ED 353 544   CS 011 145

AUTHOR   Arroyo, Christine
TITLE   What Is the Effect of Extensive Use of Computers on
                the Reading Achievement Scores of Seventh Grade
                Students?
PUB DATE   [92]
NOTE   12p.
PUB TYPE   Reports - Research/Technical (143)

EDRS PRICE   MF01/PC01 Plus Postage.
DESCRIPTORS   *Computer Assisted Instruction; Grade 7;
                Instructional Effectiveness; Junior High Schools;
                Public Schools; *Reading Achievement; Reading
                Improvement; Reading Research; Urban Education
IDENTIFIERS   Chicago Public Schools IL; Illinois (Chicago); Iowa
                Tests of Basic Skills

ABSTRACT
                A study examined the effect of extended use of
computers on reading achievement. The study population consisted of
75 seventh-grade students at the J. N. Thorp Elementary School
located in a predominantly low income socio-economic neighborhood of
South Chicago. Of this total, 15 students were subjected to an
intensive computer assisted instruction program, while 15 others,
randomly selected from the remaining group of 60, received no
computer training and served as a control group. The reading subtest
of the Iowa Tests of Basic Skills served as the pre- and posttest.
Results indicated a statistically significant increase in reading
achievement of the students who used computers. (One table of data is
included; 13 references are attached.) (RS)

WHAT IS THE EFFECT OF EXTENSIVE USE OF COMPUTERS ON THE

READING ACHIEVEMENT SCORES OF SEVENTH GRADE STUDENTS?

Christine Arroyo

Almost every school in the Chicago Public System has a
computer program. Students are receiving some type of
computer assisted instruction (CAI) whether its a pull-out
or other type of program. Many of the Chapter 1 labs have
concentrated on one subject area only. The labs are reading
labs, math labs or writing labs. The pull-out programs have
their limitations, and sometimes students may be even turned
off by constant drill and practice work on the computers.
Extensive computer instruction (ECI) in a homeroom situation
provides students with a varied and extensive use of
computers. Students are able to use computers in all
subject areas and can decide how best the computer can serve
and be of assistance to them. Parents, local school
councils, school administrators should become aware of the
varied uses of computers and implement them in every
classroom.

The question if schools should use computers no longer
exists. It is a technological must. Given the proper
information, educators can make the appropriate decisions
about what type of computer programs need to be implemented

at their schools. Teachers must be willing to take control
of this tool and use it to their advantage, only when this
occurs will the students benefit the most.

Review of Literature

Today's teachers are presented with the emergence of a
relatively new classroom teaching tool--computers. Although
the first device containing the essential processes of a
computer was designed in 1835 by Charles Babbage it was not
until 1977 that computers entered the nation's schools
(Hoffmeister, 1984; Shalaway, 1980) Today, approximately one
million of the nation's schools are incorporating CAI in the
curriculum (Abrams, 1986) Many schools are training teachers
to be computer literate, yet there appears to be virtually
no training concerning the effective use of computers as an
educational tool (Caruso, 1984). As educators are faced
with the surge of computers in the classroom, effective
computer usage in reading instruction becomes of primary
importance.

Hundreds of studies attribute gains in standardized test
scores and other improvements to the use of integrated
instructional systems-custom packages of computers, data
storage devices, and instructional software. According to
Mark Sherry the director of Educational Products Information
Exchange (EPIE) Institute the study they conducted says its
researchers avoided looking at quantitative studies because

so few were good. Instead they conducted a qualitative study of 11 integrated systems, examining instructional and management software and interviewing teachers, students, lab managers, computer coordinators, and school administrators. The resulting 427 page "Integrated Instructional Systems Report" contains evaluations and comparative ratings of specific integrated systems. Most school districts EPIE visited were pleased with the integrated systems. Nearly two-thirds of teachers and administrators called them highly effective, and 96 percent said they would recommend their system to another school. 98 percent of the students shared the same recommendation.

John Kerman, president of Jostens Learning Corporation, suggests that schools should mix and match- buying an integrated system for the basics of the curriculum and independent software extras (Trotter, 1992).

There is evidence of class-, race-, and gender-based differences in computer use. (Apple, 1992) In middle-class schools, the number of computers is considerably more than in working-class or inner-city schools populated by children of color. Economically advantaged schools not only have more contact hours and more technical support, but the very manner in which the computer is used is often different from what would be generally found in less-advantaged schools.

Gender differences are also very visible (Apple, 1992).
Two out of every three students currently learning about
computers are boys. Even these data are deceptive, since
girls tend to be clustered the general introductory courses,
not more advanced ones.

Class, race and gender impact will also occur because of
practices such as tracking or streaming. Vocational and
business tracks will learn word-processing skills and be
primarily filled with young women. Academic tracks will
stress general programming abilities and uses and be
disproportionately male. While many 'eachers and curriculum
workers have devoted considerable time and effort to
equalize opportunities and outcomes of females in
mathematics and science, where curricula already contribute
to the reproduction of gender differences, the problem still
remains and can be worsened by computerization of these
subjects.

Robyler (1992) using meta-analysis on thirty-eight
published and unpublished studies and forty-eight
dissertations found that computer applications had a
statistically significant positive effect (p < .05) in a
majority of the areas examined. However, the results must
be interpreted cautiously until more studies of similar
types and with similar reporting styles are available to
confirm or deny these trends. The effect of computer
applications on certain content areas seemed to have

slightly greater effect with mathematics than with
reading/language skills, but this difference was not
statistically significant. Using computers to teach
cognitive skills such as critical thinking had an overall
effect for reading. This study seems to suggest that
computer-based instruction is potentially effective in most
educational applications.

Wepner (1989) after doing an extensive study on reading
software along with individual case studies concluded that
the computer's ability to combine sound reading practices
with non-threatening, humanistic feedback in a pleasingly
structured environment makes it ideal for students with
reading problems. When used with a discerning eye, the
computer can become a "natural" part of any reading
classroom for students with reading difficulties.

Schaudt (1987) conducted a study in the use of computers
in a direct instruction reading lesson. Computer- assisted
instruction has the potential to be an effective tool in
helping students master targeted reading skills if time is
allocated on the computer for sufficient and continuous
content coverage. performance is monitored, and the teacher
chooses software appropriate for the students' ability
levels. Pearson (1985) suggested a new model of teaching in
which the teacher assumes a more central and active role in
instruction. This role is highlighted with the teacher
helping the student to gradually move toward total

responsibility of skill acquisition. The use of CAI within
direct instruction has the potential to help students make
this gradual acquisition. It may also serve to increase
student motivation to learn, to enhance the monitoring of
student progress, and to free the teacher to provide more
contact with individual students. Computer-assisted
instruction presents a feasible tool for increasing teacher
effectiveness.

Warren and Rosebery (1988) found that use of CAI resulted
in marked improvements in both speed and accuracy of
isolated word and pseudoword decoding. Students showed
overall gains in pronunciation speed, the greatest gains
being for the most difficult test items. Students overall
accuracy for words and pseudowords also improved, from 73%
on the pretest to 87% on the posttest . Warren and Rosebery
also found that the computer can play an important role in
contextualizing reading instruction, provided it is not
viewed as an autonomous agent of change. Its potential as a
tool for reading instruction depends on the quality of its
design (e.g. the psychological and pedagogical
underpinnings) and on the nature of the contexts in which it
is used.

Question, of the Study

What is the effect of extended use of computers on
reading achievement?

Procedures

Population

The population of this study will include 75 seventh grade students. the students attend the J. N. Thorp Elementary School which is located in a predominantly low income socio-economic neighborhood in Chicago's South Chicago area. The population is comprised of 100% minority students.

Sample

From the 75 seventh grade students, there are 15 seventh grade students in my classroom who receive extensive computer instruction throughout the school year. Sixty students did not receive the program. Fifteen students were randomly selected from this sub-population.

Method of Data Collection

Every year students who are in the first through eighth grades in a Chicago Public School are administered the Iowa Tests of Basic Skills (ITBS). Two samples were utilized from those students who were involved in an extensive use of computers and those who were not. The reading scores of the ITBS administered in the Spring of 1991 and 1992 school years will be used in this study. The pretest-posttest group design will be utilized.

<u>Treatment of Data:</u>

The finding will be tabulated in terms of means and standard deviations. The t test will be utilized at the .05 level of confidence to determine if there is any statistically significant difference between the mean scores.

Findings of the Study

The samples for the study included seventh grade students from the J. N. Thorp Elementary School. Every year students are given the Iowa Tests of Basic Skills (ITBS). From these seventh grade students, two groups were randomly selected. Subjects in one group were given a program which consisted of an intensive use of computers while subjects in the other group were not given the program. Results from the 1991 ITBS reading subtest were used as a pretest and results from the 1992 ITBS reading subtest was used as a posttest. A t test ($p > .05$) for independent samples was done on these four sets of scores to determine if there was a statistically significant change in reading achievement after being subjected to the intensive use of computers program. Table I summarizes the statistical analyses.

Table I

Means, Standard Deviations, and t Tests for the Experiemental
Group and Control for Reading Achievement Scores

Reading (N=15)

Test	Experimental	Control	t
Pretest			
M	5.3	5.2	0.307
SD	0.987	0.782	
Posttest			
M	6.5	5.8	3.5*
SD	0.464	0.791	

df= 28   p> .05

* Significant at the .05 level

Analysis of the 1991 mean pretest scores suggest that the

Experimental group and Control group were not significantly

different at the beginning: the E-group with a mean of 5.3 and

the C-group with a mean of 5.2. This result and other

information about the E-group and C-group which is presented (see

Table 1) allows the conclusion that the two groups were not equal

in reading achievement in the Spring of 1992.

A review of the 1992 mean posttest scores points out that

after one year of exposure to extensive computer usage the

C-group's mean achievement score in reading was 5.8 while the

E-group's mean in reading was 6.5. Therefore, there is a

statistically significant increase in reading achievement of the E-group.

The t scores for the 1991 results (0.307) and 1992 results (3.5) show a significant change in reading scores for the two groups.

Generally, the data leads to the acceptance of the operational hypothesis: seventh grade students taught reading using computers extensively will obtain significantly higher reading scores than those students in the regular classrooms.

In this study more research is needed as the use of CAI within direct instruction is showing potential to help the student make the gradual transition toward total responsibility of skill acquisition. It may also serve to increase student motivation to learn, to enhance the monitoring of student progress, and to free the teacher to provide more contact with individual students. Computer-assisted instruction presents a feasible tool for augmenting teacher effectiveness.

BIBLIOGRAPHY

Apple, Michael W. Computers in Schools: Salvation or Social
    Disaster? The Education Digest v57, n6 p47-52 Feb 1992

Blanchard, Jay S; Mason, Geroge E. Using Computers in Content
    Area Reading Instruction. Journal of Reading; v29 n2 p 112-
    17 Nov 1985

Collins, Carmen Interactive Literacy: The Connection between
    Reading and Writing and the Computer. Collegiate
    Microcomputer; v3 n4 p 333-38 Nov 1985

Fox, Jeremy Some Advantages and Disadvantages of Developing
    Reading Skills with Computers. Reading in a Foreign
    Language v4 n1 p 59-67, Fall 1987

Hoffmeister, A. Microcomputer Applications in the Classroom. N.Y.
    Holt Rinehart and Winston 1984

Geisert, Gene: and Others Reading, Learning Styles, and Computers
    Journal of Reading, Writing, and Learning Disabilities
    International; v 6 n3 p 297-305 Jul Sep 1990

Pearson, P.d. Changing the Face of Reading Comprehension
    instruction The Reading Teacher, v 38 p 724-738

Rickelman, Robert J.; Henk, William A. Parents and Computers:
    Partners in Helping Children Learning to Read (Reading
    Technology). Reading-Teacher p 508-09 March 1991

Robyler, M. D. The Impact of Microcomputer-Based Instruction on
    Teaching and Learning: A Review of Recent Research.
    Educational Technology, p. 54-55 Feb 1990

Schaudt, Barbara A. The Use of Computers in a Direct Reading
    Lesson. Reading-Psychology; v8 n3 p 169-78 1987

Trotter, Andrew Computer Learning with Integrated Systems. The
    Education Digest v56 n4 p 3228-

Warren, Beth; Rosebery, Ann S. Theory and Practice: Uses of the
    Compueter in Reading. Remedial and Special Education (RASE)
    v9 n2 p 29-38 Mar-Apr 1988

Wepner, Shelly B. Stepping Forward with Reading Software, Journal
    of Reading Writing and Learning Disabilities International;
    v6 p 61-83 1989