Exploration of the Computer Assisted Instruction

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Abstract. From emergence to development and application, Computer Aided Instruction has been applied from developed countries to developing countries, in this paper the effectiveness of computer aided instruction at home and abroad has been studied, we learned the foreign computer aided instruction development and new trend in United states and British. Although the computer aided instruction had developed, but there are still many problems need to improve, aiming at what are problems, and how to solve we put forward some opinions and suggestions.

1. Introduction

Computer Assisted Instruction (CAI in short) is the use of the computer will content, graphics, images, animation, sound and organically, in various media room use specific institutions to establish logical connection, namely become an interactive ability of information system. Its development generally experienced four stages, namely initial period, formation, development and innovation period.

1.1. The enlightenment period (1958 years ago) to 1924 American psychologist Sidney, general lacy first put forward the concept of the use of machines to instruction as a representative, its thought and work for the birth of CAI created conditions.

1.2. The formative period (1958-1970) physicist, computer scientists, psychologists cooperation to promote the theory research, but also promote the computer in education field of application, skinner published the study science and instruction art "(1954) and" the instruction machine "(1958), and he developed instruction machine used for the U.S. military instruction, make CAI from laboratory to society, from theory research to move towards the practical application. In this stage, the program instruction had certain development, produced skinner program, general lacy procedures, Claude procedure of instruction mode. IBM first began to CAI development work, its worth meal center in 1958 the establishment of the first to teach pupils about binary arithmetic of computer Instruction system. In 1960 the United States proclaim the university of Illinois at that time the world's largest Instruction system PLATO (Programmed Learning And Instruction Operation), it can provide more than 150 professional course, 1963 Stanford university established CAI laboratory.

1.3. Development period (1970-1990) in the 1970 s, the United States, Britain, France and some other developed countries CAI gradually from the big middle and primary school Education to the foundation of the development of vocational Education, special Education, etc., the government attaches great importance to and give a lot of economic support, invested heavily funded research and instruction CAI software development, and training teachers master CAI technology. In 1989 the United States "popularizing science - the United States 2061 plan of the report was made clear in the Computer application and instruction importance. In 1972 the government introduced a five-year" national CAI development planning ", Germany in the 1970 s established "program instruction and Computer Education application center", 1976 Germany Bavarian state achieve every school at least equipped with a multi- user minicomputer. Japan or 1989 year by year issued a "new learning guidelines", emphasizing the various and all kinds of school strengthen information Education, in order to improve the quality and efficiency of Education.

1.4. Innovation period (1990 years) in the 90 s, CBE (Computer Based Education) developed
2. Current situation of CAI in foreign
Firstly, foreign computer aided instruction development and new trends

2.1. United States

The first computer was born in the United States, computer aided instruction also first arose in the United States. In the 80 s, with the microcomputer further popularization of the United States, in the institutions of higher learning have caused a promotion use the computer boom. Will the computer is widely used in the instruction process, the main form is computer aided instruction, and presents many instruction forms.

First of all, computer aided instruction helps the student to grasp the historical facts, rules, principle, is to learn the language rules, course principles, subject elements of the ideal way, and the traditional instruction method compared with obvious advantage.

Secondly, colleges and universities teachers to use computer to improve student' thinking level. Be referred to as "expert system" of the computer program is to improve the students' thinking ability and reasoning ability of another way. The program has been frequently used in medical school instruction work. Students can not only observe the computer is how to solve the difficulty miscellaneous disease, and can at any time interrupt computer diagnosis process of get in a word, require it to explain the reasoning process and explain the reason of conclusion. In this way, students have experienced "computer doctor" guidance, and can further discuss various problems.

2.2. British

 Britain can be called is a computer use education to pioneer. In the early seventies, the government began the publicity and introduction, and put into action, and actively support the development of the school computer aided instruction. 1978, education and science established the first in school education to promote the use of computer in microelectronics technology, such as the plan; In 1980, human service committee (Manpower Services Commission) in the annual report emphasizes the school education system in the importance of the use of computer technology, In the same year, in the education and culture under the support of science, microelectronics education plan minimum-error-probability (MEP: Microelectronic Education Program) formal implementation; [3] at the same time, in order to better promote the computer used in instruction practice, the government enacted laws to take various measures to strengthen the various and of all kinds school teachers in the computer knowledge and computer aided instruction guidance and training. In British primary and secondary schools, the computer used in instruction mainly has the following several ways:

2.2.1 Teachers and computer, no students participate in. This is mainly refers to the teachers' preparation of CAI analysis and preparation. Only teachers to advance instruction software content and operation well, can accurate effectively play a computer in the instruction the use of advantage.

2.2.2 Computer and students. This basically is to point by computer to the students as conceptual descriptions or tell an experimental process, this is often as a class teacher teach content supplement and extension. Its role is similar to the video instruction.

2.2.3 Teachers, all the students with the computer. It is often used in classroom instruction, the computer act as teachers "assistant", in the demonstration to explain some concepts or process. Because computers can simulate many actually difficult to make the model and process, so the computer screen model can make the teacher's explanation more vivid and accurate.

2.2.4 Students control computer. This is one of the most common forms in CAI. Mainly used to let the students do the exercise, do the experiment and some other extracurricular learning.

After the 1990 s, foreign computer aided instruction research and application of a more prominent progress, the emergence of a more new trend and new development, mainly displays in the following several aspects:

Firstly computer aided instruction is based on the development theory. Early computer aided instruction mainly behaviorism study theory as the foundation, then people realize behaviorism theory limitations and one-sided, in criticism, jettisoned behaviorism developed on the basis of
cognitive theory, emphasizes the people's cognitive process is in the external stimuli and cognitive subject mental process under the interaction happened, the introduction of the cognitive theory for computer aided instruction has injected new vitality, making a new generation of computer aided instruction is more flexibility and adaptability.

Secondly computer aided instruction presents the prospect of the intelligent and networking. Computer aided instruction development to intelligent computer assisted instruction (icai) stage, it is the cognitive science and artificial intelligence as the foundation of a new stage, we can get a more realistic simulation of teachers' instruction and instruction behavior, directly facing the personalized students, become a comprehensive application education psychology and pedagogical knowledge of new computer aided instruction system. ICAI usually has diagnosis function, can not only simple feedback students' learning status, to guide the students to complete the whole process of learning, and makes the computer aided instruction get rid formerly stiff and rigid fixed mode, become more flexible, easy to accept. Now to the computer network into of the beginning of the "information superhighway" rapidly changed people's life, learning, communication and even thinking mode, making including computer aided instruction, the PC machine has many new features. Network technology makes the education resources use of space from the narrow the classroom to globalization horizons, and education resources to enhance the efficiency of education and popularization of become a reality, and with multimedia technology, hypertext technology is also to computer aided instruction scale development play a positive role in promoting.

Third performance supports system's appearance and development. The international computer aided instruction has been gradually from "instruction" as the center to "learning" as the center. Facing the 21st century education revitalization action plan is proposed and implemented the "modern distance education project", this also is the world today in the network education application the mainstream of development and trend, in accordance with the computer network education application fields, development trend and hotspot mainly manifests in the online school, campus network and computer supported cooperative learning.

One, Online school
Online school is not a simple online open network course can, but involves many aspects, in addition to including school history, education aim, teachers and course setting, etc., more important is to make the students to realize online learning all process, including for entrance registration, registration and pay, etc., is a complicated system engineering.

Two, Campus network
The resources construction of campus network includes multimedia network classroom, network curriculum and the multimedia network courseware. The school can't leave the campus network construction task to implement network, it can cause the school hardware construction resources waste, but to constantly improve, reasonable and effective application of maximization.

Tree, Computer supported cooperative learning.
Computer supported cooperative learning is based on the network refers to a group or team forms of learning, learners can break through the limitation of time and region, to study, to discuss and exchange and extracurricular activities in cooperative learning.

Four, existing problems and improvement

3. CAI in China
Throughout the worldwide computer aided instruction development present situation, but also has some remains to be hard place:

3.1 From the seventies to now, computer aided instruction experience a by trials, rise to the vigorous development of the process, this is without a doubt education technology and instruction means a huge progress and qualitative fly. After nearly 20 years of development, CAI has been very achievements, especially in the developed countries, because of the emergence, the development in computer technology, and the application of computer in instruction to try also earlier, in the various kinds of schools, has carried on the level, form different computer aided instruction, and obtain good
effect; And obtained a certain practical experience and a complete set of to carry out theoretical system of CAI. At the same time, the world range of high and new technology, new vision and education speed up the pace of the modern world, CAI will be paid.

3.2 The whole world attaches great importance to the development of the computer aided instruction. Both developed and developing countries, governments do not damage force to support the development of domestic CAI. By formulating various laws and regulations, and various downtown cumber policies and measures to protect and day hold the healthy development of CAI, At the same time, the social from all walks of life have been response: or to schools provide sponsorship, help development, or provide CAI equipment, such as computer and the corresponding software, etc., In addition, all levels of schools and teachers to computer aided instruction also mostly hold cooperation or support attitude. Some schools organize forces to carry out their CAI try and practice, encourage teachers with computer aided instruction, Most of the teachers are actively cooperate with various CAI experiment, create conditions for experiments, and at the same time, in their own instruction practice, actively carry out computer aided instruction exploration, some try and experiment and good results have been achieved, and provides experience for future improvement and development.

3.3 Although the computer aided instruction had developed, but there are still many problems, need to improve urgently:

Firstly the computer aided instruction developed actually, usually with a computer as a unit of work, multiple unit of work between disconnection, influence the information utilization and resources sharing degree and computer use efficiency increase. In addition, the computer is an instruction auxiliary means, and other education methods, technology and equipment combined with or contact is not enough.

Secondly, CAI software is not abundant enough. At present, some good or to create a series of auxiliary instruction software are made by special software development department made, these software and school actual instruction situation closely contact is not enough, difficult to adapt to the actual instruction process differ in thousands ways, By the school or the teacher self-developed software is not much, quality is a very; Popular CAI software content in science or computer instruction primarily, social science in addition to foreign language besides, almost no good CAI software; CAI software form is not enough variety, more on individual practice is given priority to, unfavorable to students' socialization process.

Thirdly, Teacher training is relatively backward. Most of the teachers do not have computer operation and carry out CAI must knowledge, the situation in developing countries particularly serious. Although in normal colleges and universities opened some computer courses, but distant water cannot quench a fire nearby, on-the-job teachers' computer knowledge training and CAI technical guidance is still barely satisfactory.

References


