
**DIFFERENTIATING READING PRACTICE:
A METHODOLOGICAL COMPARISON OF
MICROCOMPUTERS AND STUDENT SELECTED
READING**

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As various segments of American society have become increasingly aware of the numerous virtues of microcomputers, there seem to have been some pressures exerted on the educational sector to make extensive instructional applications of computers in classrooms. Whether these pressures have been self-imposed or externally generated, it appears safe to conclude that the microcomputer craze is beginning to trickle down to the classroom level. In fact, the flow of computers into classrooms has picked up momentum. Duffelmeyer (1983) reported that microcomputers were gradually becoming "standard equipment," while Simon (1983) indicated that schools are purchasing computers at a rate ". . . faster than we can keep count." (pg. 17). In the same vein, Bork (1984) gauged the number of computers in schools to have doubled each year for the past few years. More specifically, he estimated that in April, 1984 there was an average of 4 computers per school across the United States.

While the computer impact on education has commenced, the seemingly liberal and more frequent applications of these instructional tools does not enjoy widespread empirical verification at this time. Perhaps the eager acceptance and use of computers in the classroom can be attributed to the recent

proliferation of commercially available, colorfully advertised software programs that are vying for teachers' attention. While it is obvious that some of these programs are more worthwhile than others, it is equally apparent that no program should be regarded as a panacea. This is especially true in light of an apparent consensus among experts with regards to the low quality of educational software. For example, Komoski (1984) reported that the Educational Products Information Exchange (EPIE) could *not* recommend purchasing 60% of the software evaluated over a two year period. Further, EPIE placed only 5% of the hundreds of programs evaluated into a "highly recommended" category. In addition to the general lack of quality among commercially prepared software programs, the nature of the vast majority of programs appears to be little more than a transformation of "hard copy" workbook pages into visual images projected on to a cathode ray video display tube.

Many educators are encouraging teachers to make fuller use of computers by employing word processing and simulation programs during computer assisted instruction in reading and language arts. While these may be virtuous applications of computers, educators should not forget that reinforcement and drill are still necessary to develop automaticity in learners' reading performances.

Computers can be advantageous in accomplishing reinforcement and practice of reading skills. In addition to being infinitely more patient than humans, they provide immediate and consistent feedback. Further, there is very little ego involvement on the part of learners when they are being corrected at a terminal (Balajthy, 1984). However, in light of the overriding concern with the quality of educational software, teachers cannot assume that the practice is appropriate and advantageous to the development of reading skills. In fact, the computers could have a deleterious influence on the reading performances of individuals.

The basic concerns with the low quality of computer software, along with the lack of existing empirical support for computer assisted practice and reinforcement of reading, support the need for investigations in this area. Reading educators need to know whether practice by way of computers will actually make a difference in the reading achievement levels of learners. Further, teachers should try to determine whether the apparent motivation and enthusiasm reflected by students while they read at the computer terminal influences their attitudes toward reading and reading instruction in general.

METHODS

Subjects and Sampling Procedures. Twenty-eight students from two sixth grade classrooms were randomly selected to participate in this study. While equal numbers of students from both classrooms were placed into each treatment condition, the assignment to treatment groups was *not* totally random because of extenuating logistical factors such as pre-existing class schedules that could not be altered. *Data Collection Procedures.* The *Metropolitan Reading Achievement Test, (Reading Comprehension Sub-test), Intermediate, Form JS* (1978) and the *Heathington Intermediate Scale* (1976) were administered to all subjects as pre-tests. In an effort to control for the lack of total randomization in the assignment of subjects, these pre-test results were used as covariates in the

analyses of the dependent measures which were administered at the conclusion of the instructional treatments.

Treatment Schedule. This classroom study was conducted during a three month period. This classroom study was conducted during a three 36 sessions which lasted approximately 25-30 minutes each and occurred three times per week.

Treatment Procedures. Within both classrooms, each treatment was regarded as a supplement to the basal program. The specific materials employed in each of the treatments were selected because they incorporated similar lesson components into their respective programs. Both sets of materials were designed for students to use in a self-pacing manner. In addition, they possessed associated record keeping/assessment systems, and subscribed to a similar comprehension skill and taxonomic orientation. The biggest difference between the two treatments was the medium through which the instructional activities were delivered. That is, a commercially prepared computer software program involving short stories comprised one treatment condition, while hard covered story books were employed in the other. Within both treatment conditions teachers limited their roles to that of monitoring student progress.

Subjects assigned to the computer treatment condition were placed in the *Comprehension Power Program, Levels 1-12*, developed by Instructional/Communications Technology, Inc. (1982). Each session consisted of learning key vocabulary words and previewing the reading selection prior to the actual reading of the story. Once the selection was started, questions were answered following various segments of each story. These interspersed questions were designed to stimulate the reader's comprehension at the literal, interpretive, analytic, evaluative, and appreciation levels.

Subjects in the student selected readings group chose books from the *Random House Reading Program, Blue and Green levels, (1977)*. Within this treatment, subjects used the survey cards, vocabulary cards, detail cards, and comprehension cards that accompanied each story. All subjects maintained a record of their responses on each portion of the program. The teacher then prescribed the appropriate skill pacer instruction and practice cards.

RESULTS

An analysis of covariance procedure was employed in an effort to analyze the post-treatment performances of subjects on the *Metropolitan Achievement Test, (Reading Comprehension Subtest), Intermediate, Form JS* (1978) and the *Heathington Intermediate Scale* (1976). On the Metropolitan Achievement Tests the mean score of the computer treatment group was 42.93 (S.D. = 10.69), while the mean score attained by the student selected book group was 39.36 (S.D. = 11.48). The results of the ANCOVA approached significance ($F_{1,17} = 3.59, p. < .069$).

The mean scores on the Heathington Intermediate Scale were 86.43 (S.D. = 14.34) for the computer treatment group and 82.50 (S.D. = 21.31) for the student selected book reading group. The results of this ANCOVA were not significant ($F_{1,17} = 1.59, p. < .216$).

DISCUSSION

The data seem to indicate that drill and practice of reading

comprehension skills delivered through applying a specific microcomputer program did not have a deleterious effect on reading achievement test performance. The trend, as reflected by the marginal significance of the ANCOVA would tend to reflect some *possible* benefits of using microcomputers for the purpose of providing practice in comprehension skill development.

With regards to reading attitudes, the subject's enthusiasm which was frequently observed during the computer treatment condition, did not appear to carry over to other types of reading instruction or reading in general (at least according to the attitude scale used in this study).

While the results of the current investigation are far from conclusive, implications for further study are evident. Research is needed with larger samples from larger schools. In this way, a control group could be employed. In the current study, which compared two supplemental treatments, one can conclude that the effects of both interventions were relatively equal. A pure control group, however, would shed more light on whether the supplemental programs were actually better than no supplemental treatment.

Additional, naturalistic investigations involving other computer instructional programs need to be conducted because the current results have limited external validity or generalizability. That is, they should not be generalized to other commercial software programs or different instructional kits designed for individualizing students' reading. In addition, future studies should implement longer treatment schedules involving more frequent treatment sessions so that possible treatment effects have more opportunity to accrue.

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