONEHAM	MEDFORD	SOUTH MIDDLESEX
DISTRIBUTIVE		35						40	40		
PRACTICAL NURSING					47*	83	85				
OCCUPATIONAL CHILD CARE		31			31		31				
ACCOUNTING		41		35							
DATA PROCESSING		12			26						
GENERAL OFFICE		39		42							
STENO., SECRETARIAL	47	23		40							
AUTO BODY	46		48			54					
AUTO MECHANICS	56		56			56					
DRAFTING		33			42	43					

* Incomplete review

TABLE II (CONT): AVERAGE NUMBER TERMOBS OFFERED PER PROGRAM

BY SCHOOL SYSTEM

SCHOOL SYSTEMS

PROGRAM	SHAWSHEEN	BROOKLINE	NASHOBA	NEWTON	NORTHEAST	QUINCY	GTR. LAWRENCE	BELMONT	STONEHAM	MEDFORD	SOUTH MIDDLESEX
WOODWORKING	46					58					
ELECTRICAL	36		43			24					
ELECTRONICS	53		32			44					
PLUMBING			58		55	56					
GRAPHIC ARTS		20			31	21					
MACHINE SHOP	56		55			49					
METALWORKING	30		32			30					
COSMETOLOGY					30					45	45
QUANTITY FOODS	67				49	68					

TABLE III: TERMOBS REVIEWED, RATED AND VALIDATED

BY SCHOOL SYSTEM

OVI = Overall Value Indicator

SCHOOL SYSTEMS

PROGRAM	SHAWSHEEN	BROOKLINE	NASHOBA	NEWTON	NORTHEAST	QUINCY	GTR. LAWRENCE	BELMONT	STONEHAM	MEDFORD	SOUTH MIDDLESEX
DISTRIBUTIVE TERMOBS: 40 OVI = 4.68		35						40	40		
PRACTICAL NURSING TERMOBS: 80 OVI = 4.70					47*	77	80				
OCCUPATIONAL CHILD CARE TERMOBS: 31 OVI = 4.60		31			31		31				
ACCOUNTING TERMOBS: 75 OVI = 3.67		40									
DATA PROCESS. TERMOBS: 75 OVI = 4.24		12			25						
GEN'L OFFICE TERMOBS: 75 OVI = 4.78				65							
STENO., SEC'Y TERMOBS: 75 OVI = 4.63	47	31		73							
AUTO BODY TERMOBS: 59 OVI = 4.66	46		49			55					
AUTO MECH. TERMOBS: 56 OVI = 4.70	56		56			56					
DRAFTING TERMOBS: 45 OVI = 4.61		42			42	42					

* Incomplete review

TABLE III (CONT): TERMOBS REVIEWED, RATED AND VALIDATED

BY SCHOOL SYSTEM

OVI = Overall Value Indicator

SCHOOL SYSTEMS

PROGRAM	SHAWSHEEN	BROOKLINE	NASHOBA	NEWTON	NORTHEAST	QUINCY	GTR. LAWRENCE	BELMONT	STONEHAM	MEDFORD	SOUTH MIDDLESEX
WOODWORKING TERMOBS: 58 OVI = 4.30	58					58					
ELECTRICAL TERMOBS: 53 OVI = 4.46	51		51			50					
ELECTRONICS TERMOBS: 55 OVI = 4.03	53		56			54					
PLUMBING TERMOBS: 58 OVI = 4.13			58		57	58					
GRAPHIC ARTS TERMOBS: 38 OVI = 4.46		20			31	21					
MACHINE SHOP TERMOBS: 57 OVI = 4.24	56		55			52					
METALWORKING TERMOBS: 37 OVI = 4.42	30		32			30					
COSMETOLOGY TERMOBS: 45 OVI = 4.64					45					45	45
QTY. FOODS TERMOBS: 69 OVI = 4.61	69				49	69					

TABLE IV: ESTIMATED TERMOB COVERAGE OF INSTRUCTIONAL PROGRAMS

1. Overall TERMOB coverage for all 19 programs: 79.18%
2. Overall curriculum validity (program relevance): 91.4%
3. TERMOB coverage by program.

	ESTIMATED COVERAGE (%)	ORIGINAL NO. OF TERMOBS	ADDITIONS	CURRENT ESTIMATED COVERAGE (%)
(1) DISTRIBUTIVE	80.0	40	(10)	95
(2) PRACTICAL NURSING	85.0	80	(12)	90
(3) OCC. CHILD CARE	93.3	31	(8)	95
(4) ACCOUNTING	90.0	47*	(3)	90
(5) DATA PROCESSING	50.0	48	(22)	90
(6) GENERAL OFFICE	95.0	41		95
(7) STENO., SECRETARIAL	90.0	46	(5)	95
(8) AUTOMOTIVE BODY	85.0	59		90
(9) AUTOMOTIVE MECHANICS	86.0	56	(7)	90
(10) DRAFTING	75.0	45	(7)	80
(11) WOODWORKING	90.0	58		90
(12) ELECTRICAL	83.3	53	(10)	90
(13) ELECTRONICS	73.3	55	(25)	90
(14) PLUMBING	60.0	58	(42)	95
(15) GRAPHIC ARTS	46.6	38	(24)	90
(16) MACHINE SHOP	78.3	60	(12)	85
(17) METALWORKING	66.6	37	(11)	80
(18) COSMETOLOGY	96.6	45		95
(19) QUANTITY FOODS	80.0	69	(15)	90

* 4 program areas considered as the Business Cluster consisting of 75 different objectives (See Table I)

TABLE V: DEPARTMENT HEAD EVALUTAION SUMMARY

TERMOBS ARE: PROGRAM	1 UP-TO-DATE	2 COMPREHENSIVE JOB-ENTRY SKILLS	3 HELPFUL IN PLANNING TEACHING STRATEGY	4 HELPFUL IN PLANNING CURRICULUM	5 MEANS OF SKILL ENUMERATION
1. DISTRIBUTIVE	4.6	4.6	5.0	5.0	5.0
2. PRACTICAL NURSING	4.3	4.3	4.3	4.4	4.3
3. OCC. CHILD CARE	4.6	4.6	5.0	5.0	5.0
4. ACCOUNTING	4.0	4.0	4.0	4.0	5.0
5. DATA PROCESSING	3.5	4.0	5.0	5.0	5.0
6. GENERAL OFFICE	5.0	4.0	4.0	5.0	5.0
7. STENO., SEC'Y	5.0	5.0	4.3	4.0	5.0
8. AUTOMOTIVE BODY	5.0	5.0	5.0	5.0	5.0
9. AUTOMOTIVE MECH.	4.6	4.6	5.0	5.0	5.0
10. DRAFTING*	3.0	5.0	5.0	5.0	5.0
11. WOODWORKING**	4.0	4.0	4.0	4.0	4.0
12. ELECTRICAL	4.3	4.6	4.6	4.3	4.3
13. ELECTRONICS	4.3	4.3	4.3	4.6	4.6
14. PLUMBING	4.0	4.3	4.6	5.0	4.3
15. GRAPHIC ARTS	3.6	4.6	4.6	4.3	4.4
16. MACHINE SHOP	3.6	4.3	4.0	3.6	4.6
17. METALWORKING	5.0	4.7	4.5	4.7	5.0
18. COSMETOLOGY	5.0	5.0	4.6	4.3	4.6
19. QUANTITY FOODS***	5.0	4.0	5.0	4.0	4.0

* Brookline, Northeast not returned
** Quincy, Nashoba not returned
*** Northeast not returned

Table VI: Superintendent Evaluation Summary

If terminal performance objectives (TERMOBS) were made available to your school system for all of your programs as an on-going process,

(1) Do your teachers feel that they would be useful to them as a means of communicating with

(Please register a rating from 1 to 5 where 1 is the lowest rating)

	Superintendent's Rating
a. students-parents	3.8
b. superiors (department head, superintendents)	4.0
c. advisory councils	3.8
d. employers	4.4

(2) Do your teachers feel they would be useful to them as guidelines for curriculum development purposes? 4.6

(3) In your judgement, would your teachers use them?

Yes 100% No ____

If no, please explain briefly

_____

_____

_____

(4) Do you feel that the TERMOBS would be useful to you as a means of communicating with

a. students-parents	4.2
b. teachers	4.2
c. advisory councils	4.2
d. employers	4.6
e. Department of Education	4.2

(5) Do you feel that the TERMOBS would be useful as a management tool?

Yes 100% No ____

If no, please explain briefly

_____

_____

_____

(6) Would you use TERMOBS? Yes 100% No ____

ADDENDUM 1

INITIAL CENSUS DATA SYSTEM FALL PACKAGE EVALUATION

The Commonwealth of Massachusetts
Department of Education
1017 Main Street
Winchester 01890
617-729-9260

DIVISION OF OCCUPATIONAL EDUCATION

MANAGEMENT & INFORMATION SYSTEM

January 30, 1974

To: Dr. Gregory R. Anrig
Commissioner of Education

From: Dr. Charles H. Buzzell, Associate Commissioner
Division of Occupational Education

Subject: Project MISOE - Census Data System

The first purpose of this memorandum is to describe my impression of an evaluation of a part of the Census Data System (CDS) developed by MISOE. This evaluation was conducted by several local school systems (see Appendix A). The second purpose is to specify recommendations for an implementation schedule of that part of the CDS that has been evaluated and for final development of CDS. This memorandum is divided into three parts:

Part I - A review of the Census Data System as developed by MISOE for the Division of Occupational Education (DOE) and its fit into the Census Data System of the entire Department of Education;

Part II - A description of the evaluation process of the "exposed" part of CDS and my impression of that evaluation. Appendix B stipulates specific responses by the local schools and a frequency count of agreement or disagreement to each positive or negative criticism;

Part III - A recommendation for implementation and continued development of the CDS for the Division of Occupational Education, in coordination with the total Department.

PART I

A Review of the Census Data System of the Division of Occupational Education

The data gathering part of the census data system of the Division of Occupational Education has been divided into two separate sections: The Fall Report and the End-of-Year Report. The Fall Report includes the following types of information: occupational education enrollments by grade, occupations (USOE Codes), student type, school and geographic setting, and

Terminal Performance Objectives (TERMOBS). The current system only yields enrollment counts by LEA (not school) and is structured so that it cannot reflect the occupations for which students are studying by grade, nor can the current system accommodate any curricula flexibility beyond lump numbers of students enrolled in a range of grades learning skills for one occupation. Current enrollment information does not accurately reflect practice, is rigidifying of practice, and frequently is misleading, because of its structure.

The MISOE-CDS enrollment system permits local schools to account for a wide variety of occupational program alternatives, ranging from short courses designed to prepare students with a limited range of skills, to complex, cluster programs, with multiple groups of students simultaneously pursuing different occupational skill configurations within the same program. The enrollment description of MISOE has been painstakingly developed to provide an accurate description of practice in a manner that in no way facilitates curricula rigor mortis.

In summary, the enrollment section of the CDS Fall Report provides a description of the occupations and skills within occupations (TERMOBS) which students are learning in a way that can be responsive to a wide range of management concerns at state and local levels, ranging from manpower policy concerns to issues of appropriate educational influences for human growth.

It is important to understand that MISOE-CDS has been structured so that it can aggregate and disaggregate enrollment (and all other data) by a wide variety of program, geographic, school, grade and student type dimensions instantly. This planned provision gives MISOE-CDS its power in supporting a range of information needs by management.

The Fall Report also includes other information, flexibly structured as is enrollment data: (1) Utilization and capacity of school space by OE program, by school, by time of day and year; (2) a general description of staff characteristics; (3) a description of the varying length of OE programs by school, and (4) the distribution of faculty teaching time over OE programs.

It is useful to understand that the Fall Report is structured to connect with the End-of-Year Report, yielding expenditure by OE program (within school) information.

The End-of-Year Report (not evaluated by the cooperating schools) is, in fact, a three page supplement to the existing End-of-Year Financial Report of the Department of Education. Its implementation requires a coordinated coding and logistic development between DOE and the Department, which will result in one, integrated census data information system for the entire Department. Such a system will provide DOE with the specialized management information it requires in a way that is maximally coordinated with the Census Data System of the Department. A diagrammatic conception of the relationship between Department and DOE Census Data Systems is as follows:

Department of Education Census Information	DOE Census Information System
	Fall Report 1. Enrollment by OE program and groups within programs. 2. Enrollment by TERMOB configurations within OE programs. 3. Utilization and capacity by OE program. 4. Staff characteristics. 5. Length of OE programs. End-of-Year Report 1. Expenditure by OE program.

Note: (1) DOE Census Data System, (expenditures and enrollment data), is reconcilable to the Department-wide system at the LEA level and above.

(2) The DOE Census Data System is designed to be interactive, such that management can instantly retrieve from self-initiated inquiries, numerical summaries, cross-tabs, or (even) mathematically manipulated results of analysis for all data within the system.

PART II

A Description of the Evaluation Process of the Fall Report of MISOE-CDS by Participating Schools

The five participating schools based their evaluation upon the experience of actually filling out all of the forms in the Fall Report. All

schools (but one, due to a snow storm) attended a workshop conducted by the MISOE staff, designed to help them with the reporting task and understand the management consequences of the information provided by the Fall Report. The MISOE staff also provided assistance to each school in the field during the trial experience. In each of the participating schools, a minimum of one department head and one administrator participated. The schools were purposefully selected to represent a broad range of settings (from traditional to innovative) in which occupational education is offered. The experiment was limited to the secondary level.

The evaluation took place at the Department of Education on January 21, 1974 at a meeting which was structured such that all "evaluators" had an opportunity to respond to both general and specific parts of the Fall Package. It should be pointed out that the "evaluators" were aware of the connectibility of the MISOE-CDS Fall and End Year packages, and, in general, were responding to the data of the whole CDS system, and the reporting forms of the Fall Package.

Appendix B itemizes responses on the part of the "evaluators" by role (administrator or department head), and the following is my impression of the response of the "evaluation."

1. The general response to the data yielded by the Fall Report, forms and guidelines was almost overwhelmingly favorable. The single exception to this judgement was from one school which failed to attend the previously cited workshop, due to the snow storm.

2. The "evaluators" pointed to a need to provide well thought through workshops and assistance to schools in understanding the usefulness of the CDS information to the management function and the process of organizing themselves to easily provide the information required. In some instances, considerable lead time will be required to organize a process for schools to provide the information in the format required. (This will be equally true with the expenditure supplement of the End Year Report). I am sensitive to this problem and attempt to deal with it in my recommendations, (Part III).

3. It was recommended that the Department commit itself to the CDS system over time (administrations), in particular the MISOE-CDS system which meets data requirements without forcing structure upon practice.

4. Office education, which is structured in the comprehensive high school quite differently than other occupational education programs, presents problems not fully solved by the existing MISOE Fall Reports. The Office Education "evaluation" found the information useful, but some alternatives are required in the Fall Report to facilitate reporting. This finding is dealt with in my recommendations of Part III.

5. All participants were extremely positive toward the TERMOBS and enrollment breakdowns within programs by TERMOBS, except the school that failed to attend the workshop.

6. Most participants suggested that cost information could be "misunderstood" when arrayed by OE program, if not accompanied by benefit data, in a way that allows meaningful comparisons for decision making. I do not deal with this objection in my recommendations, but now stipulate that: (1) The Sample Data Systems of MISOE (unimplemented) are designed to treat this concern over the long run, while the "interim impact study" (now being deliberated by the Assessment Group) deals with it in the short haul.

7. There was a positive response to decentralizing information of the MISOE-CDS type from the central office to the department level, except for the school that missed the workshop.

PART III

Recommendations for Implementation and Development of MISOE-CDS for the Division of Occupational Education

1. The Fall Report be implemented in all schools on the North Shore offering occupational education, except for Office Education. Based on our previous experience, an improved "workshop" process is evolving (ready now for display), which will be most useful in this task. This implementation will be coordinated with DOE's current data collection activities, to avoid double reporting. Moving now to this scale of implementation will provide a necessary experience to "shake out" any remaining "bugs", prior to statewide adoption. It will also provide a broad base for validating TERMOBS, and, finally, should develop a representative group of practitioners at the local level who are able to support through experience the contribution of MISOE to structuring and describing occupational education for improved policy making. A "real data" report of this experience should make obvious the necessity of such information for rational management at the state level in meeting its leadership and compliance responsibilities in the field of occupational education.

2. In a way coordinated with our federal reporting data collecting responsibilities, I suggest we allow about one month to make a "few" structured changes in the Fall Report to accommodate the needs of Office Education, and collect Fall Report information in a limited but representative number of secondary schools on the North Shore (about 6). All the positive advantages of Recommendation #1 apply to Recommendation #2, too.

3. Immediately, negotiations should begin between the MISOE staff and those responsible for the information system of the Department, so that the End-of-Year Reports can be integrated such that a Department-wide Census Information System can evolve, which will provide DOE with the information it needs (previously cited), in a way that is maximally merged at the Department level. Obviously, an implementation schedule for the entire Department package will depend upon development progress. Although it might be inappropriate for me to say this, the MISOE staff has solved most of the conceptual problems, and what essentially remains to be done is the difficult business of developing guidelines and forms for the End-of-Year Package, as well as determining a way to coordinate Fall Reports (the Department's and DOE's). Finally, a plan must be evolved for statewide adoption of a single Census Data System, which is integrated on both the reporting and analysis ends.

I should point out that our plan has been that the MISOE development staff would conceptualize an "integratable system" for DOE, and develop and field test the guidelines and forms necessary for adoption, as well as the adoption process, and then turn this process for management over to the Division of Occupational Education. It is our hope that we will be able to coordinate the conceptual coordination with the Department of Education. It will be the function of the Department to pursue the conceptualized development of an integrated system through the difficult stages of guidelines and forms development, as well as adoption.

All of the above has dealt with only the CDS of MISOE. The Sample Data Systems, which allow an estimation of the causation of the occupational education process on the students and the society it attempts to serve, is a separate entity, but one which is connectible to the Census Data System within the Division of Occupational Education.

APPENDIX A

EVALUATION SCHOOL PARTICIPANTS FOR JANUARY 21, 1974 MEETING

NEWTON

Orrin Brawn, Director, Vocational Education
Ernest Repucci, Department Head, Graphic Arts
Volin Wells, Department Head, Business

QUINCY

Maurice Daly, Assistant Superintendent
Patrick Crozier, Department Head, Electronics
Paul Milward, Coordinator, Electrical
Charles Magnarelli, Department Head, Auto Mechanics
Patricia Gorman, Research Assistant

GREATER LAWRENCE

Roland Cotton, Assistant Superintendent
Howard Smith, Business Manager
Ava Pula, Department Head, Practical Nursing

GREATER FALL RIVER

John Harrington, Superintendent
Russell Booth, Department Head, Machine Shop

NORTHEAST METROPOLITAN

John Connolly, Superintendent
Henry Corcoran, Department Head, Electrical

APPENDIX B

SPECIFIC RESPONSES TO MISOE-CDS FALL PACKAGE

NEGATIVE RESPONSES	ADMINISTRATORS	DEPT. HEADS
1. Forms are time consuming.	2	1
2. Data is not useful.		1
3. Report forms cause same problem for Office Education in reporting enrollment as existing forms.		2
4. Costs of MISOE are prohibitive.	1	
5. There is some duplication in the nursing programs.	1	3
6. TERMOBS are too unwieldy, are cut too fine, and could have been developed easier.	1	1
7. Forms are difficult to fill out.		1
POSITIVE RESPONSES		
1. MISOE is an excellent and necessary concept.	1	1
2. MISOE should be continued, an investment has been made and we need a payoff.	1	1
3. The data MISOE can provide is crucial (accurate in detail).	2	2
4. MISOE can package data to meet an individual LEA's needs.	2	
5. In the future there will be a need for more fiscal detail, which MISOE can provide.	2	2
6. Standardized reporting is coming -- MISOE can help us.	1	2
7. MISOE does not duplicate present efforts.		2

POSITIVE RESPONSES	ADMINISTRATORS	DEPT. HEADS
8. MISOE will be invaluable in relation to program budgeting.	1	1
9. MISOE will serve to coordinate and inform many educators (put them into the picture). This is not currently done, and will support more rational and comprehensive practice.	1	
10. MISOE can check on teacher performance and curriculum development		3
11. There is a definite need to get a handle on costs and benefits as all school systems are on a program budget in some sort. MISOE can provide this.	1	1
12. MISOE is an accurate reporting system and provides a standardized reporting format.	1	
13. MISOE eliminates reinventing the wheel		1
14 Present programs will not require a lot of work to convert to the MISOE format		1
15. TERMOBS will be an excellent resource in the implementation of Chapter 766	1	
16. TERMOBS will help show relevance to students, parents and public.		1
17. TERMOBS are great!	3	3
18. TERMOBS would be helpful in developing new programs.	1	1
19. TERMOBS are well worth the time, effort and money put into their development.		1
20. MISOE is a new and better way of reporting	1	

OTHER	ADMINISTRATORS	DEPT. HEADS
1. There is a need for workshops for LEAs on how to fill out appropriate forms (staff training) and take full advantage of information provided	1	3
2. Information from MISOE could be misread as threatening		1
3. Caution: Moving from one system of reporting to another (simple to complex) is difficult. Don't assume the state can go to this level.	Baker	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-I - Distributive Education Program

TERMOB No.	Belmont	Brookline	Stoneham
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X		X
009	X	X	X
010	X	X	X
011	X		X
012	X	X	X
013	X		X
014	X	X	X
015	X	X	X
016	X	X	X
017	X		X
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X		X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-I - Distributive Education Program (Cont'd)

TERMOB No.	Belmont	Brookline	Stoneham
026	X	X	X
027	X		X
028	X	X	X
029	X	X	X
030	X	X	X
031	X		X
032	X		X
033	X		X
034	X		X
035	X		X
036	X		X
037	X		X
038	X		X
039	X		X
040	X		X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-2 - Practical Nursing Program

TERMOB No.	Greater Lawrence	Quincy	Northeast
001	X	X	X
002	X	X	X
003	X		X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X		X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X	X	X
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-2 - Practical Nursing Program (Cont'd)

TERMOB No.	Greater Lawrence	Quincy	Northeast
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039	X	X	X
040	X	X	X
041	X	X	X
042	X	X	X
043	X	X	X
044	X	X	X
045	X	X	X
046	X	X	X
047	X	X	TERMOB review stopped at 047
048	X	X	
049	X	X	
050	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-2 - Practical Nursing Program (Cont'd)

TERMOB No.	Greater Lawrence	Quincy	Northeast
051	X	X	
052	X	X	
053	X	X	
054	X	X	
055	X	X	
056	X	X	
057	X	X	
058	X	X	
059	X	X	
060	X	X	
061	X	X	
062	X	X	
063	X	X	
064	X	X	
065	X	X	
066	X	X	
067	X	X	
068	X	X	
069	X	X	
070	X	X	
071	X	X	
072	X	X	
073	X	X	
074	X	X	
075	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-2 - Practical Nursing Program (Cont'd)

TERMOB No.	Greater Lawrence	Quincy	Northeast
076	X	X	
077	X	X	
078	X	X	
079	X	X	
080	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-3 - Occupational Child Care Program

TERMOB No.	Greater Lawrence	Brookline	Northeast
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X	X	X
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-3 - Occupational Child Care Program (Cont'd)

TERMOB No.	Greater Lawrence	Brookline	Northeast
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X

S = Stenographic & Secretarial

A = Accounting & Computing

Addendum II- TERMOB FREQUENCY BY PROGRAM

Addendum II-4-7 - Business Cluster Programs

O = General Office

D = Data Processing

TERMOB No.	Newton	Brookline	Shawsheen
001	O S	S A	S
002	O S	A	S
003	O S	O S A	S
004	O S	O	S
005	O S		S
006	O S	O	S
007	S		S
008		O S A	S
009		O S	S
010	O S	O S A	S
011	O S	S A	S
012	O S		S
013	O S		S
014	O S		S
015	O S	S	S
016	O S	S A	S
017	O S	S	S
018	O S	O S	S
019	O S	O S	S
020	O S	O S	S
021	O	O A	S
022	O	O A	S
023	O	O A	S
024	O S	S	S
025	A	O A	S

S = Stenographic & Secretarial

A = Accounting & Computing

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-4-7 - Business Cluster Programs (Cont'd)

O = Gen. Office

D = Data Process.

TERMOB No.	Newton	Brookline	Shawsheen
026	O S	O A	S
027	O S	O S A	S
028	O S	O S A	S
029	O S	O S A	S
030	O S	O S A	S
031	O S	O S A	S
032	O S	O	S
033	O S	O	S
034	O S	A	S
035	O S	S A	S
036	O S	A	S
037	O S	A	S
038	O S	S	S
039	O S	S	S
040	O S	S	S
041	O S	S	S
042	A	O A D	S
043	A	O A D	S
044	A	O A	S
045	A	O A	S
046	O A		S
047	O A		
048	O A		
049	O S A	O A	
050	S A	O A	

S = Stenographic & Secretarial

A = Accounting & Computing

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-4-7 - Business Cluster Programs (Cont'd)

O = Gen. Office

D = Data Process.

TERMOB No.	Newton	Brookline	Shawsheen
051	A	O A	
052	A	O A	
053	A	O A	
054	A	O A	
055	A	O A	
056	A	O A	
057	A	O A	
058	A	O A	
059	A	O A	
060	A	O A	
061	A	O A	
062	A	O A	
063	A	D	
064	A	D	
065	A	D	
066	A	D	
067	A	D	
068	A		
069	A	D	
070	A	D	
071	A	D	
072	A	D	
073	A	D	
074	A		
075	A		

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-8 - Automotive Body Program

TERMOB No.	Quincy	Nashoba	Shawsheen
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007		X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X	X	X
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-8 - Automotive Body Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Shawsheen
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039	X		
040	X		
041	X		
042	X		
043	X	X	
044	X	X	
045	X	X	
046	X	X	
047	X		
048	X		
049			X
050		58	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-8 - Automotive Body Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Shawsheen
051			
052			
053			
054	X	X	X
055	X	X	X
056	X	X	X
057	X	X	X
058	X	X	X
059	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-9 - Automotive Mechanics Program

TERMOB No.	Quincy	Nashoba	Shawsheen
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X	X	X
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-9 - Automotive Mechanics Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Shawsheen
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039	X	X	X
040	X	X	X
041	X	X	X
042	X	X	X
043	X	X	X
044	X	X	X
045	X	X	X
046	X	X	X
047	X	X	X
048	X	X	X
049	X	X	X
050	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-9 - Automotive Mechanics Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Shawsheen
051	X	X	X
052	X	X	X
053	X	X	X
054	X	X	X
055	X	X	X
056	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-10 - Drafting Program

TERMOB No.	Northeast	Brookline	Quincy
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	
010	X		
011	X		X
012	X	X	X
013		X	X
014		X	X
015	X		X
016	X		X
017	X	X	X
018	X	X	X
019	X	X	X
020	X	X	X
021	X		X
022	X		X
023	X		X
024	X	X	X
025	X		X

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-10 - Drafting Program (Cont'd)

TERMOB No.	Northeast	Brookline	Quincy
026	X		X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X		X
033	X		X
034	X	X	X
035	X	X	X
036	X		X
037	X	X	X
038	X	X	X
039	X	X	X
040	X	X	X
041	X	X	X
042	X	X	X
043	X	X	X
044	X	X	X
045	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-II - Woodworking Program

TERMOB No.	Quincy	Shawsheen	
001	X	X	
002	X	X	
003	X	X	
004	X	X	
005	X	X	
006	X	X	
007	X	X	
008	X	X	
009	X	X	
010	X	X	
011	X	X	
012	X	X	
013	X	X	
014	X	X	
015	X	X	
016	X	X	
017	X	X	
018	X	X	
019	X	X	
020	X	X	
021	X	X	
022	X	X	
023	X	X	
024	X	X	
025	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-II - Woodworking Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	
026	X	X	
027	X	X	
028	X	X	
029	X	X	
030	X	X	
031	X	X	
032	X	X	
033	X	X	
034	X	X	
035	X	X	
036	X		
037	X	X	
038	X	X	
039	X	X	
040	X	X	
041	X		
042	X		
043	X	X	
044	X	X	
045	X	X	
046	X		
047	X	X	
048	X		
049	X		
050	X		

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-II - Woodworking Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	
051	X	X	
052	X		
053	X		
054	X		
055	X		
056	X		
057	X	X	
058	X	X	

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-12 - Electrical Program

TERMOB No.	Shawsheen	Nashoba	Quincy
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	
010	X	X	X
011	X		X
012	X		X
013	X		X
014	X		
015	X		
016			X
017	X	X	X
018		X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023		X	
024		X	
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-12 - Electrical Program (Cont'd)

TERMOB No.	Shawsheen	Nashoba	Quincy
026	X	X	X
027			X
028	X	X	X
029	X	X	X
030	X	X	
031	X	X	
032		X	
033		X	
034	X	X	
035		X	
036		X	
037	X	X	
038		X	
039		X	
040	X	X	
041	X	X	
042		X	
043		X	
044		X	
045			
046			
047			
048	X	X	
049	X	X	
050	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-12 - Electrical Program (Cont'd)

TERMOB No.	Shawsheen	Nashoba	Quincy
051	X	X	
052	X	X	
053	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-13 - Electronics Program

TERMOB No.	Quincy	Shawsheen	Nashoba
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009		X	X
010		X	X
011	X	X	X
012		X	X
013	X	X	X
014	X	X	X
015	X	X	
016	X	X	
017	X	X	
018	X	X	
019		X	
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-13 - Electronics Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	Nashoba
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030		X	X
031	X	X	X
032	X		X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039		X	
040	X		
041	X	X	
042	X		
043	X	X	
044	X	X	
045	X	X	
046	X	X	
047	X	X	
048	X	X	
049			
050			

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-13 - Electronics Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	Nashoba
051			
052			
053	X		
054	X	X	
055			

Addendum II - TERMOB FREQUENCY BY PROGRAM.

Addendum II-14 - Plumbing Program

TERMOB No.	Quincy	Nashoba	Northeast
001	X	X	
002	X	X	
003	X	X	
004	X	X	
005	X	X	
006	X	X	
007	X	X	
008	X	X	
009	X	X	
010	X	X	
011	X	X	
012	X	X	
013		X	
014	X	X	
015	X	X	
016	X	X	
017	X	X	
018	X	X	
019	X	X	
020	X	X	
021		X	
022	X	X	
023	X	X	
024	X	X	
025	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-14 - Plumbing Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Northeast
026	X	X	
027	X	X	
028	X	X	
029	X	X	
030	X	X	
031	X	X	
032	X	X	
033	X	X	
034	X	X	
035	X	X	
036	X	X	
037	X	X	
038	X	X	
039	X	X	
040	X	X	
041	X	X	
042	X	X	
043	X	X	
044	X	X	
045	X	X	
046	X	X	
047	X	X	
048	X	X	
049	X	X	
050	X	X	

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-14 - Plumbing Program (Cont'd)

TERMOB No.	Quincy	Nashoba	Northeast
051	X	X	
052	X	X	
053	X	X	
054	X	X	
055	X	X	
056	X	X	
057	X	X	
058		X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-15 - Graphic Arts Program

TERMOB No.	Northeast	Brookline	Quincy
001	X	X	X
002			X
003	X		
004	X		
005	X		
006	X		
007	X		
008	X		
009	X	X	
010	X		
011	X	X	
012	X		
013	X	X	
014	X	X	
015	X	X	
016	X		
017	X		
018	X	X	X
019	X	X	X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X		X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-15 - Graphic Arts Program (Cont'd)

TERMOB No.	Northeast	Brookline	Quincy
026	X		X
027	X		X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034		X	X
035			X
036			X
037			X
038			X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-16 - Machine Shop Program

TERMOB No.	Nashoba	Quincy	Shawsheen
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X	X	X
018	X	X	X
019	X	X	X
020	X		X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-16 - Machine Shop Program (Cont'd)

TERMOB No.	Nashoba	Quincy	Shawsheen
026	X	X	X
027	X	X	X
028	X		X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X		X
035	X	X	X
036	X	X	X
037	X	X	X
038	X		X
039	X	X	X
040	X	X	X
041	X	X	X
042	X	X	X
043	X		X
044	X	X	X
045	X	X	X
046	X	X	X
047	X	X	X
048	X		X
049	X	X	X
050	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-16 - Machine Shop Program (Cont'd)

TERMOB No.	Nashoba	Quincy	Shawsheen
051	X		X
052	X		X
053	X	X	X
054	X	X	X
055	X	X	X
056	X	X	X
057		X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-17 - Metalworking Program

TERMOB No.	Shawsheen	Quincy	Nashoba
001	X	X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X	X	X
016	X	X	X
017	X		
018	X		
019	X		
020	X		
021	X		
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-17 - Metalworking Program (Cont'd)

TERMOB No.	Shawsheen	Quincy	Nashoba
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X		X
032	X		X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
	83		

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-18 - Cosmetology Program

TERMOB No.	Northeast	South Middlesex	Medford
001		X	X
002	X	X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007		X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013		X	X
014		X	X
015		X	X
016		X	X
017	X	X	X
018		X	X
019		X	X
020	X	X	X
021	X	X	X
022		X	X
023		X	X
024		X	X
025		X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-18 - Cosmetology Program (Cont'd)

TERMOB No.	Northeast	South Middlesex	Medford
026	X	X	X
027	X	X	X
028		X	X
029		X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039	X	X	X
040		X	X
041	X	X	X
042	X	X	X
043	X	X	X
044	X	X	X
045	X	X	X
	85		

Addendum 11 - TERMOB FREQUENCY BY PROGRAM

Addendum 11-19 - Quantity Foods Program

TERMOB No.	Quincy	Shawsheen	Northeast
001	X	X	X
002		X	X
003	X	X	X
004	X	X	X
005	X	X	X
006	X	X	X
007	X	X	X
008	X	X	X
009	X	X	X
010	X	X	X
011	X	X	X
012	X	X	X
013	X	X	X
014	X	X	X
015	X		X
016	X		X
017	X		X
018	X		X
019	X		X
020	X	X	X
021	X	X	X
022	X	X	X
023	X	X	X
024	X	X	X
025	X	X	X

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-19 - Quantity Foods Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	Northeast
026	X	X	X
027	X	X	X
028	X	X	X
029	X	X	X
030	X	X	X
031	X	X	X
032	X	X	X
033	X	X	X
034	X	X	X
035	X	X	X
036	X	X	X
037	X	X	X
038	X	X	X
039	X	X	X
040	X	X	X
041	X	X	X
042	X	X	X
043	X	X	X
044	X	X	X
045	X	X	
046	X	X	
047	X	X	
048	X	X	
049	X	X	
050	X	X	

Addendum II - TERMOB FREQUENCY BY PROGRAM

Addendum II-19 - Quantity Foods Program (Cont'd)

TERMOB No.	Quincy	Shawsheen	Northeast
051	X	X	
052	X	X	
053	X	X	
054	X	X	
055	X		
056	X	X	
057	X	X	
058	X	X	
059	X		
060	X	X	
061	X	X	
062	X	X	
063	X		
064	X	X	
065	X	X	X
066	X	X	X
067	X	X	X
068	X	X	X
069	X	X	X

ADDENDUM III

TERMOB COVERAGE INFORMATION

BY PROGRAM

1. Distributive Education - Objectives were added across the entire program to raise estimated coverage to 95 percent.

2. Practical Nursing - While the TERMOBs hands-on skills covered only 40 percent of the cognitive instructional program, they covered 85 percent of the job-entry skills for Licensed Practical Nurses. Twelve objectives were added in the maternity and pediatrics divisions extending estimated coverage to 90 percent.

3. Occupational Child Care - The program was generally complete lacking only a division on infant care including pediates for nursery school employees bringing estimated coverage to 95 percent.

4. Accounting - Generally complete, three TERMOBs added, estimated coverage of 90 percent.

5. Data Processing - Coverage was low in this program, 50 percent, necessitating the addition of 22 TERMOBs across the board in all divisions to bring extimated coverage to 90 percent.

6. General Office - full coverage, estimated 95 percent

7. Stenographic, Secretarial - Although coverage was high (90 percent) 13 objectives were added in the typing division, specifically focusing on typewriter skills bringing estimated coverage to 95 percent.

8. Automotive Body - Generally complete, no additional objectives, 90 percent estimated coverage.

9. Automotive Mechanics - Coverage was broadened to include air conditioning systems. Seven objectives were added in this area to bring estimated coverage to 90 percent.

10. Drafting - Coverage was found to be deficient in architectural, electronic, and pipe drafting. A division on sketching was added, as well. Altogether, seven TERMOBs were added bringing estimated coverage to 80 percent.

11. Woodworking - Although full coverage is estimated in this program, revisions of existing objectives in three divisions were made. Estimated 90 percent coverage.

12. Electrical - Although coverage was high, it was determined that overall degree of difficulty of the TERMOBs was excessive. Ten objectives were added to broaden the base and balance the difficulty level of the electrical program (accommodation to D. Murphy - Nashoba Valley). Estimated 90 percent coverage.

13. Electronics - Coverage in this program suffered due to missing skill areas and redundancy of some objectives. The program was completely restructured. TERMOBs were added in cable and cable harness areas, while extensive additions were made in the circuit construction division. A total of 25 objectives were added to bring coverage to estimated 90 percent

14. Plumbing and Pipefitting - Coverage was weak (60 percent) in both the heating and pipefitting areas. In several divisions, the basic job-entry skills had been omitted. The program was entirely restructured, including the addition of 42 objectives across the board to bring coverage to estimated 95 percent.

15. Graphic Arts - Low coverage (47 percent) led to the addition of 24 TERMOBs, with emphasis on commercial art skills (prevalent in Massachusetts). In addition, three TERMOBs were added in the bindery division to bring estimated coverage to 90 percent.

16. Machine Shop - Coverage was extended by strengthening the bench-work division to include assembly, layout, and drillpress. Two units in the inspection division were added to include indicators and thread measurements. With the addition of 12 objectives estimated program coverage was extended to 85 percent.

17. Metalworking - Eleven objectives were added in the welding and cutting divisions. (Further additions required) Coverage estimated at 80 percent.

18. Cosmetology - 95 percent or full coverage in this area. No additions.

19. Quantity Foods - Consolidation of some objectives, revised procedures in several others, and an additional 15 TERMOBs brought extimated coverage to 90 percent.

FALL PACKAGE FIELD TEST VIDEO-TAPE DOCUMENTATION

A video-tape documentary of the field test is available from the Management Information System for Occupational Education, Division of Occupational Education, Department of Education, 182 Tremont Street, Boston, Mass.