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ABSTRACT

A mail survey of two-year colleges was conducted to identify (1) two-year colleges using computer technology to teach reading, (2) the types of hardware and software used, (3) the courses in which computer technology is used, and (4) the ways in which computer technology is used in two-year college reading programs. Responses from 181 two-year colleges with developmental programs showed that 31.5% used computers in reading classes or labs, 10% used computers for classroom management, and 40% did not use computers. More than half of the institutions using computers had five or fewer units. An overwhelming majority used some version of the Apple computer, with the Commodore 64, the Franklin, and Texas Instruments' Alpha and Atari also mentioned. Although 71 different software packages were cited (with many developed locally), only four--Comprehension Power, The Speed Reader, Plato, and Word Attack--were cited with any frequency. Software was used most prevalently in remedial reading courses, followed by speed reading, vocabulary development, study skills, and combined reading and writing courses. The major trends indicated are that computer use in reading instruction appears to be increasing, with a wide variety of software in use, mostly on Apple computers, and used most commonly to provide drill and practice with tutoring. (A list of software packages frequently used in the reading programs of two-year colleges, with distributors' addresses, is included.) (JG)

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Various forms of computer-assisted and computer-managed instruction have been widely adopted for use in developmental education programs during the past five years. This has been particularly true of developmental programs in community, junior, and technical colleges. Two of the most common uses of computers in developmental programs have been to provide drill and practice in learning assistance centers and to support mathematics courses. The use of computers in reading programs has, until recently, been rather limited. In recent years, however, an increasing number of two-year college reading programs have begun to use computer hardware and software for instructional purposes.

To date, few attempts have been made to identify the types of hardware and software used or the way in which they are used in two-year college reading programs. Such information would be useful to practitioners who are planning to use computers in reading programs or who are currently using computers and wish to know what others are doing in this area. As a result, this issue of RESEARCH in DEVELOPMENTAL EDUCATION is devoted to a recent survey of two-year college reading programs and their use of computers.

THE METHOD

Survey and Response

During the Fall of 1984, a survey instrument was designed to: 1) identify two-year colleges which use computer technology to teach reading, 2) identify the types of hardware used, 3) identify the types of software used, 4) identify the courses in which computer technology is used, and 5) classify the way in which computer technology is used in two-year college reading programs. The survey included a multiple choice response format with several options for open-ended responses. The instrument was then field-tested using a group of 30 developmental educators and revised on the basis of field-test responses. The instrument was also reviewed by experts in the field of reading, computers, and developmental education to determine the appropriateness of the survey format.

Using a mailing list supplied by the National Association for Developmental Education (NADE), a group of 235 two-year colleges with developmental programs was identified. The survey instrument was then mailed to all 235 institutions. The initial mailing and a follow-up mailing yielded a 77% (181) response. These responses were then collated and analyzed to develop an overview of computer usage among survey respondents.

Limitations

A major limitation of this study results from the survey sample. While all two-year insitutions with members in the National Association for Developmental Education were surveyed, this still represents a non random and non controlled

sample. Since there are over 2,000 two-year institutions in the United States, and responses were obtained from only 181 of these, the sample represents less than 10% of the available population. Furthermore, since the sample was drawn exclusvely from the mailing list of a professional association, there is a strong likelihood that sample respondents are not typical of two-year college reading programs.

As a result, the results presented here are considered to be neither representative nor generalizable. They do, however, provide a useful base for improving our understanding of how computers are used in two-year college reading programs.

RESULTS

Of those who responded to the survey, 68 or 31.5% reported that computers were used in reading classes or laboratories. Eighteen respondents or 10% reported that computers are used for classroom management purposes. Twenty-one or 18% of the respondents volunteered the information that, while computers were not currently being used, plans are being made to use them in the near future for either instruction or management purposes. Seventy-four or 40% of the respondents indicated no current use of computers.

Of those who do use computers, 59% reported having their own for exclusive use. Forty-one percent reported having to share computers with other agencies or departments in their institutions. A few of the respondents used both their own computers and shared computers with others.

Slightly more than half of the respondents who used computers had five or fewer units. Twenty-one percent used between six and fifteen computers while twenty-three percent used more than fifteen units.

Computer Hardware

Of those who reported the use of computers in their reading programs, an overwhelming majority (90%) used some version of the APPLE computer. Of these, slightly more than half used the APPLE IIe while the remainder used the APPLE II+, the APPLE IIc, or the original APPLE computer.

Other computers mentioned included the Commodore 64, the Franklin, and Texas Instruments's Alpha and Atari units. Mainframe systems included Honeywell, Hewlitt Packard, and Sperry-Univac. In general, however, only a relative few programs used the campus mainframe computer for either instruction or management purposes.

FIGURE I

TYPES OF SOFTWARE AND INCIDENCE OF USE

TYPE OF SOFTWARE	NUMBER OF TIMES INDICATED	NUMBER OF POINTS (408 POSSIBLE)
DRILL AND PRACTICE	61	377
TUTORIAL	42	226
DIAGNOSTIC/ PRESCRIPTIVE	17	77
WORD PROCESSING	15	74
LOCALLY-DEVELOPED	12	56
SIMULATION	7	28

Resourcery

...The following software packages are used frequently by two-year colleges in their reading programs.*

Analogies (Compatible with Apple Computers)	Micro Power & Light 12820 HillcrestRoad, Suite 224 Dallas, Texas 75230
Bank Street Writer (Compatible with Apple Computers)	Broderbund 17 Paul Drive San Rafael, California 94903
Cloze Plus (Compatible with Apple Computers)	Milliken 1100 Research Boulevard St. Louis, Missouri 63132
Comprehension Power (Compatible with Apple Computers)	Milliken - same as above
Critical Reading (Compatible with Apple Computers)	Borg-Warner, Educational Systems 600 West University Drive Arlington Heights, Illinois 60004
How to Read in the Content Areas (Compatible with Apple, Commodore, and TRS-80 Computers)	Educational Activities 1937 Grand Avenue Baldwin, New York 11510
Reading Drills (Compatible with Apple Computers)	Jamestown Publishers P.O. Box 6743 Providence, Rhode Island 02940
Speed Reading (Compatible with Apple Computers)	Bureau of Business Practice 24 Rope Ferry Road Waterford, Connecticut 06386
Steps to Advanced Reading	Creative Curriculum 15632 Producet Lane Huntington Beach, CA 92649
Speed Reader I & II (Compatible with Apple Computers)	Davidson 6069 Groveoak Place, Suite 12 Rancho Palos Verdes, CA 90274

* The materials listed above have not been evaluated by the author or by the editorial staff of RiDE. Consequently, no endorsement of these materials is intended.

Software Usage Patterns

In order to determine the types of software most used for instruction, respondents were asked to classify their use of computers according to the following categories:

Drill and Practice - repetitive exercises, with some evaluation, reinforcement, and varying levels of difficulty.

Tutorial - direct instruction with evaluation, feedback, and branching.

Simulation - real-life situations in which a student is required to think and to make decisions.

Diagnostic/Prescriptive - pre-tests and evaluation based on some hierarchy of skills and including specific assignments.

Word Processing - programs allowing students to create written responses to demonstrate comprehension (usually in combined reading and writing courses).

In analyzing response data, tallies were taken of the number of times a program indicated use of each type of software. Of the 68 total respondents, 61 indicated that computer software was used for drill and practice. Software was used for tutorial purposes by 42 repondents; for diagnostic/prescriptive purposes by 17 respondents; for word processing by 15 respondents, and for simulation by 7 respondents. In addition, 15 respondents indicated that they used software which had been developed locally to perform a variety of the tasks noted above.

In addition to tallying responses, the respondents were also asked to rank their choices of software according to frequency of use. These responses were then weighted according to the ranking, with each type of usage being worth a possible 408 points. Analyzing the data in this manner, drill and practice still received the highest ranking -- 377 points. Tutorial usage was next with a total of 226 points. Diagnostic/prescriptive usage received 77 points while word processing received 74 points. Simulation received 28 points. In addition, locally-developed software was given a rating of 56 points (see FIGURE II).

In addition to listing the ways in which computer software was used, respondents were also asked to name the commercial software packages which were used most frequently. When all the software programs were listed and tallied, two packages emerged as more frequently used in reading instruction than others. These were THE SPEED READER by Davidson and COMPREHENSION POWER by Milliken. THE SPEED READER WAS USED by 11 respondents and COMPREHENSION POWER was used by 10 respondents. The only other commercial packages used with any degree of frequency were PLATO BY Control Data Corporation, (6 times), WORD ATTACK by Davidson (6 times), CRITICAL READING by Borg-Warner (5 times), and the BANK STREET WRITER by Broderbund (4 times). It should be noted that all of these programs except those poduced by Control Data Corporation can be run on APPLE computers. In addition, the Davidson materials can be used on either the Commodore or the IBM PC.

Usage by Course

Survey participants were also asked to identify courses in which computers were used in reading instruction. Respondents were offered the following choices for course usage: remedial reading, vocabulary development, spelling development, speed reading, study skills, and combined reading and writing courses.

The most prevalent usage of computer software was to teach remedial reading courses. Fifty-four or 70% of the respondents used software in remedial reading courses. Thirty-five or 51% of the respondents used software in speed reading courses. These two uses of computer software in courses were, by far, the most common.

Other uses, in order of frequency, were vocabulary development, spelling development, study skills, and combined reading and writing courses. Regardless of the courses in which computer software was used, however, the predominant usage was to supplement instruction. Very few programs used computer software as a primary means of instructional delivery.

SUMMARY AND CONCLUSIONS

Overall, this study indicates that the computer is now being used for instructional purposes in reading programs in over one-third of the two-year colleges

FIGURE II

COURSE USAGE OF COMPUTERIZED INSTRUCTION IN READING

COURSE	NUMBER OF TIMES USED	% OF RESONDENTS	% PRIMARY USE	% SUPPLEMENTARY USE
REMEDIAL READING	54	79	4	96
SPEED READING	35	51	6	94
VOCABULARY	30	44	10	90
SPELLING	24	35	6	94
STUDY SKILLS	17	25	6	94
READING/ WRITING	14	22	0	100

surveyed. Given the recent declines in the cost of computer hardware and software as well as the attention given to the computer as a learning tool during the past decade, this is a somewhat surprising figure. It might be expected that a larger number of two-year college reading programs would be using computers for instructional purposes. However, when the number of programs indicating that they plan to adopt computers for reading instruction in the near future is considered, the percentage increases to about half.

The major use of computers appears to be as a supplement to instruction. In very few cases is instruction handled completely by computers. The only case where computers appear to be used with some regularity as the primary instructional vehicle is in vocabulary development -- an area in which drill and practice may be considered to be an effective method of learning.

Among those surveyed, a rather wide variety of software was employed for reading instruction. The 68 respondents who used computers for reading instruction cited 71 different software packages in use by their programs. Of these, only four -- COMPREHENSION POWER, THE SPEED READER, PLATO, and WORD ATTACK -- were cited with any frequency.

It was also interesting to note that, in spite of the wide variety of software packages available on the market, many programs use locally-developed software in reading instruction. Twelve of the 68 respondents who used computers also used locally-developed software to supplement commercial software.

Among respondents, the most widely-used hardware is APPLE. This may be due to the fact that the APPLE computer has been on the market longer than most of the others. The APPLE Company has also engaged in a rather substantial promotional campaign to sell their equipment to educational institutions. Furthermore, most of the software packages available are compatible with APPLE hardware. Nevertheless, two of the four most frequently chosen software packages can also be run on the IBM PC and the Commodore computers.

While the survey population for this study was limited, the results do suggest that computers are being employed with increasing frequency to teach reading in the two-year colleges. At present, computers are used primarily as a supplement to regular instructional activities. Given the current limitations of most software packages, this is probably a wise choice.

The major trends indicated by this survey are that: 1) computer use in reading instruction appears to be increasing, 2) APPLE computers are, by far, the most widely used by two-year college reading programs, 3) a wide variety of sof-

tware is employed by two-year colleges in the teaching of reading, and 4) computer software is used most commonly to provide drill and practice with tutoring being the next most common usage.

As a reference for practitioners, the software packages identified by this survey are included in the "Resources" section of RESEARCH in DEVELOPMENTAL EDUCATION for this and the following issue. A complete summary of this research report (including a complete listing of software and a listing of responding programs by state) may be obtained for the cost of reproduction and postage by contacting Ms. Donna Swartz, Assistant Professor, Reading Department, Essex Community College, Rossville Boulevard, Baltimore, MD 21237.*

*Unavailable at this time

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