

## 5B-11 USE OF COMPUTERS IN EDUCATION: U.S.A.

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### INTRODUCTION

With less than eight years before the start of the twenty first century, educators are looking for ways to improve the teaching and learning process according to present needs and future challenges. One suggestion that receives much support is to enhance teacher effectiveness and student learning through a more effective and appropriate use of computers and technology.

The growth rate of computers in schools has been phenomenal in the past twenty years. The percentage of American schools using computers in instruction grew from 18 percent in 1981 to 95 percent in 1987 and estimates of the number of computers in public schools ranged from 1.2 to 1.7 million. Many educators believe that technology will become an important factor in efforts to improve public schools.

### RATIONALE

A basic concern shared by many leaders in education, business and industry, and government is that schools need to prepare students for living and working in the technologically orientated world of the twenty first century. This they cannot do by using teaching approaches that have changed little over the past 50 years.

In view of the above, this paper attempts to study the uses computers have on schools in general and on science education in particular. Initially, this study focused on America where most of the data were accessed through File 1: ERIC of the DIALOG Information Services.

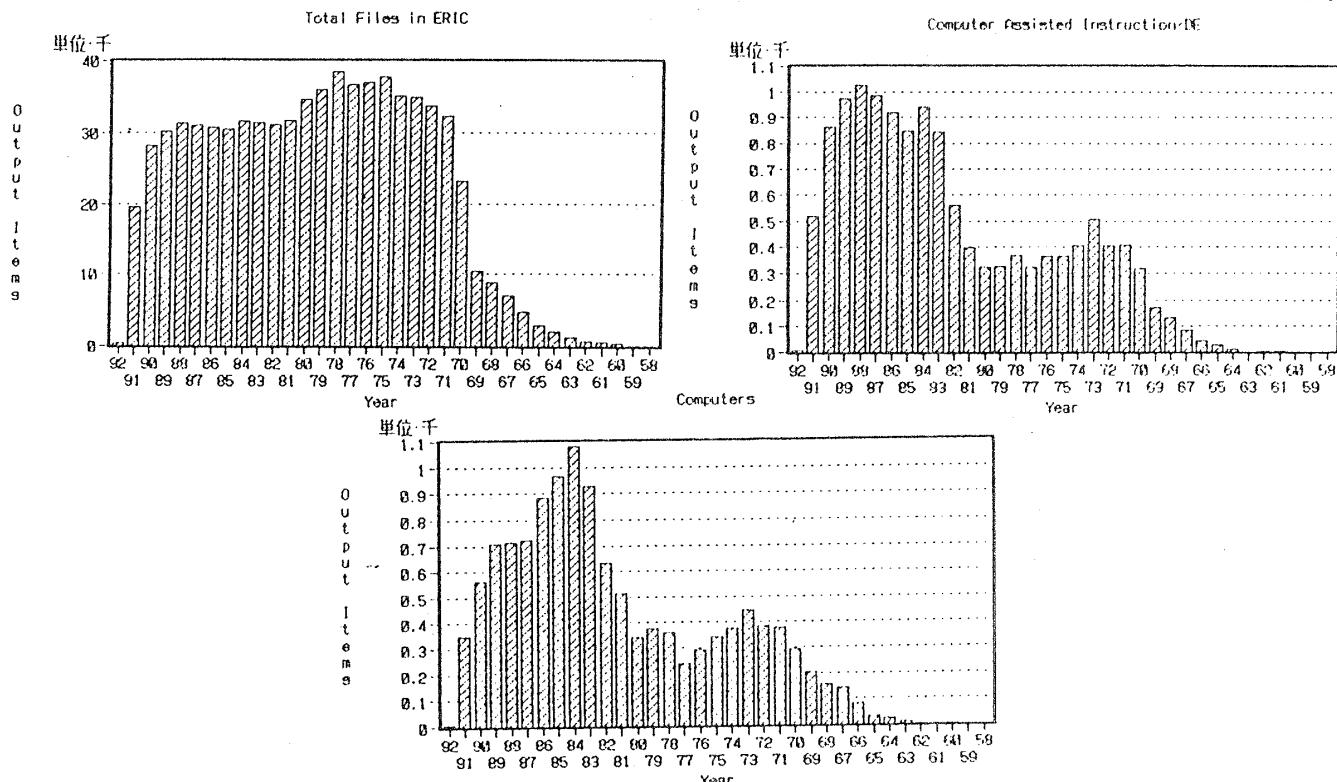
It is hoped that by doing a literature review of computer uses in education for a twenty year period (1972-1991), obvious trends and future direction can be determined. This will be an asset in tackling the issue of how best to use computers in teaching science in the classroom.

### METHODOLOGY

The database of educational materials collected by the Educational Resources Information Center (ERIC) of the U.S. Department of Education which is accessible through File 1 of the DIALOG Information Retrieval Service was utilized. ERIC consists of two subfiles (1) Resources in Education (RIE), covering documents, and (2) Current Index to Journals in Education (CIJE), covering approximately 750 journals and serial publications. The number of records in each year under selected keywords were noted and bar charts created to determine the changes over the years.

### RESULTS AND DISCUSSION

ERIC Online contained RIE records from 1966 and CIJE records from 1969. Although some records could be searched before those dates, they are scanty and may be incomplete. As such, only records from 1972 onwards shall be dealt with in this paper.



The graph on "Total Files in ERIC" showed there were more than 30,000 records per year except for 1990 and 1991, with the most records (38,459) in the year 1978. The drop in the number of records in the past two years could be due to new records not being updated yet.

The graph on Computer Assisted Instruction showed a relatively constant average of 350 records per year from 1972 until 1981 when there is a steep rise in number reaching to more than 1,000 records in the year 1988. From then on, the number slowly declined to almost half in the year 1991. The sudden increase in the early 1980s is due to the rapid introduction of microcomputers at that time.

The graph on Computers showed a slow, steady drop in number of records from about 450 to 250 in the year 1973 to 1977. From 1978 to 1980, the number of records first stabilized at around 450 records and then from 1981 rapidly shot up to a peak of almost 1,100 records in 1984. It then dropped to about 700 records in 1987 maintaining the number until 1989. In 1990 and 1991 there is again a drop in the number of records. The changes observed is due to the popularity of the microcomputer as a new educational tool.

As can be seen from most of the graphs, there is a boom in computer research and articles in the early 1980s, particularly in CAI. This could be due to the introduction of microcomputers and the accompanying widespread use in schools and academic institutions. The use of computers in education somehow seem to follow a certain trend. In the early stages, computer literacy and computer oriented programs were the focal points. In the later half of the 80s, these activities seem to wane and the current craze appears to be computer networks and computer system designs. In future, the school scenario might shift from being localized to being a global school where educational centers are interlinked through networks. Also, multimedia modes of the teaching-learning process may become popular. As more and more people can afford a computer system, it will become a household item among the already familiar television.