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## Experimental Research on the Multimedia CAI Courseware in the University Tennis Teaching

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### Abstract

With the research methods such as the documentary data, questionnaire, interview, mathematical statistics, teaching experiment to make an analysis of Multimedia CAI Courseware based on network. Taking the network multimedia tennis teaching system as the basis, this paper will provide some suggestions and references for the application of network multimedia system in other sports teaching courses and explore the development of network multimedia teaching system in the future. This paper carries on the theory and method research of network multimedia CAI tennis teaching system, and also carries on the evaluation and practical application of this system. Taking the Jinggangshan university tennis elective course's students as the empirical object, comparing the computer network teaching model with the tradition teaching model, this paper will analyze the feasibility and effectiveness of network multimedia CAI tennis teaching system and explore its application way, thus achieve the combination of theoretical teaching and technique practice and promote the effective integration of teacher and students and teaching quality. With the rapid development of network and computer technology, our society and each profession have launched the computer information revolution. Under this technical influence the professions such as education, medical and government have built their own information network platform. Among the numerous courses, because of the unique point of physical education, the sports network teaching must have its own characteristics and requirements. Because the network multimedia teaching system has a powerful interactive feature, it can create mobile communication platform, greatly increase the exchange time between teachers and students and contribute to the FAQ of the knowledge. Although the network multimedia teaching system has the incomparable superiority, in our country's sports education circle, the related tennis teaching network multimedia is also rare [1]. How to let this superiority fully develops in the tennis teaching becomes an urgent problem. Through the teaching quality and students' study efficiency, thus enhance the tennis technique teaching

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*Key words:* Tennis teaching; multimedia; application research

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## **1. Research object**

Taking two group students at random from 2009 tennis elective class in Jingtangshan University as research objects, each group 25 students randomly choose one as the experimental group and another as the compared group.

## **2. Research Methods**

Documentary data: This research will through the CNKI, Google and Baidu to collect massive relevant works and references and obtain useful information and data.

Interview: In order to solicit comments on this research and determine the assessment index, this paper will carry on interview with the relative experts and teachers in terms of questionnaire design, teaching methods and evaluation index.

Questionnaire: According to this research's goal and content, this paper has designed two kinds of questionnaire, one questionnaire for the students without using the courseware before experiment, while another choose those who have used it before.

Teaching experiment: This research will carry on experiments to make an analysis of network multimedia CAI courseware in tennis technique teaching.

Mathematical statistics: Using the statistic method to analyze the related data and through SPSS 17.0 statistics processing to analyze the teaching experiments result, this research will carry on the variance analysis and T-test to obtain data results.

## **3 Teaching experimental design**

Teaching experimental goal: Through the compared experiment research this paper will study the network multimedia tennis courseware effect and obtain correlation data to theoretical analysis, then examine the auxiliary effect of network multimedia tennis teaching system to tennis theory and technical study.

Then examine the auxiliary effect of network multimedia tennis teaching system to tennis theory and technical study.

Teaching experimental class arrangement: Experimental time from September 2010 to January 2011, altogether takes 32 class periods to carry on the teaching. Class hours assignment: The compared class uses the conventional method teaching while the experimental class uses network multimedia tennis teaching system, both have 3.2 class hours and every two weeks 3 class hours to study tennis technique and 1 class hour for theory. The experimental class and compared class have the same class hours to ensure both the technique study and theoretical knowledge study, thus to guarantee that the experimental class and compared class have the same condition to carry on teaching research.

The implementation of experiment: The experimental class and compared class are taught by the same teacher; both have the same venues, teaching content and schedule. The test to the students of both classes is carried out under the same condition. The theory and technique test are blind which means the score teacher doesn't know which one is experimental class and which one is compared class. In order to ensure the objectivity and accuracy of the test results, the score teacher can't be the teacher teaching tennis of both classes. The tennis technique teaching of both classes uses the traditional teaching mode and the same teaching schedule and method. In addition, when carrying on theory teaching, the teacher of the experimental class uses network multimedia tennis teaching system and computer-assisted teaching to theory and techniques.

he experimental class teaching process: In the initial period, the theory class should introduce the network multimedia tennis teaching system and teach at least one time about tennis theory. The teacher can design some pictures and videos about the tennis junior technique and explain it while students watching. Then after having studied some tennis technique, let the students further learn the theoretical knowledge and analytic learning about the tennis pictures and videos, teacher can correct the students' errors. At the end of this curriculum, teacher should ask students to study the theoretical knowledge again and induce all the picture reviews, at the same time appreciate the tennis video and enjoy the sports event.

#### 4 Result and analysis

At the end of the experiment, It will use two measures to examine and explain teaching experimental result: (1) Test students' theory, technique, the hitting consistency, after testing obtains objective data to examine experiment's teaching result. (2) Conduct a questionnaire to the experimental class students, after survey there is an evaluation to obtain related information which will be analyzed and processed later. After 32 study periods of tennis, two groups both finish their curriculum, students are arranged to have test of theory and shots technique in order to obtain both classes' theory scores, technique scores and scores of hitting consistency. The theory examined by written test and technique results mainly by the perfectly complete of smash backswing, low hitting and play on shoulder with three steps; the hitting consistency mainly by the ball whether to strike in point, the ball placement whether is unified and ball numbers back and forth.

Through the above test and scores it can make mathematical statistic about the results of theory, technique and hitting consistency. (Hitting consistency for 20 points, technique movement and theory for 40 respectively), the conclusions shown in the table

Table 1 Related Parameter of Results Compared both Classes (Theory, Technique, Hitting Consistency)

Category		A	B	C
		Hitting Consistency	Technique Movemen t	Theory Score
Experimental Group	Average	16.62	36.38	32.85
	Standard Deviation	2.664	3.197	3.438
Compared Group	Average	14.93	33.76	29.96
	Standard Deviation	1.846	4.449	3.963
Average Differential value		1.69	2.62	2.89
T value		3.016	2.712	2.653
P value		<0.05	<0.05	<0.05

After the mathematical statistic analysis on the results of theory, technique and hitting consistency, we can find that all the three results of experimental class are higher than compared class and the difference

is quite remarkable( $P < 0.05$ ); At the end of experiment, 25 students from experimental class will be given questionnaire to survey. With the evaluation of questionnaire and analysis of information, the conclusions can be shown in the table2

Table 2 Questionnaire Analysis after the Experiment

	Frequency	Percenta	Effective Percentage
Network multimedia can arouse interest	23	92	92
Network multimedia can deepen memory	21	82	82
Network multimedia can strengthen exchange	20	80	80
Can grasp this teaching system quickly	22	88	88
Satisfied to this teaching system's effect	21	82	82
Freely choose view , control playback, frame	25	100	100

Based on the learning and application of network multimedia teaching system, 92% students are very interested in this teaching model, and can enhance their interest in tennis learning. Through network multimedia teaching system, 82% students deepen their memory to tennis technique movement. 80% students thought this teaching can strengthen the exchange with teacher; most students can quickly grasp this teaching system and satisfied with the teaching effect. 100% students thought that the most important thing they can do with the video material is freely choose view, able to control playback and frame.

#### 4.2 Analysis of the experimental results

##### 4.2.1 Network multimedia tennis courseware impact on students

Through the experimental research about network multimedia teaching system, the result data analysis demonstrated that the experimental class which used that teaching system has more significant achievement than the compared class. This can explain most directly that the network multimedia tennis teaching system has a very big help to students' comprehensive tennis test. Nowadays, the network has become a way of life to students, it means that the network can be used to conduct a skill leaning and through it they can fully feel the convenience. Questionnaire's result also show that students from experimental class can grasp the using skill of this teaching system and be able to operate it with their own technology, that means this system has a very good operability. Moreover, students completely support this teaching system's application prospect, this demonstrates that the network multimedia tennis teaching system has a very strong superiority and it is necessary to make an improvement of the traditional tennis teaching method.

##### 4.2.2 Network multimedia tennis courseware impact on teachers

Along with the progress of tennis technique as well as the development of educational reform, the traditional teaching way become difficult to satisfy the current teaching study, in addition the university tennis developed later than the general ball game and many teachers through self-learning to grasp tennis technique without regular professional training, therefore perhaps present wrong action in the demonstration. Thus the network multimedia tennis teaching system perfectly becomes a powerful auxiliary means for teacher in technique class; it can be a good supplement to the traditional teaching

model and because of its detailed instruction and demonstration to the action through picture, frame, repeated video and concise introduction, and students can carefully observe the details and characteristics of each movement. Simultaneously teacher can give a comprehensive illustration of movement difficulties and enable students to establish the correct movement representation quickly and form correct dynamic stereotype, thus improve the efficiency of students' learning and teacher teaching.

#### *4.2.3 Network multimedia tennis courseware impact on teaching effect*

The experimental class students study tennis for 32 study periods, the theory learning uses the network multimedia tennis teaching system auxiliary teaching while the compared class uses the traditional teaching way. Through the analysis of test data after experiment, we can find that the experimental class has more significant achievement in theory knowledge than the compared class. This can show that the network multimedia tennis teaching system has a very big help to tennis theory teaching. Through the contrast between the experimental class and the compared class in technique results we can find that the network multimedia tennis teaching system indeed has a good effectiveness in improving study efficiency and students' understanding of movement. Also the contrast in hitting consistency can show this system has a good auxiliary function to teacher teaching and students' learning. Students enhance their own awareness and practical ability on the tennis court and form a more accurate dynamic stereotype. The survey to the experimental class also shows that all the students agree the network multimedia tennis teaching effect is better than

the traditional teaching effect. There is a big success of network teaching system in improving teaching efficiency and effectiveness.

## **5 Conclusion and Suggestions**

### *5.1 Conclusion*

#### *5.1.1 Network multimedia teaching system's positive effects*

The network multimedia teaching system can enhance students' mastery of tennis theory and improve tennis technique test scores. As a new educational model, the network multimedia teaching system has greater appeal to students and can fully mobilize students enthusiasm and initiative, stimulate their curiosity thus reflect the trends of education reform and personnel development.

#### *5.1.2 Network multimedia teaching system's effective improvement to tradition teaching model*

Introducing network multimedia tennis teaching system into the physical teaching is a new idea in physical teaching reform which has significant meaning to reform education, improve teaching methods and enhance physical education.

#### *5.1.3 Network multimedia teaching system proposes higher request for teachers and students*

For students who want to skillfully use network multimedia teaching system need some basic computer knowledge and higher ability of thinking and learning; for teachers, this teaching system provides a more scientific management of students and teachers' management should be further strengthened, moreover computer proficiency for teachers will not just be a skilled operator, but a master

of network teaching system development capabilities. Teachers should produce their own network multimedia teaching system according to their teaching content and goal.

## 5.2 Suggestions

### 5.2.1 Enhancing teachers' ability

Teachers are the crucial link to combine the tradition education model and the modern education model. Only enhancing teachers' ability can effectively implement modern teaching ideas and theory. Teachers' comprehensive ability can help to improve modern teaching environment and instruct students well.

### 5.2.2 Promote Network Teaching System

Network multimedia teaching system meets the requirement of current reform of university sports, it has a strong operation and feasibility and university should have a long term perspective to realize its important position in the future. Promoting the network multimedia teaching system and utilizing it in more special teaching will enhance teachers' teaching and students' study efficiency.

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