

# DOCUMENT RESUME

ED 087 514

JC 740 086

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**TITLE** A Research Project to Determine the Student Acceptability and Learning Effectiveness of Microform Collections in Community Junior Colleges: Phase III. Final Report.  
**INSTITUTION** American Association of Community and Junior Colleges, Washington, D.C.  
**SPONS AGENCY** Office of Education (DHEW), Washington, D.C. Bureau of Research.  
**PUB DATE** Jun 73  
**CONTRACT** OEC-0-9-180260-3703 (095)  
**NOTE** 16p.  
**EDRS PRICE** MF-\$0.65 HC-\$3.29  
**DESCRIPTORS** Bibliographies; \*Community Colleges; \*Instructional Materials Centers; \*Manuals; \*Microforms; Post Secondary Education; \*Resource Materials; Student Attitudes; Technical Reports  
**IDENTIFIERS** \*Project Microform

## ABSTRACT

The American Association of Community and Junior Colleges launched the Microform Project in 1969 under a contract with the U.S. Office of Education. The major product of Phase I (1969-1970) was a bibliography of resource materials used in 10 courses of study at community colleges (see ED 040 708). During Phase II (1970-1971), a series of pilot studies explored the procedural and environmental problems relating to microform utilization, and probed the matters of student acceptance and learning effectiveness of microforms (see ED 071 662). In Phase III (1972-1973), a microform handbook, consisting of six chapters, a bibliography, and appendices, was developed. It serves as a primer for educators who wish to consider the applicability and adequacy of microform systems at their respective institutions. This final report summarizes each of the three phases, describes the handbook, and presents the conclusions and recommendations of the project staff. In addition, as appendix provides a reprint of a paper titled "A Medium for Spies. . . and Community Colleges" by Dale Gaddy. (Author/DB)

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FINAL REPORT

Contract No. OEC-0-9-180260-3703-(095)

A RESEARCH PROJECT TO DETERMINE THE STUDENT ACCEPTABILITY  
AND LEARNING EFFECTIVENESS OF MICROFORM COLLECTIONS IN  
COMMUNITY JUNIOR COLLEGES: PHASE III

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June 1973

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

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The research reported herein was performed pursuant to a contract with the Office of Education, U.S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgement in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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## ACKNOWLEDGMENTS

On behalf of the American Association of Community and Junior Colleges, I express gratitude to the U.S. Office of Education for funding the Microform Project. Also, on behalf of the project staff, I express appreciation to our AACJC colleagues for their interest in and assistance with the ongoing activities of the project.

For the service of the members of the Phase I and Phase II advisory committees who helped shape and guide the project during its first years and for the suggestions offered by the participants in the microform handbook planning session of Phase III, I am most grateful.

A special note of appreciation is extended to Aikin Connor whose able assistance as the project's research specialist was extremely valuable, and to Lisabeth Horner whose diligent work as project secretary was an incentive to both Aikin and me.

Dale Gaddy, Director  
AACJC Microfilm Project  
June 29, 1973

## ABSTRACT

**Title of Project:**

A Research Project to Determine  
the Student Acceptability and  
Learning Effectiveness of Micro-  
form Collections in Community  
Junior Colleges: Phase II

**Duration of Project:**

15 June 1969 to 30 June 1973

The American Association of Community and Junior Colleges launched the Microform Project in 1969 under contract with the U.S. Office of Education. The major product of Phase I (1969-70) was a bibliography of resource materials commonly used in 10 courses of study at community colleges. During Phase II (1970-71) a series of pilot studies explored the procedural and environmental problems relating to microform utilization and probed the matters of student acceptance and learning effectiveness of microforms. Plans to verify the results of the pilot studies through continued research were aborted when USOE officials decided that, instead, a microform handbook should be developed during Phase III (1972-73). The microform handbook consists of six chapters, a bibliography, and appendices. It serves as a primer for educators who wish to consider the applicability and adequacy of microform systems at their respective institutions. The handbook is scheduled for publication by the National Microfilm Association, 8728 Colesville Road, Silver Spring, Maryland 20910.

The final report summarizes each of the three phases, describes the handbook, and presents the conclusions and recommendations of the project staff.

## CHAPTER I

### Background for the Study

#### A. Summary of Phase I

When launched in 1969 under contract with the-then Bureau of Libraries and Educational Technology (USOE/HEW), the mission of the American Association of Community and Junior Colleges Microform Project was to study the learning effectiveness of microforms\* in two-year colleges. Accordingly, Phase I (1969-70) was devoted to the development of research plans, the identification of relevant resources, and the recruitment of a permanent staff to carry out the project activities in subsequent phases.

During Phase I, the project was directed by Louise Giles (who during that time also served as Associate Dean of the Learning Resources Center at Michigan's Oakland Community College). The major product during the first phase was a 4,166-entry bibliography of the required, recommended, and available readings for seven high-enrollment courses in community colleges (e.g., English and political science) and three additional courses having typically lower enrollments (e.g., Spanish). The bibliography became the basis for characterizing the nature of graphic information being transmitted in two-year colleges thus tempering the research design for Phase II. A summary of the Phase I activities (including the bibliography) appears in ERIC document number ED 040 708 which is available from the ERIC Document Reproduction Service (C/O Leasco Information Products, 4827 Rugby Avenue, Bethesda, Maryland 20014) for \$0.65 in microfiche or \$9.87 in hard copy.

#### B. Summary of Phase II

With the beginning of Phase II in June 1970, the project moved to the AACJC headquarters in Washington, D. C., under the direction of Dale Gaddy and with the assistance of Aikin Connor as research specialist. In addition to completing the plans for the Phase II pilot studies, initial activities of the second phase included the direct mailing of a project description to more than 300 micrographics companies throughout the United States, visits to prospective sites for the pilot studies, and meetings with the project's advisory committee and with officials at USOE.

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\* Microform is a generic term that includes various forms of miniaturized photographs (usually of newspapers, books, journals, charts, maps, etc.) either on film or paper. Common microforms are (1) microfilm--a roll of film containing a series of images, (2) microfiche--a sheet of film containing micro-images arranged in a grid pattern, (3) aperture cards--cards containing one or more frames of microfilm, and (4) microcards--sheets of opaque material containing micro-images.

The major accomplishment of Phase II was the completion of five pilot studies at four community junior colleges in the Washington, D.C. area during the 1970-71 academic year. Two of the studies were designed to explore procedural and environmental problems relating to the use of several microform collections at a selected college. (The microform collections as well as appropriate equipment were used on loan from several microform companies.)

The three experimental studies probed the following questions:

- (1) Will students who use learning resource materials in microform accept the medium as well as students using traditional materials accept the traditional hard copy medium?
- (2) Is student acceptance of microforms differentially affected by any one or combination of the following factors?
  - a. Mode-- the action the user must perform in order to be presented with a readable image of the information stored in various microforms; also, the means by which the user stores in his mind the physical location of specific information (e.g., a formula).
  - b. Access-- the accessibility (restricted or unrestricted) of equipment and microform materials.
  - c. Content-- the type of subject matter content involved in the microform-user transaction (e.g., essay material such as English literature or display material such as mathematics).
  - d. Format-- the physical sequence of frame presentation in microfiche (vertical or horizontal).
  - e. Image Polarity-- the tonal value of the image (positive, usually black print on white background, or negative, usually white print on black background).

- (3) Is student learning affected by using microforms?

Results showed that within in the confines of the pilot study colleges, Questions 1 and 2 were answered positively (with access being the only significant factor in Question 2) and that Question 3 was answered negatively. However, no generalizable conclusion could be drawn since random sampling procedures were impossible in this stage of the research.

The findings were of value primarily to the project staff in planning the more comprehensive research envisioned for Phase III. (For a detailed description of the Phase II pilot studies and an outline of the broader research suggested by the findings, consult ERIC document ED 071 662 which costs \$0.65 in microfiche or \$3.29 for hardcopy printout.)

## CHAPTER II

### Phase III Activities and Accomplishments

In the two years that had elapsed between the instigation of the project and the completion of the pilot studies, key changes in personnel and priorities had occurred at USOE resulting in a major alteration of the directives for the project's third phase. Rather than proving or disproving the findings of the pilot studies through continued research, it was the desire of USOE that Phase III be devoted to the writing of a handbook - a handbook designed to help educators decide whether microforms should be used as learning resources and if so how to proceed with the designing, installation, and evaluation of a microform system to meet local needs. Hence, the Microform Project became a report preparation project with the beginning of Phase III as the name of the funding bureau was changed from the Bureau of Libraries and Educational Technology to the Bureau of Libraries and Learning Resources.

#### A. Activities

The four major activities of the project's final phase were (1) the collection and review of relevant documents pertaining to micrographics, (2) the planning of the microform handbook in conjunction with the project advisory committee, (3) the writing of the handbook, and (4) the negotiation of an agreement for the publication of the handbook.

Although a substantial quantity of publications and descriptive brochures had been accumulated during the first two phases of the project, it was essential that the latest reports regarding microform equipment, materials, and systems be identified as possible resource materials for the proposed handbook. In addition to using standard reference indexes (e.g., Reader's Guide to Periodical Literature and the ERIC publications entitled Research in Education and Current Index to Journals in Education), the staff relied on numerous micrographics trade publications and advertisements as a means of amassing materials of possible use in preparing the handbook.

A planning session was held during the early months of Phase III for the purpose of determining the appropriate scope, depth, and format of the handbook. Participating in the planning session in addition to the project staff and the USOE moderator were:

Don Avedon, Technical Director, National Microfilm Association (Maryland)

Joleen Bock, Director of Library Services, College of the Canyons (California)

Donald Holmes, Association of Research Libraries  
(District of Columbia)

Claud Hunter, Department of Vehicle Mechanics,  
Central Piedmont Community College (North Carolina)

Al Kellock, General Manager, Community College  
Division, McGraw-Hill, Inc. (New York)

Lee LaJeunesse, Director of Learning Resources,  
Orange Coast College (California)

David Lake, President, Microform Publishers  
International (Illinois)

Mayrelee Newman, Co-director, Institute for  
for Training in Librarianship, Appalachian  
State University (North Carolina)

Audrey North, Director of Library Services,  
Cazenovia College (New York)

James Prevel, President, Educational Information  
Services, Inc. (District of Columbia)

Robert Sullivan, Chief, Order Division, Library  
of Congress, (District of Columbia)

Dolly Svobodny, Modern Language Association  
(New York)

Following the modified outline which evolved out of the planning session, the project director began writing the handbook which in its completed form consists of six chapters, a bibliography, and five appendices. The handbook is further described in the following section of this report.

A publications contract was negotiated with the National Microfilm Association (Silver Spring, Maryland) which calls for publication of the handbook by no later than January 1974. Inquiries regarding the availability of the document may be addressed to:

National Microfilm Association  
8728 Colesville Road  
Silver Spring, Maryland 20910

## B. ACCOMPLISHMENTS

The major accomplishment of Phase III was, of course, the completion of the microform handbook. The handbook (which is 213 typewritten pages in length) is summarized as follows:

Chapter One - an introduction to micrographics  
(including definitions)

Chapter Two - an overview of community and junior  
college learning resources centers (LRC's)

Chapter Three - an overview of the micrographics  
field (including history and development)

Chapter Four - a description of microfilm, micro-  
fiche, and other microform software (including  
questions to be answered prior to selecting  
microforms for the LRC)

Chapter Five - a description of microform readers,  
reader-printers, film duplicators, and other  
microform equipment (including a checklist of  
factors to consider in selecting hardware)

Chapter Six - an outline of the major consider-  
ations that should go into the designing of an  
educational microform system.

Complementing the text are five appendices which identify sources of additional  
information:

A - excerpts from the NMA's Buyer's Guide

B - a list of NMA chapters (the location  
and president of each)

C - a list of micrographics standards

D - a list of micropublishers

E - a list of microform periodicals and newsletters

Together the text and appendices constitute a resource tool which, hopefully,  
will benefit educators in their endeavors to serve the information needs  
of LRC users.

In addition to the handbook, other accomplishments of Phase III included  
(1) the publicizing of project activities through announcements in various  
newsletters and through the publication of an article entitled "A Medium  
for Spies.....And Community Colleges" which appeared in the June/July 1973  
issue of The Community and Junior College Journal (see appendix A for photo-  
static copy), (2) the conducting of a two-hour forum on micrographics at  
the 1972 convention of the American Association of Community and Junior Colleges,  
(3) the conducting of a workshop on micrographics at the Rutgers University  
conference for librarians, LRC directors, and media specialists, and (4) the  
transmitting of oral or written reports regarding the project's goals and

activities to persons attending meetings of the ALA/AACJC/AECT Joint Committee, the National Microfilm Association, and the American Library Association.

## CHAPTER III

### Conclusions and Recommendations

#### A. Conclusions

The major conclusions reached by the project staff as a result of this four-year endeavor are (1) that users of microforms can learn as well from this medium as from more conventional media, (2) that resistance to microforms is minimal, particularly in view of recent technological developments in micrographics which have led to the marketing of relatively inexpensive and portable readers and to the availability of more current information in microform, and (3) that microform systems which are carefully designed to meet local needs not only will be usable (and used) by students and faculty but will permit the institution to expand the breadth and depth of its learning resources at substantial savings in costs as compared with conventional printed materials.

#### B. Recommendations

The project staff recommends the following:

1. Educational institutions at all levels - and community colleges in particular - should devote full attention to micrographics as a means of more effectively, more efficiently, and more economically serving the information needs of the persons whom they serve;
2. Librarians, media specialists, and directors of learning resources centers should utilize the AACJC Microfilm Project handbook in deciding whether and how to instigate or expand microform systems at their respective institutions; and
3. The U.S. Office of Education should fund a research project similar to the one originally envisioned for Phase III of the AACJC Microform Project in order to establish the extent to which microforms will enhance the educational development of their users and the extent to which LRC's can effectively utilize microforms as a means of disseminating (as opposed to circulating) resource materials.

As noted in the Phase II final report, one means of investigating the above issues would be: (1) to develop, in cooperation with microform and curriculum experts, an extensive microform collection, taking advantage of the unique information-handling techniques of microforms; (2) to install the microform collection, together with appropriate microform reading equipment, in the college learning resource center; (3) to conduct orientation sessions with students and faculty to acquaint them with the use of the equipment as well as the contents of the collection; (4) to monitor and measure the utilization of microforms in the learning resource center and off-campus; (5) to measure educational achievement of students in the experimental college and a parallel control (where only hardcopy collections exist); (6) to replicate the design in several colleges simultaneously; and (7) to analyze data relevant to the research questions posed.

# A MEDIUM FOR SPIES

\* \* \*

## DALE GADDY

In recent months a televised commercial for a well-known American automobile has featured several detective-types busily disassembling a "captured vehicle" suspected of containing microfilm—no doubt cleverly hidden in the best tradition of "The French Connection." A seat is ripped open. "Wow, look at this deep foam padding," exclaims one Dick Tracy while another interjects something about double roofs and double fenders. "No microfilm here," intones a voice as fingers and screwdrivers continue moving at a feverish pace.

Such is the drama of prime-time TV, a la '73. And such is the image of microfilm: something of use to saboteurs and spies or worse.

## LEGITIMATE USES

To some it may come as news that microfilm and other microforms\* have *legitimate* uses. Airlines, for instance, are using microform systems to expedite flight reservations service; hospitals are storing medical records on microform to expedite the retrieval of files for review prior to and during treatment; and governmental agencies are storing voluminous files of information in microform as a means of conserving space and reducing retrieval time.

The sphere of legitimacy in microform use has come to include educational institutions as well, although evolving much later and for different reasons than was true for govern-

mental and industrial concerns. In government and industry, the principal advantages for moving\* into microform technology were (and are): (1) a reduction in the amount of space required to store information, (2) a reduction in the amount of time required to retrieve desired documents, and (3) a reduction in overall costs of information handling—especially where volume is significant and where the transportation of records is a factor.

While such advantages are intriguing to educators, they alone have not resulted in any discernible avalanche of microforms into the education marketplace. And for good reason.

Certain advantages notwithstanding, educators—especially personnel of learning resources centers (LRC's)—have not been thoroughly convinced that microforms can convey information as effectively as ink and paper. And those who have been convinced have not found sufficient quantities of relevant educational materials in microform, nor have they found the accompanying equipment to be well designed or reasonably priced.

## LEARNING POTENTIAL

Several studies of microform materials and equipment have been conducted, but until recently the question of the learning effectiveness of microforms had not been researched. Can one learn as well from reading microforms as from reading conventional printed forms? This was the question that prompted AACJC to launch its Microform Project in 1969 under contract with the U.S. Office of Education.

During its first year (Phase I), the project was directed by Louise Giles, dean of learning resources at Macomb County Community College (Michigan). Phase I resulted in the

identification of required, recommended,\* and available reading resources in ten subject areas that are commonly offered by community colleges throughout the country. This information contributed to the research design which was developed and implemented in Phase II under the directorship of the author and with the assistance of Dr. Asin Connor, research specialist. Specifically, the research design focused on the following factors that were believed to be related to the use of microforms:

## RELATED FACTORS

1. Access to microform equipment and materials. (Selected students were restricted to the use of equipment at the LRC while others were loaned equipment for use at home. Still others were equipped with portable readers that could be used wherever feasible.)

2. Interaction between the student and the equipment. (The mechanics of manipulating various types of equipment necessary to read roll microfilm, microfiche, etc.)

3. Types of subject matter content involved in the reading. (Essay—materials usually read without interruption; and display—materials such as charts and diagrams that required longer fixations.)

4. Relationship between positive and negative image microforms. (Differences in dark print on light background and light print on dark background.)

5. Sequence or format of images on a microform. (Differences between presentation of images in horizontal or vertical sequence.)

The Phase II pilot studies, limited to four community junior colleges in metropolitan Washington, D.C., revealed that students (ranging in ages from 17 to 53 years and enrolled in

\*A generic term for any form, either film or paper, which contains micro images. More common microforms are microfilm, microaperture cards, and micro-

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INFORMATION

# AND COMMUNITY COLLEGES

various degree and non-degree programs) evidenced little or no resistance to microforms and that they performed as well, scholastically, as students who used "conventional" materials. It should be noted, however, that these results apply only to the pilot studies, and may or may not be generally true.

## GUIDE SUGGESTED

Rather than verifying through further research the tentative conclusions reached in Phase II, USOE recommended that a guide be developed to assist educators with selecting appropriate microform equipment and materials. Consequently, the major product of Phase III is a soon-to-be published book entitled *A Microform Handbook*.

The handbook includes an introduction to micrographics, an overview of community college LRC's, an overview of the micrographics field, a description of microform software and hardware, and checklists for selecting, organizing, and operating microform systems. Sources of microforms are included, as well as numerous illustrations and a selected bibliography.

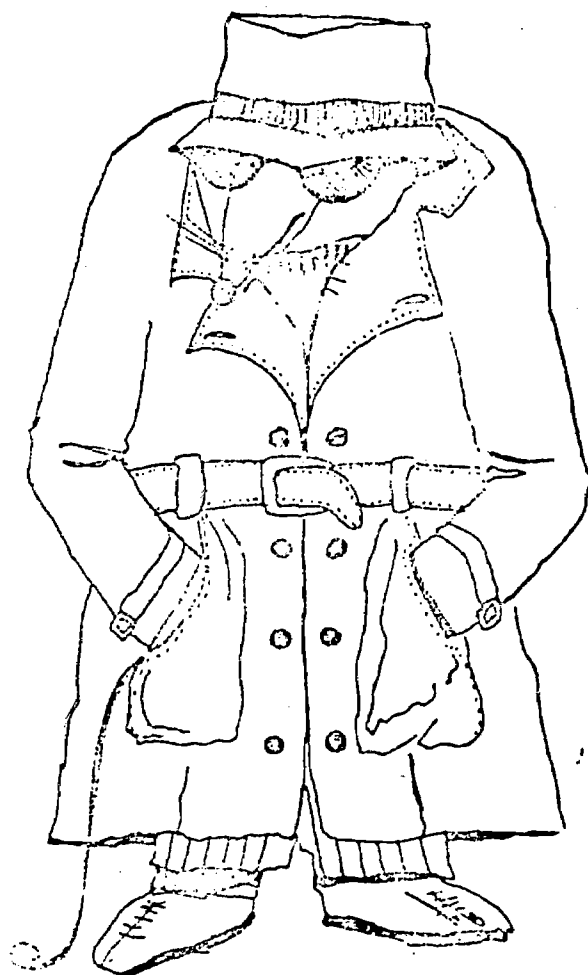
As in previous phases of the project, the staff avoided endorsements or criticisms of microform products by brand name. The project was envisioned from the outset as an evaluator of the medium—not an assessor of the medium's products. Hence the handbook stresses the advantages and disadvantages of various microforms and of various types of microform equipment. Intended to serve as a resource tool for LRC personnel, the handbook raises negative as well as positive issues regarding microform technology and suggests ways of evaluating, selecting, organizing, and maintaining microform systems.

As the foregoing suggests, microform technology can be an effective means of expanding and extending the learning resources of community colleges—if carefully selected and properly utilized. Many documents are marketed at lower costs in microform than in paper form; consequently, for the same amount of money more titles can be purchased in microform than in printed form. Economic savings also may be realized through the conversion of selected printed materials to microform, thus freeing shelf space for additional hard copy growth internally without necessitating new or expanded building space.

## UNLIMITED SERVICE

Perhaps more exciting than other possibilities offered by microform technology is that of extending learning resources to people who otherwise would not have them. Educational resources in microform can be retrieved manually within minutes or mechanically within no more than two seconds—a significant factor particularly to the working commuter. Certain microforms (e.g., low-reduction microfiche containing approximately 100 pages of information) can be duplicated for a dime or less at an LRC and transported by or mailed to a student or other user. Hence a user can build his own collection of learning resources and persons such as the handicapped, aged, or distant residents can gain access to LRC materials more readily than before.

This is not to say that all microforms are educationally and economically feasible for all community colleges (contrary to some sales pitches proffered by the micrographics industry). Some microforms are undesirable due to their high production costs; many contain information



that is relevant to few if any community college students or faculty; and an alarming number of microform viewers (apparatus with which to read microforms) are ill-designed for educational use and/or are too expensive for most LRC budgets. But for the majority of community colleges, microform technology represents a realistic solution to the information explosion and to the need of most LRC's to serve a more diversified clientele, i.e., students with greater differences in goals, abilities, and programs of study.

With microforms, LRC's can become *distributors* of information rather than *depositories* for information. The technology exists today making such use both desirable and possible for community colleges. □