APPLICATIONS AND PROBLEMS OF COMPUTER ASSISTED EDUCATION IN TURKEY

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ABSTRACT
This paper focuses on the Computer Assisted Education (CAE) in Turkey; reviews of the related literature; examines the projects, applications and problems on the Computer Assisted Education (CAE) in Turkey compares with the World; exposes the positive and negative aspects of the projects; a number of the suggestion presents on the effective use of CAE in Turkey.

Key Words : computer assisted education; Turkey; world.

TÜRKİYE'DE BİLGİSAYAR DESTEKLİ EĞİTİM UYGULAMALARI ve SORUNLARI

ÖZET
Bu çalışmada Türkiye'de bilgisayar destekli eğitim konusu ele alınmıştır. Çalışmada ilgili literatür incelemesi yapıldıktan sonra, Türkiye'de bilgisayar destekli eğitim konusunda gerçekleştirimiş olan projeler,uygulamalar ve karşılaşılan sorunlar, Dünyada bu konuda gelişmiş ülkeler ile karşılaştırmalı olarak ele alınarak incelenmiştir. Projelerin olumlu ve olumsuz yönleri belirlendikten sonra, Türkiye'de bilgisayar destekli eğitimin etkili olarak kullanımına yönelik olarak geliştirilmiş birtakım öneriler sunulmuştur.

Anahtar Sözcükler.bilgisayar destekli eğitim; Türkiye; Dünya; sorunlar

1. INTRODUCTION

Computer-assisted instruction (CAI) is a narrower term and most often refers to drill-and-practice, tutorial, or simulation activities offered either by themselves or as supplements to traditional, teacher-directed instruction (Grimes, 1997; Batey, 1986). The term, Computer-Assisted Instruction (CAI) refers to the interaction of a learner with a computer in a direct instructional role. CAI addresses course content in a variety of formats, with or without the direction of a teacher (Lockard, et al, 1997). CAI applications are utilized across many different computer platforms and operating systems.

The general research areas on the computer assisted instruction in the World are the following:
*Microcomputer use and student achievement
*CAI and retention of learning
*The effects of CAI on student attitudes
*CAI and different student populations
*Other beneficial effects of CAI such as locus of control, attendance, motivation/time-on-task CAI and different curricular areas
*Why students like CAI?
*Cost-effectiveness of CAI (Cotton, 2002).

The aim of this study is to examine the projects, applications and problems on the CAE, in Turkey, compare with the World, and present a number of suggestions on the effective use of CAE in Turkey.

Computer Assisted Instructıon in the World
Some studies have found CAI to generate positive findings related to student achievement in reading (McCreary & Maginnis, 1989), business education (Din, 1996), and opinions of teachers to CAI (Berry, 1994). Stennett (1985) found favorable results in the literature when reviewing CAI in education. A related meta analysis of 199 comparative studies involving instruction in high schools, institutions of higher learning, and adult education settings found that CAI increased test scores by .31 standard deviations (Kulik & Kulik, 1985). Although described research supports the use of CAI as a supplement to course instructor-provided information, the effectiveness of CAI as an independent instructional tool to learning gains is not conclusive. A number of studies have found no favorable results when comparing CAI to traditional instructional methods (LaBonty, 1989; Morrell, 1992; Ruef & Layne, 1990; Wiksten, et al, 1998).

The findings of researches on the CAI in the World indicate that:

- The use of CAI is associated with other beneficial outcomes, including greater internal locus of control, school attendance, motivation/time-on-task, and student-student cooperation and collaboration than the use of conventional instruction alone.
- CAI is more beneficial for younger students than older ones.
- CAI is more beneficial with lower-achieving students than with higher-achieving ones.
- Economically disadvantaged students benefit more from CAI than students from higher socioeconomic backgrounds.
- CAI is more effective for teaching lower-cognitive material than higher-cognitive material.
- Most handicapped students, including learning disabled, mentally retarded, hearing impaired, emotionally disturbed, and language disordered, achieve at higher levels with CAI than with conventional instruction alone.
- There are no significant differences in the effectiveness of CAI with male and female students.
- Students' fondness for CAI activities centers around the immediate, objective, and positive feedback provided by these activities.
- CAI activities appear to be at least as cost-effective as--and sometimes more cost-effective than other instructional methods, such as teacher-directed instruction and tutoring.
- The use of CAI as a supplement to conventional instruction produces higher achievement than the use of conventional instruction alone.
- Research is inconclusive regarding the comparative effectiveness of conventional instruction alone and CAI alone.
- Computer-based education (CAI and other computer applications) produce higher achievement than conventional instruction alone.
- Student use of word processors to develop writing skills leads to higher-quality written work than other writing methods (paper and pencil, conventional typewriters).
- Students learn material faster with CAI than with conventional instruction alone.
- Students retain what they have learned better with CAI than with conventional instruction alone.
- The use of CAI leads to more positive attitudes toward computers, course content, quality of instruction, school in general, and self-as-learner than the use of conventional instruction alone (Cotton, 2002).

II. REVIEW OF THE LITERATURE

When we review the related literature concerned in the computer assisted education and instruction in Turkey, we see that these studies has been generally prepared as master or doctoral thesis. Some of these studies (Samur, 1989; Numanoğlu, 1992) explores the CAI softwares of Ministry of National Education and some of them (Aksoy, 1989; Gökdaş, 1996; Dursun, 1988) are concerned in the teacher training and competencies of teachers for the computer assisted instruction. On the other hand, the aim of some studies (Keser, 1988; Akkoyunlu, 1991; Taşcı, 1993; Yaşar, 1997) is to propose a CAI model for Turkish National Education System.

The aim of some studies (Yedekçioğlu, 1996; Odabaşı, 2000) is to examine the use of computers and technological resources at high schools in Turkey. Yedekçioğlu (1996) describes initiatives taken by the Turkish Ministry of Education to promote computer literacy and the use of computers in schools, from 1984 through 1994. Evaluation indicates that in Turkey's high schools, computer education is still in the early stages of development. Major problem areas are lack of financial resources, lack of appropriate planning, and lack of adequate software.

Usun (2000) indicates in his book entitled "Dünya'da ve Türkiye'de Bilgisayar Destekli Öğretim" (Computer Assisted Instruction in the World and Turkey) that the applications on computer assisted education and instruction in Turkey are not sufficient and unfortunately they are still in infancy period. Odabaşı (2000) examined faculty use of technology resources in Turkey. Results from a questionnaire showed that the faculty knows and used traditional technologies more often and lacked familiarity and use in computerized technologies. Faculty mostly used computers as word processors. The most effective factors for use were availability of the technologies, increase in student interest and improvement on student learning.

The findings of some studies (Bayraktar, 1988) indicated that computer assisted instruction was more effective than traditional instruction in Turkish National Education System. Compared to traditional classrooms, CAI was perceived as more interesting, better understood, and more motivating.

Some studies (Balcı, 1998; Evren, 1999; Akkoyunlu & Orhan, 2002) are concerned in The World Bank Supported Project, called the "Project for Globalization in Education 2000". Balcı (1998) and Evren (1999)

reports that this project was not successful from the point of the first desired aims and it only contained the provinces and administrative districts of Turkey. Akkoyunlu and Orhan (2001) explained that this project was a very important step for Turkish Educational System. Schware and Jaremillo (1998) explored that the CES project was first formulated and undoubtedly more would be achieved in coming years. Yedekçioğlu (1996) pointed out that the CES project was useful for true introduction of CAI in higher education.

III. THE PROJECTS, APPLICATIONS AND PROBLEMS ON THE COMPUTER ASSISTED EDUCATION IN TURKEY

During the 1980s, as Turkey started laying the foundations for an Information-Based Economy, the problem of having a work force not sufficiently computer-literate became much more apparent. Thus, the Ministry of Education (MOE) embarked on an ambitious computer aided education (CAE) project in 1984. The main components of the project were identified as:

- Preparing and integrating curricula;
- Software design and development;
- Training of teachers;
- Acquiring hardware;
- Incentives to produce hardware and components locally

In the academic year 1985-86, as part of the CAE project, 1,111 computers were bought for 101 high schools -- 10 for pupils and one for the teachers in each school. Two teachers from each school were trained for five weeks. Plus, 130 PCs were bought for 101 tourism and hotel-operation high schools. Starting in the 1987-88 academic year, these schools introduced a computer-literacy course as an elective with a hands-on component. In the next academic year, 805 PCs were purchased to train pupils in vocational high schools, with some emphasis on hardware maintenance.

The positive and negative aspects of the developments in CAE Project for the 1984-88 periods may be summarized as follows:

Positive Aspects

- CAE has had a positive influence in increasing pupils' motivation to learn.
- Involving private firms helped advance the popularity of the CAE concept.
- Training of teachers and administrators in computing gave rise to a core of cadres.
- The awareness of adults about computing was raised considerably

Negative Aspects

- Software was not developed with compatibility to the curriculum in mind.
- Successfully involving teachers in CAE did not occur.
- Selected teachers were not trained in an adequate fashion.
- Private firms did not provide appropriate hardware and software.
- Private firms' involvement was below expectations (Yedekçioğlu, 1996).

In 1989, the MOE invited private firms to take part in the CAE Project. A total of 28 firms (17 local and 11 foreign) joined in 50 selected schools. The MOE also invited some universities to take part by training teachers in programming and computer literacy. By the middle of 1995, a draft of specifications including hardware, software, courseware, staffing needs and training outlines was complete, the software evaluation consultant was in place, and the fellowship trainees were at a university in the United States. By the end of the year, firms which were to provide hardware and software to the schools had been selected and the CES project was on the way (Schware & Jaramillo, 1998).

The National Council of Education, which convened in May 1996, focused its work on the following five issues in order to reconstruct the education system in conformity with the anticipated social, scientific, and technological developments of the 21st century:

1.Primary education and its orientation,
2.Reconstruction of the secondary education system,
3.Re-arrangement of the ways of transition to higher education,
4.Meeting the educational needs of society, and
5.Financing of education (Akkoyunlu & Orhan, 2001, 29-31).

As the project was due for completion in June 1997, a review was planned late enough in the implementation phase to isolate the lessons from the experiment, but in time for any corrective measures to be initiated. With Turkey's open commitment to information technology in schools, the review assumed the continuance of the project and concentrated on areas of challenge and, improvement.

The World Bank supported project, called the "Project for Globalization in Education 2000" began a very important step for the Turkish Educational System. The aim of this project was to use instructional technology in each level of the education system to be able to create a society with adapted information and technology standards. Through this project, new computer labs were established in 2,451 primary and secondary schools in 80 cities and 921 towns in Turkey. In each of these schools the technology class rooms were equipped with: Computers, Printers, Scanners, Office program, Courseware for Computer literacy, Courseware for different subjects, Educataiment (education + entertainement) courseware, Electronic references, Video, overhead projectors, TV, educational videocassettes, and transparencies (Akkoyunlu & Orhan, 2001, 29-31; Usun, 2000, 228).

The computer companies sponsoring this project provided one year of free Internet access to project' schools. The people living near the schools had a chance to use the Internet during the weekends. The second phase of this project will continue with 3000 schools. In this project some basic principles were accepted for Turkey to move into the 21st century. These are:

- To support formal education through distance education
- To install computer labs in primary education institutions and provide access for all students to Computer Assisted Education
- To make students and teachers computer literate
- To equip the schools with modern technological materials

IV. CONCLUSION

The findings of the researches on the CAI in the World generally, indicate that CAI applications are effectively utilized across many different computer platforms and operating system and school degrees.

In spite of initiatives taken by the Turkish Ministry of Education to promote computer literacy and the use of computer assisted education in schools, from 1984 through 2002, unfortunately, computer education and CAE is still in the early stages of development. The main components of the first project on CAE in 1984, couldn't be realized yet. Although the first project of The Turkish Ministry of Education was called a "CAE Project", it has only been appeared to use computers in education and schools. In the other projects in 1993 supported by the World Bank called "The Computer Experimental Schools" and "Project for Globalization in Education 2000" the main components and aims haven't been realized yet, too. But these projects seem to be a new future and very important steps for the Turkish Educational System.

In Turkey on the CAE, the major problem areas are the following:
- the effective planning,
- the administration of the CAE projects,
- lack of enough financial resources,
- lack of adequate software and hardware,
- teacher training for CAE,
- the projects and experimental studies on the computer education and computer assisted education.

Through the determined efforts on Ministry of National Education, more than one third of the existing 5.851 schools have at least one computer lab. It is clear that the number of computers in schools in Turkey will continue to increase. But, compared with other developed countries, from the point of the CAE projects, applications and studies, Turkey is still at very early stages. As above mentioned, the main components and aims of the first project in 1984, couldn't be realized yet. But the second project named the "Computer Experimental Schools", although is no longer at an experimental stage, the implementation is complete, and all deliverables-hardware, software and training-are in place and this project undoubtedly more will be achieved in coming years.

V. SUGGESTIONS

Some suggestions on the successful and effective applications of computer assisted instruction in Turkey are the following:

- A "Computer Assisted Instruction Center" should be established with support of the universities.
- The budgets of the Ministry of National Education and universities should be increased.
- The difficulties that appeared because of the highly bureaucratic and centralized organization of the Ministry of National Education should be overcome and the Ministry, with speed working, should realize The World Bank Supported projects at once.
- It must not be considered that computer assisted education and instruction is only the duty of the Ministry of National Education. The all related institutions such as the universities, Scientific and Technical Research Institutions of Turkey (TUBİTAK), the Ministry of the Education and the private institutions must be cooperation on the software, hardware, teacher training, project, publication, research, and other related subjects.

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