



New Library Materials and Technology for Instruction and Research

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A CAREFUL REVIEW of the research literature published since 1960 on using modern communications technology for library instruction, will disclose a number of relevant studies which may be classed under two headings: (1) those relating to formal course work in library science; and (2) those which cover informal instruction in the use of libraries. A majority of the studies reported concern informal instruction.

The first part of this article will show that there has been a growing amount of experimentation on the use of both new and traditional instructional aids in teaching library science, for example, color slides, new programmed learning materials, closed-circuit and broadcast television, tape recordings, overhead transparencies, and single concept films. The studies reported in later sections of the article suggest that experimentation completed in informal or undergraduate settings has not been matched in volume or quality by research pertaining to library science instruction as conducted on the graduate level. The author hopes all projects cited may help point the way to fruitful new research and experimentation in the field.

Formal Course Work in Library Science. One of the more significant projects involving controlled experimentation in a formal course in school reference materials is that reported by Allen.¹ Subjects participating in this study, juniors and seniors in the Instructional Materials Department at Southern Illinois University, were divided into the usual experimental and control groups. Within the time period of two hours and twenty minutes (held constant), twenty-nine separate reference items were demonstrated to and studied by each group although actual materials were not shown to either. A lecture, which

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used 2" × 2" slides to give views of each whole volume, its title page, table of contents, typical entries, and some special features, was presented to the experimental group. The same lesson, without slides, was presented to the control group.

Scores obtained before and after the experiment were based on School and College Ability Test (SCAT) performance, grade point averages, and on pre-test and post-test results. Both tests called for answers to thirty-one matching questions. The two groups did not differ significantly in SCAT scores, grade point average, or in pre-test results. A Wheery-Doolittle regression analysis, computed on three scores, indicated that grade point average was the only predictor of success on the post-test. However, a simple variance t-test (two-tailed) of gain scores showed highly significant differences in favor of the experimental group at the .001 level of confidence. In other words, results of using slides to illustrate reference works seemed to indicate improved instruction at Southern Illinois when compared with results of the same instruction without slides (or use of actual reference materials). Furthermore, the use of slides brought group scores closer together on the post-test since even slower students tended to catch up with brighter colleagues.

In order to determine those factors in the slide presentation which contributed most to results noted, another group of thirty students was given both types of instruction and asked to indicate which method was better and why. All thirty students replied that they preferred the slide lecture because: (1) the slide material helped them to retain an image of actual physical appearance and size; (2) the arrangement of materials was more easily visualized and understood; (3) contents could be enlarged for individual instruction within the group; (4) the slides afforded a common denominator of experience which tended to equalize previous knowledge of particular sources; (5) answers could be explained visually as well as verbally; (6) the slide-lecture combination seemed to bring out the "better" qualities of each approach; (7) it was easier to take notes since attention was focused sharply.

Allen concluded that the slide-lecture method of instruction has numerous possibilities for use in teaching library science since the slides needed are inexpensive and can be used to show almost any type of material normally presented in a classroom, and since the time required for effective instruction can be reduced.

However, it might well be asked, "When and why would a compe-

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tent instructor teach the use of reference materials without introducing actual volumes?" Using Allen's slides in place of actual materials could solve the problems raised by trying to offer extension courses in towns where the requisite volumes are not available from local libraries or where the cost of acquiring works needed for instructional purposes would be prohibitive. Furthermore, pressures created by the increasing Federal support of library programs demand accelerated programs for teaching library fundamentals, especially to librarians serving schools. Allen's experiment with slides suggests a convenient way of meeting this need, even for more isolated schools which have not acquired many basic materials.

Before moving on to discuss several studies of library orientation programs, perhaps a brief mention should be made of Penland's² work on benefits to be gained from intensive student analysis of programmed instruction. Results obtained from his research led Penland to believe that many students may profit substantially from detailed analysis of objectives and other features of programmed instruction.

Informal Orientation to the Library. Regarding informal student orientation to the use of libraries and library materials, several surveys yield information concerning use of both new and traditional media. For instance, Power³ has summarized for the International Association of Technical University Libraries a number of surveys conducted at university libraries in the United States and has reported the kinds and extent of instruction given in each case and the results of evaluation.

Josey⁴ sent a questionnaire to five hundred college and university library administrators representing many different kinds of institutions and obtained a 79 percent response (which is unusually high). Sixty percent of those responding indicated that their library staffs were not responsible for a course; 45 percent replied that a member of the library staff gave a lecture on the use of the library during an orientation week; 56 percent said that comparable instruction was presented to English classes. Josey concluded that (1) librarians are "alienated" from orientation instruction, (2) orientation week is disappearing, and (3) tours of the library are falling into disfavor. He also felt that too much instruction about the library was being given at a time when college freshmen were not able to make any really functional use of information gained from such activities.

In another survey concerning the value of library orientation courses, Wojcik⁵ questioned some thirty schools about the desirability of de-

veloping and offering a course which could be required nationally; most respondents favored two to three hours of such an orientation program. Hartz⁶ emphasized the need for new approaches in freshman library orientation. Syracuse University⁷ surveyed the literature and held conferences with library and academic staffs at the universities of Buffalo, Cornell, Rochester, and Syracuse. Hilker⁸ completed a study which revealed very little relationship between academic classes and proficiency in library skills but which did indicate "a small positive relationship between academic success and knowledge about library usage gained chiefly from pre-college experience."

Pritchard⁹ sent a library handbook containing a self-test to all "pre-freshmen"; 78 percent read it and most "passed" the test. Gottinger¹⁰ used one hundred 2" × 2" colored slides with a dubbed-in commentary on tape to teach some 1,400 freshmen about main entry catalog cards; the experiment will be assessed at some time in the future. San Antonio College¹¹ received a grant to experiment with teaching machines in instructing pupils on how to use the library. Freshmen orientation programs involving some degree of novelty but not using newer media were reported by Matthews,¹² Taylor,¹³ Alston,¹⁴ and Knapp.¹⁵ However, a number of fairly recent studies recommend more innovation.

For example, Gerlach and Farnbach¹⁶ report the use of 8 mm. single-concept films for self-instruction. Gee¹⁷ and Reed¹⁸ urge use of more programmed instruction in the formal teaching of library science. The use of programmed instruction for in-service training has been recommended strongly by Hines.¹⁹ A flow chart of library searching techniques, described by Swenson,²⁰ is suggested for library orientation. And, in reporting a somewhat traditional program of library instruction, Bartlett²¹ mentioned the use of televised lectures. Clinch²² and Dance²³ suggest the use of more closed-circuit television for many purposes in the library. In fact, television seems to be the one form of communications technology which has won recognition in the field of library orientation.

Moffett²⁴ reports that teaching an orientation course via television is just as effective as offering traditional lectures. Brown²⁵ has reported that, while an attempt to represent a library tour by showing slides and movies to 1,500 students failed, closed-circuit television lectures on the history of libraries, the Dewey Decimal and Library of Congress classification systems, reference books and periodicals, and on research problems were very successful. Brown did, however,

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note two limitations of television—(1) the lack of interaction with students, and (2) the fact that better students could pass the course “with flying colors” without ever having entered the library. Awareness of the dangers of pure verbalization without performance testing should be noted since most instruction in library science insists upon performance.

A well-designed experiment has been reported by Hertel²⁶ in which the principal variable was the amount of televised instruction (closed-circuit) given during four lessons. Unfortunately, the fact that some students were repeating the course contaminated the data and made valid statistical analysis impossible. Even so, the author concludes, “No one . . . can fail to be impressed by the potentialities which television offers. . . .” Holley and Oram²⁷ reported on a preliminary television broadcast (which they felt did as much good as an organized library tour) and on a longer broadcast involving 181 slides. They felt the latter program was worth the effort and served their purpose as well as tours; however, statistical data concerning results were not reported. Holley and Oram also stated that “The same amount of information is communicated with the expenditure of much less effort” in spite of technical difficulties. It might be noted in passing that, as a result of their first program, the experimenters decided a narrator should not be visible on the screen. The reports offered by Holley and Oram contain helpful advice for anyone attempting use of this medium for orientation.

Wendt and Rust,²⁸ and McCoy²⁹ have reported on the use of programmed instructional techniques. In a series of thirteen controlled experiments, four units of such instruction were given including items on use of the card catalog, shelving, encyclopedias and dictionaries, periodicals and indexes. Not only were new branching techniques of programming employed, but all frames produced included a Kodachrome picture as well as printed information. In completing a program, the learner was required to stop the program at various points and perform actions which would simulate required terminal behavior. At several points in the program on the card catalog the learner was instructed to locate a particular card in a card catalog tray on a table in front of him. Similar assignments required him to locate books on shelves and find items in dictionaries, encyclopedias, and indexes. Most experimental materials utilized such programming techniques as by-passes, remedial circuits, and diagnostic questions.

In the initial experiment, a group of thirty freshmen taught by the

traditional lecture system were compared with thirty freshmen taught by a teaching machine which displayed 2" × 2" slide images projected on to a screen. The answers given to multiple choice questions determined sequence and which materials the machine would show.

Results obtained from this experiment indicate that machine instruction may be just as effective as a lecture, even though lectures can be improved by adding slide presentations. Furthermore, when machines are used, each student may proceed at his own pace. In the study reported, slower students were found to take as long as forty minutes to complete each program, whereas, with use of a "by-pass" sequence, brighter and more experienced students could finish the same program in less than ten minutes.

In still another experiment with programmed instruction, thirty students completed the work, but Kodachrome pictures were eliminated and their content translated into print. While no difference was found between results obtained by the "pictorial" group and the "print-only" group as measured by the paper-and-pencil criterion post-test, a highly significant difference was found which favored the "pictorial" group when a special performance test was administered. This test asked students to carry out specific assignments by working in the library with actual materials. While completing his assignment, each student was graded by an observer who used a structured rating scale. Results of the experiment suggest that, wherever possible, instruction in library science should be tested by actual performance rather than paper-and-pencil tests.

A final experiment in the series eliminated performance frames from the programs. There was no difference between the "no performance frames" group and the group taking the standard programs including performance frames as measured by paper-and-pencil tests but, again, there was a highly significant difference when actual performance was measured.

One general conclusion which can be drawn from the Wendt, Rust and McCoy experiments is that well-designed units of programmed instruction which involve simulation of desired terminal behaviors by means of pictorial instruction and occasional completion of performance assignments, can teach without reliance upon a human instructor as well as or more effectively than can traditional orientation lectures which involve valuable staff time. In addition, simulation of terminal behavior via pictorial performance frames produces significant results in terminal behavior but non-significant results in paper-and-pencil tests.

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A greater willingness to experiment with new media seems evident from informal experiments and demonstrations conducted at the elementary and secondary school levels. In teaching children how to use school libraries, teachers and administrators have employed closed-circuit and broadcast TV, tape recordings, and the overhead projector. Steinrod³⁰ has reported use of closed-circuit television to teach all fifth and sixth graders in one school how to use a card catalog. A post-test involving a sample library card resulted in scores ranging from 90 to 100 percent correct. Use of broadcast television has been reported by Egan³¹ whose subjective evaluation was that the series was "stimulating and of real value." Ligda³² reported on a tape recording written, produced, and presented by the children themselves. During presentation of the tape, cartoons were shown; evaluation was subjective. Bruner³³ used programmed learning to motivate children seeking occupational information.

A controlled experiment was conducted by Siefker³⁴ who wrote a linear program on the card catalog for the upper elementary and junior high school levels. She reported that accuracy on the pre-test ranged from 25 to 63 percent and on the post-test from 85 to 96 percent, which illustrated not only the efficacy of the program but also the tendency of programmed instruction to make groups of learners more uniform. A seventh-grade student's very successful performance on a real card catalog, although he had never before seen one, illustrated the much-to-be-desired values of performance testing in library instruction.

Use of the overhead projector in teaching library skills has been reported by Landman,³⁵ Johnson,³⁶ and Schwartz and Schofield.³⁷ Landman reported that specific areas of a library handbook were illustrated by transparencies projected with an overhead projector. Facsimiles of circulation cards and date-due slips made it possible to illustrate for an entire class actual work involved in filling out these forms. The experimenter noted improved interest. Johnson reported use of lectures employing transparencies which resulted in a high level of learning; but he reported no objective testing. Schwartz and Schofield reported a demonstration of ready-made transparencies.

The Need for Research. It is unfortunate that the relatively large number of studies and experiments with new media and methods of instruction for library orientation have not been matched by an equal research effort concerned with the formal teaching of library science, especially on the graduate level. There are several reasons for this deficiency.

Although the most important teaching of library science probably occurs in recognized graduate library schools, most research in teaching methods is confined to lower academic levels. One reason is that college administrators and teachers are always looking for better ways to handle the flood of students now entering freshman and sophomore classes. However, the steadily increasing enrollment in colleges and universities and the inevitable demand for more qualified librarians presage larger graduate classes in library science and a corresponding need for more efficient teaching methods. Furthermore, although bibliographic research is a prime area of study in library science, it has little application to teaching in areas that require experimental research.

There is a need for controlled and objective experimentation in the teaching of library science. Any science can be defined as "a body of knowledge organized by laws." Library science conforms to this definition and its teaching does not differ in any important way from the teaching of other sciences. It should, therefore, be possible to adapt to library science new teaching methods developed in other sciences, for example, the Postlethwaite carrel system of self-instructional techniques as developed at Purdue.

In addition, in order to undertake controlled experimentation it must be possible to have flexible conditions so that experimental situations can be created. The teaching of library science can be just as flexible in this regard as can any other science. It is possible to set up controlled and experimental sections of students in the same course, one of which receives the usual type of instruction while the other receives an experimental version.

Controlled experimentation needs one important element: a valid and reliable criterion test, the basis on which experiments must rest. Without a good criterion test, the experimenter never can tell whether he has created a difference. The validity of the test can be established by several methods to determine whether the test really measures what it is supposed to measure. It must be reliable enough to be used repeatedly to obtain approximately the same results. A criterion test which has been standardized nationally to develop dependable norms is especially desirable in experimentation. In many fields of achievement, notably on the secondary school level, many such standardized tests are available. Unfortunately, this cannot be said of library science, but, inasmuch as library science is a body of knowledge organized by principles, standardized testing is patently feasible.

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Library science, as taught in most schools, represents a fertile field for experimentation since there is a tendency to teach by requiring simulation of desired terminal behaviors. Library science courses normally include assignments which project examples or simulations of skills desired. For example, cataloging is taught by having students actually catalog books (or xeroxed essentials from a book). To the instructor in library science this seems only common sense; to a student of programmed instruction, however, such practicality is an achievement since one attribute of programmed instruction is the emphasis placed upon desired terminal behavior. A teacher, before writing programmed instructions, must specify in great detail what he wants the learner to be able to do when instruction has been completed. In other social sciences this often is interpreted to mean merely the answering of a paper-and-pencil test because, in most cases, it is impossible to test actual behavior. For example, the teacher of a course which involves learning value judgments can seldom if ever be sure that the learner, after leaving the course, will render sound value judgments. In library science, there are many instances in which actual terminal behavior can be tested by the instructor in the field or a simulated field situation. Thus, library science courses have a strong behavioral criterion for measuring experimentation.

Since control is essential in order to make valid generalizations about the results of experiments, it is hoped that controlled experimental approaches will become common in the teaching of library science. General surveys, although useful and necessary, merely reveal a status quo which may or may not be deplorable. Demonstrations are not research, and the Elementary and Secondary Education Act makes a sharp distinction between them. Title III provides funds for demonstration, while Title IV supports research and its dissemination. Inevitably, the "library college" movement will involve librarians in many types of controlled experimentation. The present proliferation of devices to provide automated, programmed instruction (without an instructor present) implies that most colleges will see rapid growth in the number of study carrels on campus. At institutions such as Oklahoma Christian College, whole floors of the campus library contain several hundred student carrels. Language laboratories, which already provide such individualized study space, are being followed rapidly by such devices as the talking typewriter, dial-access retrieval systems and, most important, computer-assisted instructional aids.

Role of the Computer. Computer-assisted instruction provides the ultimate in individualized teaching. A computer will store branching forms of programmed instruction which can vary the content presented depending upon student answers to multiple-choice diagnostic questions placed in the program. Provision can be made both for fast and slow learners and for fast and slow readers; for individuals who need a higher percentage of pictorial instruction; for students from different socioeconomic levels; and to satisfy needs of other groups depending only upon the creativity of a program writer. In the so-called "adaptive" mode of computer-assisted instruction the computer can adjust to the student in two additional ways. First, it can keep records of student failure or success and adjust programs accordingly without student knowledge. Second, such previous information about a student as IQ and grade point averages can be stored under the student's own name in the computer "memory" from which a learner's whole program of instruction may then be planned.

It should also be mentioned that the same computer which is used in computer-assisted instruction can also keep records of student performance and, in the end, provide researchers with full sets of statistics. In fact, the statistical results of such experiments can be made available to researchers within minutes of the time the last subject leaves a carrel.

Computer-assisted instruction implies the eventual presence not only of a typewriter controlled by both student and computer for communication purposes, but also of a cathode ray tube display to show both printed and graphic materials, a projection screen to show colored pictures, and a speaker or earphones for audio presentation. Thus, stimuli impinging on a learner may be printed, graphic, pictorial, or audio. Eventually the use of motion pictures via computer—a medium offering tremendous possibilities for automated instruction—will also be possible. By the end of 1967, forty American universities will be using computers for instruction. Present models can handle as many as thirty-two learners simultaneously, all working with different programs.

It is inconceivable that library science should stand idle while other areas of study benefit from use of the computer for instruction. The "library college" idea envisions many automated carrels linked to computers placed within the library itself and not in some separate campus agency divorced from libraries. Thus, since instructors in library science may well find many such automated carrels situated

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near their classrooms, controlled experimentation in using them is virtually inevitable.

Research completed to date has shown that automated carrels are especially useful in teaching factual information and skills. Library science has its full share of these elements, and there are many areas of controlled experimentation open to library science teachers. For instance, at Southern Illinois University, research completed in the past six years with simulated computer-assisted instruction has demonstrated that one vital area for research concerns the relationship between pictures and words. Apparently this relationship follows a continuum. At one end is the book with no illustrations. Next come those books in which pictures are "fillers," i.e., materials which relieve the sameness of the printed page. For example, pictures reproduced in *Time* magazine do not contribute much to the text but are used principally to draw attention to the text. Picture books written for children afford good examples of both text and pictures having equal prominence with each contributing its share to the development of a story. The captions of newspaper photographs are subordinated to the pictures, and the words are usually confined to a few short sentences. In filmstrips, the pictures predominate and the number of words accompanying each frame is cut to a minimum.

Further down this continuum of "cooperation" between pictures and words we find that many paintings, especially the non-representational, have titles which are quite meaningless and do not help interpretation; they are mere labels. Finally, there are pictures which need no words, for example, the series of five hundred photographs published under the title, *Family of Man*, by the Museum of Modern Art in New York City. These pictures, culled from many thousands, show human beings around the world arranged in very familiar poses and they literally speak for themselves about the brotherhood of man.

Although in the past the profession of librarianship has been concerned principally with the printed word, librarians should also be involved in determining which elements in pictures provide the most effective communication. This should not be left only to photographers since the same analytical techniques employed so brilliantly in linguistics could be used to determine the communicable elements of pictures. The growing interest of professional librarians in storage and retrieval of pictorial content calls for research into the instructional value of pictures, an area most appropriate to library science. Controlled experimentation would be difficult but not impossible; such

research has not been done in the past because of lack of interest and lack of competent researchers.

Since multi-media approaches can now be used for auto-instruction in a carrel, the interrelationships of media provide another fascinating field for study. One good hypothesis might be that a student sitting alone in a carrel would prefer an instructor's voice teaching him via audio system more than cold print or visuals. This hypothesis could be tested easily by programming several units in library science and presenting them in two or three ways to selected classes.

To sum up, many new methods and media useful for instruction and research—notably, computer-assisted instruction—should be employed in library science, at least experimentally, to help handle increasing numbers of students, to maximize amounts of instructional information which can be introduced and learned in a short time, and to simulate desired terminal behavior once clear educational goals have been determined. It is hoped those responsible for improving education for both library use and management will not fail to harness the new communications technologies to these ends.

References

1. Allen, Kenneth W. "The Use of Slides for Teaching Reference," *Journal of Education for Librarianship*, 6:137-139, Fall 1965.
2. Penland, Patrick R. "Programmed Instruction at Southern Connecticut," *Journal of Education for Librarianship*, 6:55-60, Summer 1965.
3. Power, Ellen. "Instruction in the Use of Books and Libraries: Preliminary Report to the International Association of Technical University Libraries," *Libri*, 14:253-263, 1964.
4. Josey, E. J. "The Role of the College Library Staff in Instruction in the Use of the Library," *College & Research Libraries*, 23:492-498, Nov. 1962.
5. Wojcik, Maria. "Academic Library Instruction," *College & Research Libraries*, 26:399-400, Sept. 1965.
6. Hartz, Frederic R. "Freshman Library Orientation: A Need for New Approaches," *College & Research Libraries*, 26:227-231, May 1965.
7. "Special Project," *Journal of Education for Librarianship*, 4:54, Summer 1963.
8. Hilker, H. A. "Electronic Librarian: Institute on Newer Methods and Media for Library Orientation," *Library of Congress Information Bulletin*, 25: 409-410, July 14, 1966.
9. Pritchard, Hugh C. "Pre-arrival Library Instruction for College Students," *College & Research Libraries*, 26:321, July 1965.
10. Gottinger, F. Eugene. "Orienting the Freshman to the Library," *Canadian Library*, 21:390-394, March 1965.
11. "College Library Gets CLR Grant for Teaching Machine Experiment," *Library Journal*, 89:2978, Aug. 1964.

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12. Matthews, Sidney E. "A Military College Initiates a Library Instructional Program," *College & Research Libraries*, 23:482-484, Nov. 1962.
13. Taylor, Robert S. "A Coordinated Program of Library Instruction," *College & Research Libraries*, 18:303-306, July 1957.
14. Alston, Annie May. "The Happy Medium in Library Instruction at the College Level," *College & Research Libraries*, 21:469-470, Nov. 1960.
15. Knapp, Patricia B. "The Monteith Library Project: An Experiment in Library-College Relationship," *College & Research Libraries*, 22:256-263+, July 1961.
16. Gerlach, Vernon S., and Farnbach, Irene. "How to Teach Library Skills Without Really Being There," *Library Journal*, 89:921-922, Feb. 15, 1964.
17. Gee, Ralph D. "The Library Association Prize Essay, 1965. Algorithmic Mathematical Reinforcement: The Implications of Programmed Instruction for the Librarian," *Library Association Record*, 67:228-232, July 1965.
18. Reed, Gerald. "Programmed Instruction: A Challenge to Librarians," *PNLA Quarterly*, 27:108-112, Jan. 1963.
19. Hines, Theodore C. "Programmed Learning and In-Service Training in Libraries," *ALA Bulletin*, 58:719-724, Sept. 1964.
20. Swenson, Sally. "Flow Chart on Library Searching Techniques," *Special Libraries*, 56:239-242, April 1965.
21. Bartlett, Bertrice. "The Stephens College Library Instruction Program," *ALA Bulletin*, 58:311-314, April 1964.
22. Clinch, Barbara. "Closed Circuit TV and the Librarian," *School Libraries*, 14:17-22, May 1965.
23. Dance, James C. "Libraries and Closed-Circuit TV," *Wilson Library Bulletin*, 36:562-563+, March 1962.
24. Moffett, Thomas James. "A Comparison of Two Methods of Familiarizing Students with Library Methods and Materials," *Dissertation Abstracts*, 26:5791, April 1966.
25. Brown, Clayton M. "TV or the Herded Tour," *Library Journal*, 90:2214-2218, May 15, 1965.
26. Hertel, Robert R., *et al.* "TV Library Instruction," *Library Journal*, 86:44, Jan. 1, 1961.
27. Holley, Edward G., and Oram, Robert W. "University Library Orientation by Television," *College & Research Libraries*, 23:490, Nov. 1962.
28. Wendt, Paul R., *et al.* "A Study to Determine the Extent to Which Instruction to University Freshmen in the Use of the University Library can be Turned Over to Teaching Machines," U.S.O.E. Grant No. 7-11-076.00 made under Provision of NDEA Title VII; and Wendt, Paul R., *et al.* "To Test Refinements in Intrinsic Programing in Pictorial, Audio, and Performance Frames to Maximize the Probability of Desired Terminal Behavior," U.S.O.E. Grant No. 7-23-0907-189 made under Provision of NDEA Title VII.
29. McCoy, Ralph E. "Automation in Freshman Library Instruction," *Wilson Library Bulletin*, 36:468-470+, Feb. 1962.
30. Steinrod, Margaret B. "They Teach Library Skills with TV," *Grade Teacher*, 84:108-109, Nov. 1966.
31. Egan, Mary Joan. "Using Television to Serve the Library Program," *Instructor*, 74:74-75+, Nov. 1964.

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32. Ligda, Dorothy. "Do-It-Yourself Tape Recording for Library Instruction," *Library Journal*, 86:4009-4010, Nov. 15, 1961.
33. Bruner, Fern Blanche. "The Effect of Programmed Instruction on Information Seeking Behavior in Tenth Grade Students," *Dissertation Abstracts*, 26:3750, Jan. 1966.
34. Siefker, Barbara. "Programed Instruction on Use of the Card Catalog," *Southeastern Librarian*, 12:149-152, Fall 1962.
35. Landman, Juanita M. "Teaching Library Skills With an Overhead Projector," *Library Journal*, 89:923-924, Feb. 15, 1964.
36. Johnson, Alice E. "Library Instruction 'En Masse'," *School Libraries*, 11: 21-23+, Jan. 1962.
37. Schwartz, Eleanor E., and Schofield, Edward T. "Here's How the Garfield School Teaches Research," *Educational Screen and Audio-Visual Guide*, 44:14-15, June 1965.

ADDITIONAL REFERENCES

- Buist, Eleanor. "Training in Bibliography and Information Techniques for the Soviet Student," *American Documentation*, 13:397-400, Oct. 1962.
- Goldstein, Harold, and Parker, Edwin B. "Library Services and Instructional Television," *Illinois Libraries*, 44:631-635, Nov. 1962.
- Jones, Wyman. "Programed Help," *Library Journal*, 89:4304, Nov. 1, 1964.
- Lewis, Philip. "Programed Learning '64," *Illinois Libraries*, 46:109-115, Feb. 1964.
- Lewis, Philip. "Teaching Machines and the Library," *Wilson Library Bulletin*, 36:464-467, Feb. 1962.
- Moon, Eric. "Pre-Conference Potpourri: A-V Showtime," *Library Journal*, 91: 3640-3642, Aug. 1966.
- Rogers, Marjorie L. "Library Project with Teachers in Training," *Top of the News*, 18:19-24, Dec. 1961.
- "Self-instruction with Teaching Machines," *ALA Bulletin*, 55:121, Feb. 1961.
- Steinberg, Charles B. "Challenge of Mass Media," *Bookmark*, 23:256-260, June 1964.
- Midgett, Helen Laurie. "A Study of the Library Training and Knowledge of Undergraduate Students at Duke University." Unpublished M.S. dissertation, Department of Library Science, University of North Carolina, 1964.
- "Teaching-Machine on Library Use," *Library of Congress Information Bulletin*, 23:366-367, July 20, 1964.
- Waller, Theodore. "Teaching Machines; Implications for the Librarian," *Library Journal*, 86:1654-1656, April 15, 1961.
- Woelflin, Leslie E. *Bibliography, Footnoting, and Quotations*. Dubuque, Iowa, William C. Brown Book Company, 1965.