I

DOCUMENT RESUME

ED 134 746   CE 009 567

AUTHOR   Caldwell, Phyllis A.
TITLE   Massachusetts Adult Basic Education Management
                Information System. Working Paper No. 1.
SPONS AGENCY   Massachusetts State Dept. of Education, Boston.
                Bureau of Adult Services.
PUB DATE   20 Nov 76
NOTE   22p.

EDRS PRICE   MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS   *Adult Basic Education; Adult Programs; Computer
                Oriented Programs; Information Utilization;
                *Management Information Systems; *Program
                Development; Statewide Planning; *Student
                Enrollment
IDENTIFIERS   Massachusetts

ABSTRACT
                This report describes a project designed to provide a
cost effective centralized data collection, analysis, and retrieval
system to handle all data on adult basic education (ABE) clients and
staff personnel for all adult learning sites in Massachusetts for
reporting, research, and evaluation purposes at local and State
levels. This report is divided into five sections: Statement of the
Problem; Goals of the Project; Relevant Research; System Design,
which presents two exhibits explaining the management information
system (MIS) model followed in the design, implementation, and
evaluation of a Massachusetts field research project which has been
implemented at all 30 learning centers in Massachusetts; and Project
Overview, which describes (1) use of standardized data collection
forms for student registration and reinstatement, student
advancement, student separation from an ABE program, and student
attendance, (2) training of staff in use of the system, and (3)
several reports generated by the system. A bibliography is appended.
(SH)

MASSACHUSETTS ADULT BASIC EDUCATION

MANAGEMENT INFORMATION SYSTEM

WORKING PAPER NO. 1

PHYLLIS A. CALDWELL, PROJECT DIRECTOR

COORDINATOR OF FIELD RESEARCH

20 NOVEMBER 1976

I STATEMENT OF THE PROBLEM

The General Accounting Office (1975) has criticized the national
Adult Basic Education effort for lack of available and reliable
data on ABE programs. They have recommended that the Office of Education
direct efforts toward gathering and reporting data on program
functioning in a timely and accurate fashion.

The Massachusetts State Department of Education, Bureau of Adult Services, has
witnessed an increase in reporting requirements in response to a
need for greater program accountability and timely and accurate
reporting. Additionally, the Bureau has experienced a need for a
data base composed of all program data suitable for both
reporting and research purposes.

In response to increasingly demanding requests for reports from federal
agencies, state agencies, referral agencies, and local educational
agencies, learning centers and sites involved in the Adult
Basic Education effort have spent a greater proportion of their
time in record keeping and data collection activities. Although
learning sites feel that their primary mission is the delivery of
services to clients, they have found themselves engulfed by
paperwork and thus diverted from their fundamental mission.

Both the Bureau of Adult Services and ABE learning sites have experienced
a need for relevant research to be applied to increasingly
sophisticated program demands. These research demands would include:
research on financial modeling and projection of the current
ABE grant; research on other possible sources of funding;
research on adult education legislation; research on other learning center
and site needs. Pertinent research, disseminated throughout the Massachusetts
ABE network, would strengthen and promote program continuity
and unity. Additionally, such research would insure the continuation
of the leadership role which the program has nationwide.

II GOALS OF THE PROJECT

1. To provide a cost effective centralized data collection, analysis, and retrieval system to handle all data on ABE clients and staff personnel for all adult learning sites in Massachusetts for reporting, research, and evaluation purposes.

2. To provide a management information system capable of handling information on all students and staff throughout the State which would serve as an invaluable management and research tool for local, state, and federal agencies, as well as for operational learning sites.

3. To provide appropriate information at necessary points for decision making by local program managers, and the state agency.

4. To respond to the GAO report by providing accurate and timely data in an effective reporting format.

5. To establish a system for local program accountability.

6. To conduct relevant and timely research for the Bureau of Adult Services and ABE local programs as deemed necessary by the State office and local sites.

III. RELEVANT RESEARCH

Problems related to information, whether this be collection, storage,
communication, manipulation, analysis, retrieval and application
of information are involved in every educational situation. The
mandate for American education in the 80's is clear:

> The continued use of antiquated information processing
> procedures in the face of growing size and complexity of
> American education is in large measure an information processing
> system. The right data at the right moments give teachers
> and administrators the edge they need for making
> calculated rather than uninformed decisions.
> Wisdom and information are a powerful team.
> Computers can provide the information, educators must
> provide the wisdom. (Goodlad, O'Toole and Tyler, 1966)

Computer use and growth in the educational sphere have been
comparable to that within the business world. The ex: .sion of the computer
use in the last five years within the secondary school setting is reflected
in Exhibit 1, taken from a paper presented at a 1975 conference on educational
computer applications. Gains are reflected in both administrative and
instructional uses of the computer, although administrative growth has
been much greater. A¹so, educational data processing applications in the
administrative area are far more familiar and have had direct models in the
business world.

Administrative computer applications or management information systems
are a common phenomenon in the business world. MIS develop in response
to the needs of management for accurate, timely, and meaningful data
to plan, analyze, and assist in the control of the organization's act-
ivities. A MIS has several objectives:

1. to provide timely information to management
2. to aid in the distribution of resources
3. to aid in the selection of alternatives.

By the mid 70's, computer technology has advanced to the point where the
needs of most educational administrators in the area of information re-
trieval con be met. The tremendous gap often perceived by educators between
technological potential and delivery is a result of two problems: 1. a
lack of conceptualizing educational functions and operations into a
comprehensive information management system and 2. the absence of trained
professional educators and support personnel to apply existing computer
technology to solve information problems. The purpose of this paper is
to suggest that the gap between technological potential and delivery is
being bridged.

Exhibit 1

"COMPUTER APPLICATIONS IN SECONDARY EDUCATION"

Secondary School Survey

	1970	1975
Secondary Schools Using Computers	34.4%	52.7%
(Admin. only)	21.5%	29.5%
(Instruc. only)	3.9%	4.5%
(Both Admin. & Instruc.)	9.0%	18.7%
Nonusers	65.5%	47.3%

(Korotkin & Bukoski in Green, editor, 1975.)

The national Adult Basic Education endeavor has come under increasing scrutiny in terms of accountability for delivery of services. The General Accounting Office in its 1975 report to Congress commented upon: "statistics compiled at the local program level, and ultimately reported to the Office of Education and summarize nationally, which have been unreliable and have overstated program accomplishments." The General Accounting Office recommended strongly that program reporting data be improved. (GAO, 1975)

Requests by the USOE for improved data collection, coupled with increasingly complex and demanding reporting forms, and stress on accountability have prompted some states to use a computerized data collection, analysis, and retrieval system coupled with overall improved omanagement information systems. Using responses to a brief survey letter sent by the author to federal regional officers and then to state administrators of ABE programs, the author found the following:

> -Several states have used the computer for research purposes notably in the area of statewide needs assessments of potential adult education audiences and of adult educators.
>
> -Four states (Arizona, Massachusetts, Texas and Wisconsin) are using computer analysis for all aspects of data required for annual federal performance report and for data of interest to state agencies.
>
> -One state (Rhode Island) is using the computer for analysis and reporting performance data on clients.
>
> -One state (Arkansas) is using the computer to analyze data on adult education staff.
>
> -Several states expressed interest in future computerization of data collection.

Reasons for computerization of program data as expressed by the responding states in cluded: need for a comprehensive, easy method for generating reliable accurate data on program participants; needs for a system to handle voluminous data; need for program information in a timely and understandable fashion.

To summarize the findings of this informal survey:
> 1. All states currently engaged in computerized data collection, analysis, and retrieval are using centralized data collection, batch mode, and standardized collection forms for all sites.
> 2. Batch mode is currently the most cost effevtive computer application for handling administrative data.
> 3. Most states have collected not only data required for federal reporting but also data which could suuplement research efforts by the state agency.
> 4. The focus of data collection, analysis, and retrieval efforts has been the state agency and the leadership the state agency has provided in this effort.

In 1968 and 1969, the state of Arizona pioneered a data processing system
for Adult Basic Education. The program aimed at information
gathering and reporting on: administrative and teaching staff,
student enrollment, dropouts, curriculum data, project financial
data. Using preprinted forms with tear-out carbons forwarded to
the Research Coordinating Unit on a monthly basis, substantial
research and evaluation data was gathered for program monitoring
and change. In 1969, a progress report on the project remarked on some
system problems in need of correction, but noted several
achievements including: considerably more data being available than
a hand system, program results analyzed in monthly summaries,
possibilities of total program evaluation, and timely summary
tabulations available for the state office suitable for program
monitoring.

Monthly,Rhode Island collects student registration and attendance data
from all ABE projects within the state. Data is keypunched and
computerized to provide the state agency with bimonthly reports
and generate the annual federal report.

A two year (1974-1976) 309 project in Massachusetts explored possible
administrative and instructional computer applications. Seven
learning centers used the capabilities of a time-sharing computer
in Springfield to handle student record keeping. One center also
used a computer managed instructional system which was under
development at the other centers. As a result of this two year experience,
learning centers on the network expressed a strong interest in
continuing the administrative application. (Paeschke, 1976)

IV SYSTEM DESIGN

Exhibits 3 and 4 explain the system model followed in the design,
implementation, and evaluation of the Massachusetts Field Research
project. Currently, the project has been implemented at all 30
learning sites in Massachusetts.

Currently, the project has been implemented at all 30 learning
centers in Massachusetts. Training has been conducted regarding
use of the forms and interpr tation of the program reports. Eval-
uation of the information s' stem and revisions in the system are
underway.

Exhibit 3

SYSTEM DESIGN OF A STATEWIDE ABE COMPUTERIZED
DATA COLLECTION, ANALYSIS, AND RETRIEVAL SYSTEM

I. CONCEPTION

1. Goal Setting - establish goals of federal, state, and local agencies
    for project.

II. RESEARCH

1. Gather reporting forms and reporting requirements of federal
    agency, state agency, local agency, and individual learning sites.
2. Research similar systems in industrial and educational setting.
3. Determine information sought for reporting purposes.
4. Determine time requirements for reporting.
5. Research most cost effective approach to data analyis and report
    writing.

III. DECISION

1. Decide on most cost effective computer system for data analysis
    and retrieval requirements.

IV. DESIGN

1. Design computer configuration for data analysis and retrieval.
2. Design personnel and staffing requirements necessary for
    implementation of the application.
3. Design system flow including data collection procedures, report
    generation, and report dissemination procedures.

V. DECISION

1. Decide on adequacy of design.
2. Decide on suitable computer facility with appropriate hardware
    and software for computer application. (Most likely this
    decision will be based on competitive bidding.)

VI. DEVELOPMENT

1. Develop data gathering instruments.
2. Develop collection procedures for instruments.
3. Develop dissemination procedures.
4. Develop computer documentation.

Exhibit 3 cont'd

VII. TESTING

1. Computer program debugging.
2. Field Test instruments at selected sites.
3. Field Test data collection procedures at selected sites.
4. Field Test reports and dissemination procedures at selected sites.
5. Obtain feedback from local, state, and federal agencies.

VIII. IMPLEMENTATION

1. Implement data collection, analysis, and retrieval system for all sites.
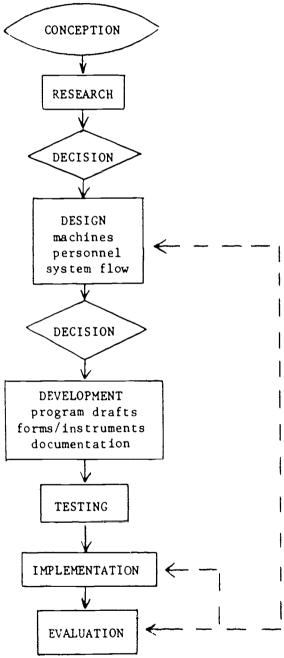2. Implement staff development needed to maintain the system.

IX. EVALUATION

1. Evaluate system design.
2. Evaluate system implementation.
3. Evaluate report collection and generation.

Exhibit 4

FLOWCHART SHOWING COMPUTERIZED
DATA COLLECTION, ANALYSIS, AND RETRIEVAL SYSTEM

```
            ╭──────────────────╮
            ⟨    CONCEPTION     ⟩
            ╰──────────────────╯
                      │
                      ▼
            ┌──────────────────┐
            │     RESEARCH      │
            └──────────────────┘
                      │
                      ▼
               ◇ DECISION ◇
                      │
                      ▼
            ┌──────────────────┐
            │      DESIGN       │ ◄─ ─ ─ ─ ─ ─ ─ ┐
            │     machines      │                │
            │     personnel     │                │
            │    system flow    │                │
            └──────────────────┘                │
                      │                         │
                      ▼                         │
               ◇ DECISION ◇                     │
                      │                         │
                      ▼                         │
            ┌──────────────────┐                │
            │   DEVELOPMENT     │                │
            │  program drafts   │                │
            │ forms/instruments │                │
            │  documentation    │                │
            └──────────────────┘                │
                      │                         │
                      ▼                         │
            ┌──────────────────┐                │
            │     TESTING       │                │
            └──────────────────┘                │
                      │                         │
                      ▼                         │
            ┌──────────────────┐                │
            │ IMPLEMENTATION    │ ◄─ ─ ┐        │
            └──────────────────┘      │        │
                      │               │        │
                      ▼               │        │
            ┌──────────────────┐      │        │
            │   EVALUATION      │ ◄─ ─ ┴ ─ ─ ─ ─┘
            └──────────────────┘
```

12

PROJECT OVERVIEW

Standardized data collection forms are supplied by the project
including student registration, advancement, separation, and
attendance forms. These are collected by mail every month on
a set schedule. Registration and separation forms may be
mailed in throughout the month, but no later than by the 5th working
day of the next month. Monthly reports based on collection of
attendance, registration, separation, and advancement materials
will be sent to the centers by the 9th working day of the month.

All forms are mailed to the research area. Forms are then keypunched to
provide a computer readable medium suitable for processing.
Computer programming, processing, and storage is provided by
Control Data Corporation which successfully responded to a request
for proposal. Two data bases are maintained: an extensive student
data base consisting of registration and attendance information
and a staff data base. Control Data Corporation's data base management
system is used to provide a cost-effective, easily manipulated,
and readily accessible retrieval system.

Designated reports based on collected data will be generated
monthly by site, quarterly by site for the entire state,
and annually by site and for the entire state. Distribution
of reports is accomplished through United Parcel Service.

Training for the system consists of:
        1. Initial training meetings during the months of
June and September.
        2. On-site training for the first data collection of
registration.
        3. On-going system support throughout the year.
The research coordinator will be continually available and
prepared to handle questions and problems which arise
regarding the new system. Close cooperation is maintained bwteen
the coordinator of field research and Control Data Corporation.

13

PROJECT OVERVIEW
STUDENT REGISTRATION AND REINSTATEMENT

Student registration for each ABE student will consist of one
standardized registration form.

Each student will be identified by unique student identification
number. Where possible, this number will be the student's
social security number. In the case of students who lack a social
security number, this number will consist of:

AAA-2 Digit Program number-program assigned 4 digits.
AAA-30-0002

In the case of students already assigned a student number and when
the social security number has not been collected, the student
number will consist of:

BBB-2 digit program number-already assigned 4 digits.

Each ABE program will be identified by unique assigned 2 digit
project number.

Upon entrance to the program, the registration form will
be completed for each student. The forms are in duplicate. The
original top sheet will be mailed to the research area. The
duplicate will be retained by the program to serve as a permanent
registration record.

If the registration information changes or requires correction, a new
registration form should be completed with only the changed or
corrected information entered on the form.

Program reinstatement will be accomplished by filling in the student
number, program number, and checking the indicated box
for reinstatement.

When a sufficient number of registration, reinstatement and separation
forms have been collected by the program, these forms should be
grouped and mailed to the research area at mid-month.
They must be received by the 5th working day of the next month.

PROJECT OVERVIEW
STUDENT ADVANCEMENT

Information on student status may be changed by using a student
advancement form which when completed is mailed to the
research area. This will automatically update information on the
student's record. This form is designed to capture student
progress.

PROJECT OVERVIEW
STUDENT SEPARATION

Each ABE student who separates from the program will be identified by
completion of a student separation form. The student's record is
still available in computerized form, but has inactive status. On
the form, the student will be identified by the dame student
identification number and by 2 digit program number.

The top copy will be mailed to the research area and the other copy will
be retained by the individual programs as a permanent copy.

PROJECT OVERVIEW
STUDENT ATTENDANCE

Attendance sheets will be generated by the computer for each project.
Two copies will be printed. These sheets will be completed by the
program for each student's attendance during the month. One
overall goal in terms of program accountability is to collect the
number of hours per month a student attends.

Attendance by student will be entered giving a total monthly
hours in the right hand column of the grid. If the student
separates during the month, the appropriate block on the right
will be checked. Note: a copy of a separation form should
be completed on the student at that point. Students new during the
month will be entered by printing the student's ID number, name,
and attendance information at the bottom of the sheet.

One completed attendance sheet will be mailed to the research
area by the 5th working day of the month. Two new attendance
rosters for the next month will then be generated by the computer
adding alphabetically those new students and deleting those separated
students.

REPORTS

Several reports are to be generated by the system. These reports
are summarized in the next several pages. Reports are based
on 3 sources of collected data: 1. Registration forms;
2. Attendance forms, 3. Separation forms. All reports are
designed to provide relevant and timely information for
program managers suitable for program monitoring. With these
reports, emphasis is put on: participation patterns, retention
efforts, and inactivation patterns.

A Monthly report will be generated to summarize attendance and
registration data and to identify persons missing during the
month or attending less than 15 hours in a month.

Quarterly reports will be generated on the data to give an overview
of center activity. One quarterly report will take the same
format as the federal performance report form. The other
quarterly reports are inactivation reports based on cumulative
data.

The annual cumulative performance report will be generated at the
conclusion of the fiscal year. Preparations,have been made to
generate whichever report the federal government requires.

MONTHLY REPORT FOR PROGRAM MANAGERS (REPORT GENERATED MONTHLY)

Objectives:
        To identify the participation patterns at the learning site.
        To identify drop-outs from the program.
        To identify potential drop-outs from the program.

Report Format

Totals:
        Number of students
        Number of student participating hours
        Total number of active students
        Total number of inactive students

Participation Patterns:

	No. of students	No. of Hours	Average Hrs.
1. by level			
2. by sex			
3. by sex and by level			
4. by age			
5. by age and by level			
6. by race			
7. by race and by level			
8. by first lanaguage			
9. by first langaage and by level			
10. by site			
11. by site and by level			
12. by city			
13. by city and by level			
14. by income source			
15. by income source and by level			
16. by teacher			
17. by time of day			
18. by time of day and by level			

Exception reports:
        Active students who were missing for the entire month
        Students who attended less than 15 hours

INACTIVATION PATTERNS/POSITIVE(REPORT GENERATED QUARTERLY)

Objectives:
        To identify the positive patterns of inactivation.

Definition:
        Students who inactivated for positive reasons as
        determined by the positive reasons in the Reason Left
        category of the student separation form.

        To take a job
        To take a better job
        To enter another training program
        Met personal objectives
        Completed level
        Received 8th Grade certificate
        Achieved US citizenship
        Enrolled in GED after taking ABE
        Discontinued Public Assistance.

_____

Report Format

Totals for each reason listed

Inactivation patterns broken down into categories as listed on the
monthly report.

INACTIVATION PATTERNS/NEGATIVE (REPORT GENERATED QUARTERLY)

Objectives:
> To identify the negative patterns of inactivation.

Definition:
> Students who inactivated for negative reasons as
> determined by the negative reasons in the Reason Left
> category of the student separation form.
>
> Lack of interest/program reasons
> Health problems
> Transportation problems
> Child Care problems
> Family Problems
> Time Class is scheduled
> Unknown Reasons
> Moved.

Report Format

Totals for each reason listed.

Inactivation patterns broken down into categories as listed on the monthly report.

BIBLIOGRAPHY

"Arizona Adult Basic Education Data Processing System: A Progress
Report," 1969, ED 034 137.

General Accounting Office. Report to Congress; The Adult Basic Education
Program: Progress in Reducing Illiteracy and Improvements Needed.
Washington,D.C.: US Government Printing Office, 1975.

Goodlad, John, O'Toole, John, and Tyler, Louise. Computers and
Information Systems in Education. New York: Harcourst, Brace,
and World. 1966.

Green, Duff, ed. "Discovery: New Worlds of Educational Data Systems."
1975, ED 107 237.

Lee, Arthur. "Arizona Data Processing System." 1968, ED 030031.

Paeschke, Phyllis. "Computer Models in Adult Education." Paper
presented at the Adult Education Research Conference, Toronto. 1976.