



REVIEW ARTICLE

ARTIFICIAL INTELLIGENCE COMPUTER ASSISTED INSTRUCTION SYSTEM FOR BASKETBALL TRAINING (ICAI) CHARACTERISTICS AND PERFORMANCE ANALYSIS

Binoy Goswami, Bijoy Chand Chatterjee and Amit Banerjee

School Of Sports Science and Sports Medicine, National Sports University, Manipur, 795001 India

*Corresponding Author Email:

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ABSTRACT

Basketball is a wide range of current popular a kind of sports the school also pay more and more attention to the relevant training for basketball teaching system reform, so the artificial intelligence computer assisted instruction system for basketball training characteristics and performance analysis has become the current physical education in the field of a very important topic. In this study, the first surveyed the current research status of the subject, have probably understanding of industry development; Then the subject involves the relevant theoretical knowledge and technical methods are analyzed; Then constructed artificial intelligence computer assisted instruction system for basketball training; Finally for the experimental system, and process and the experimental results were analyzed. The final result proves that the system is advanced, research is successful.

KEYWORDS

Basketball training, Artificial intelligence, Computer assisted instruction.

1. INTRODUCTION

Basketball is that people in their daily life often choose a sport, to improve people's physical quality, enjoy the pleasure of sports played a very important role, at the same time, with the improvement of people security awareness, in order to hurt in sports, the basketball training the importance of also more and more big, a lot of schools have adopted artificial intelligent computer assisted instruction system for basketball training, therefore, the study of the characteristics of the system and the performance is very important and necessary.

For the subject, the current has achieved very good results. Along with the further research of artificial intelligence technology in the 1970 s, the first influential ICAI system in 1970, it is by the Bohr to teach South America geographic knowledge and developed system of SCHOLAR (Li, 2010). In the 1980 s, the people of the ICAI system research mainly concentrated in the use of artificial intelligence technology, to stress the guidance of cognitive science, has been clear about the student and teacher module, make the teaching system has better response sensitivity (Zhang, 2010). Although each is not identical, in the form of ICAI system mainly consists of four parts: knowledge base, student model, teacher's module, intelligent interface. It is essentially an expert consulting system, with which not only has the common expert system reasoning to solve function, but also has to understand the learner's learning situation, establish archives for learners to guide learners learning function (He, 2000). Intelligent computer assisted instruction system based on network is a kind of intelligent, open and flexible approach to learning, it has changed the traditional learning mode, is the great revolution to the traditional learning, has not advantage relative to traditional learning (Xiao, 2002). ICAI has certain practical significance in improving the teaching effects, mainly reflected in the following: teaching is conducive to realize scientific, beneficial to bring into full play the enthusiasm of students learning process, specific project

assistant teaching system can make the learners from the outline, the plan of curriculum, teaching and training at a glance (Gao, 2001).


The second part of this article studied the subject involves the relevant theoretical knowledge; The third part for building artificial intelligence computer assisted instruction system are discussed in this paper, and analysis; The fourth part, using the method of experiment and through the comparative analysis of the experimental results, proved the advancement and the availability of the system; The fifth part is the full text of the summary and induction, and the future research direction is pointed out the subject.

2. START OF THE ART

The popularity of basketball is very broad, as shown in figure 1 can be seen everywhere in life all kinds of basketball courts for basketball and all ages, as a result, the training of basketball education is particularly important, and artificial intelligence computer assisted instruction system is undoubtedly a very good teaching system.



Figure 1: Common basketball games in the life

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2.1 Intelligent computer aided teaching ICAI

The strong ICAI system is comprehensive system engineering, it is the education science, psychological science and cognitive science as the theoretical basis, using artificial intelligence, multimedia technology, data visualization technology, aspects of computer technology, through the study of the characteristics of human thinking and process, learning cognitive model.

2.2 The characteristics of ICAI system

Can automatically generate questions and practice; According to the level of learners and learning situation choose and adjust the learning content and progress; In understanding the basis of the teaching content automatically solve the problem, have the answer; Have the generation of natural language and understanding ability, in order to improve the initiative of the human-computer interaction; To the explanation of the teaching content consulting ability; Fault diagnosis of students, analysis the reason and take corrective measures; To evaluate students' learning behavior; To evaluate teachers' teaching behavior; To constantly improve teaching strategy in teaching.

2.3 The theoretical foundation of the ICAI system and related theoretical basis

Psychological basis: constructivism learning theory, the theory is that learning a process of learners actively constructs the internal information representation. Learners are no longer passively accept outside information, but actively selection process, learners from different background, perspective, according to the external information, based on their background knowledge, with the help of teachers and others, by the unique information processing activity, the process of construct their own meaning (Feng, 2001).

Teaching theory basis: individualized teaching theory, the theory of individualized teaching method, when the same teaching material, teaching methods can't in class and the differences in the teaching of middle school students, to enable the individual ability, interest, need and possible difficulties, teachers must be in the teaching process special design different teaching plan.

The design theory of "double-principle" teaching mode: double main teaching design is the "leading - main body" teaching system design model (hereinafter referred to as the "double master" mode), the model will give priority to in order to teach and to learn to give priority to the organic combination of teaching design mode, to avoid the simple use of a teaching design in the process of teaching mode and teaching unilaterally dominated teaching (teachers or students) and the emergence of the phenomenon of "cramming education" or "blind", enable students to adopt a more reasonable learning strategies to learn at their own content and improve the ability of self-study, optimize the teaching process.

3. METHODOLOGY

3.1 System requirements analysis

Functional requirements: students and teachers model is the two key modules of ICAI system, mainly including several organic parts: student model, teacher model, domain knowledge base library and diagnosis model, also including some vivid and effective interface. So the system's main function modules include books management, online learning, online examination, interaction between teachers and students, system management, announcement and so on several aspects.

Performance requirements, the design process must ensure that the system is able to long-term, safe, stable, reliable and efficient operation. System processes must be accurate, timely; System must be open and extensible; must be friendly interface; System is easy to operate and maintain.

3.2 Function modules of the system

At the front desk system mainly include user module, learning module, test module, answering module 4 big modules, including user module contains two aspects of students, teaching tube interface; Learning module mainly students' online learning content; Test module is to test students for the master degree of chapters; Answering module is realizes the regular teachers for each chapter summarized the answer of the problem;

Backend system mainly includes three student module, teacher module, knowledge base module, in which students module contains two aspects of student information, diagnosis module; Teacher's module is mainly made up of teachers' information, teaching strategies, and reasoning mechanism; Knowledge base is a collection of knowledge representation, reasoning and data retrieval in the integration of knowledge processing system.

3.3 Database design criteria

Database design is in a given application environment, constructing the optimal data model, to set up the database, make it can efficiently store and manage data, construct the application system to support the information processing requirements of various kinds of applications. Database design is one of the important component of the system design, when the design should follow the following principles: the principle of reasonable redundancy; Principle of integrity, consistency and validity; Structured, the standardization and standardized principle; Data confidentiality; Independence and expansibility principle; Data structure stability and the principle of relative stability.

4. RESULTS ANALYSIS AND DISCUSSION

In order to verify that the system is feasible and advanced, we tested the function of the system, the results such as table 1 and table 2.

Table 1: Compression and decompression processing time test case table

The input data	The desired performance (average)	The actual average performance
The packaged file 5M	30	25
The packaged file 10M	45	40
The packaged file 100M	400	360

Table 2: Test packets upload and download time table test cases

The input data	The desired performance (average)	The actual average performance
The packaged file 5M	15	12
The packaged file 10M	25	25
The packaged file 100M	100	120

From the test case, the function realization and realize the basic teaching task handling business requirements and technical requirements, the system is basically stable. Students easy to use, teachers' teaching efficiency is improved, the overall effect is good.

5. CONCLUSIONS

For basketball sports training teaching method, based on artificial intelligence computer aided teaching system is undoubtedly the most advanced and most widely used method, so the study of the system, further understanding the characteristics and performance will certainly has very important significance. In this study, we first understand the developmental status of ICAI and its application in the field of sports teaching; Then to ICAI needs the theoretical basis of design and technical requirements are discussed in this paper, and analysis; Specific system is established based on the requirements of system function module, and analyses It's; Finally for the design of the function of the system were tested, through the comparison and analysis of experimental results proved that the system is feasible and advanced. Research results show that the artificial intelligent computer assisted instruction system in the basketball training has the incomparable advantages of traditional methods in the teaching, give full play to the advantages of information technology teaching, manifests take the student as the main body, teacher as the leading factor of double main teaching ideas, so as to achieve liberation of human resources, reduce the cost, save energy and promote the development of education modernization.

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