

Applying multimedia technology to the teaching of Taijiquan skills

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ABSTRACT: In order to speed up the modernisation of the teaching of physical education (PE) within colleges and universities, many have introduced a multimedia system, as well as creating a great deal of courseware. The authors of this article selected as the research target, Taijiquan (a Chinese martial art), which is the most popular course at a college in Wushu, People's Republic of China, and have made a comparative analysis of the qualitative and quantitative effects caused by the application of multimedia technology to teaching. Through the resultant experimental observation, it was found that a multimedia system can bring several improvements to the teaching of Taijiquan.

INTRODUCTION

In the study outlined in this article, the research subjects were the students studying sports at higher educational institutions, who have chosen Taijiquan as an optional course. The comparative experimental results of the application of multimedia techniques to the optional course, Taijiquan, formed the basis of this research (*Taijiquan*, or *T'ai chi ch'uan*, is a Chinese martial art).

A large body of related literature and documents were reviewed to meet the needs of this research, including the selection of an appropriate topic, compiling the questionnaires and analysing the results. The resources used during this research included the Northeast Normal University Library; China National Knowledge Infrastructure (CNKI); Wanfang Thesis Database; the Chinese VIP Science and Technology Journal; and Chinese Sports core journals. Moreover, other books and documents that refer to the laws and regulations of college sports curricula referenced by Li were also taken into consideration [1]. The above-mentioned literature and related investigations have offered an important theoretical basis for this study.

METHODS AND IMPLEMENTATION

Subjects for the Investigation

This research used postgraduate students as subjects. The postgraduate students were from six sports institutes at higher normal universities in China, viz. Sports Institute of Beijing Normal University, Sports Institute of Northeast Normal University, Sports Institute of Huazhong Normal University, Sports Institute of East China Normal University, Sports Institute of Southwestern University (Southwestern Normal University is combined with Southwest Agricultural University, and is known as Southwestern University), and Sports Institute of Shanxi Normal University [2].

Design of the Questionnaire

The design of the questionnaire took account of the required content and purpose, in accordance with the basic requirements for designing questionnaires. Expert opinion was sought on the detail, modifying the questionnaire appropriately. The test reliability and validity were checked and, finally, two questionnaires were produced.

Reliability of the Questionnaire

To test the reliability of the questionnaires, the *test retest method* was employed. The two questionnaires were administered, with an interval of two weeks between the first and the second, and the results analysed. The correlation

coefficient of the two tests was 0.962 and 0.958, ($p < 0.01$), which indicated that the two questionnaires had high reliability. See Table 1 and Table 2.

Table 1: Questionnaire one reliability.

Number of retest subjects	Interval between tests (days)	Correlation coefficient	p
10	14	0.963	< 0.01

Table 2: Questionnaire two reliability.

Number of retest subjects	Interval between tests (days)	Correlation coefficient	p
30	14	0.959	< 0.01

Validity of the Questionnaires

To test the validity of the questionnaires, an expert panel of seven professors and associate professors from Beijing Normal University and Northeast Normal University was formed. The content and structure of the questionnaires were scored out of five [3]. The final, overall evaluation scores for the questionnaires were 4.0 and 4.1. This showed that the questionnaires have a high degree of validity. See Table 3.

Table 3: Questionnaire evaluation form.

Expert	Number	The average score for questionnaire one	The average score for questionnaire two	Validity
Professor	3	3.9	3.8	High
Associate Professor	4	4.1	4.4	Very high
Average grade		4.0	4.1	

RESULTS AND DISCUSSION

Applying Multimedia Technology to the Teaching of the Optional Course, Taijiquan.

Multimedia teaching technology was introduced into a Taijiquan class, the results were analysed and a comparison made with a control group. To fully understand the effect of the application of multimedia technology on the teaching of Taijiquan, the authors used the questionnaire outlined above to survey students of an experimental group and to evaluate the effect of multimedia teaching. The results are shown in Table 4.

Table 4: Results of the questionnaire.

Question	Yes %	General %	No %
Did you adapt to the use of multimedia technology in Taijiquan teaching?	50.0	36.7	13.3
Did the use of multimedia technology in Taijiquan teaching increase your enthusiasm for learning?	76.7	20.0	3.3
Are you interested in the Taijiquan class?	60.0	40.0	0.0
Are you confident learning Taijiquan?	93.3	6.7	0.0
Did the use of multimedia technology in Taijiquan teaching increase your interest in learning?	100.0	0.0	0.0
Did the use of multimedia technology in Taijiquan teaching improve your ability to observe, analyse and solve problems?	86.7	13.3	0.0
Do you think the use of multimedia technology in Taijiquan teaching should be more widespread?	96.7	3.3	0.0

The students in the experimental group strongly supported the use of multimedia technology in the teaching of Taijiquan and were consistent with other studies [4]. Referring to Table 4, 50% of the students thought they had adapted themselves to the use of multimedia teaching technology; 76.7% of the students thought that it helped improve their

enthusiasm for study; 86.7% of the students thought that it improved their ability to observe, analyse and solve problems; 96.7% of the students thought that the multimedia teaching technology should be more widespread. Hence, it is clear that the use of multimedia technology in Taijiquan teaching is modern, up-to-date and very popular with the students.

Multimedia Teaching and PE

Multimedia presents the teaching content of PE teaching visually. During traditional college PE teaching, teachers demonstrate actions, but many actions are rather complex and are completed in a moment. Thus, when teachers use traditional teaching methods, students may not grasp and understand the essence of some actions. The application of multimedia teaching technology in PE teaching provides a good solution to this problem. Using multimedia technology, image frames can be slowed down. Flash technology can be used to display actions that are taught; hence, facilitating students' mastery [5].

In teaching PE theory, multimedia technology can be used to present original text. Multimedia teaching can also provide tailored teaching, so as to give better guidance to the students. Teachers can use multimedia technology to make videos of students' actions that can be decomposed and slowed down to guide students in self- and collective evaluation, so as to improve their performance.

Two-way Communication between Teachers and Students

Multimedia network teaching uses real-time communication technology. The multimedia network teaching platform is an information-sharing resource. Timely communication between teachers and students is beneficial to the smooth progress of PE teaching. Communication between teachers and students is restricted in traditional PE teaching, since there are many students per teacher. But, with multimedia teaching, students and teachers can communicate and interact with each other on-line [6].

Multimedia network teaching technology allows remote *face-to-face* communication between teachers and students, which improves the connection between teaching and learning, and the efficiency of the teaching. The comparison of communication between teachers and students under the traditional PE teaching mode and the multimedia network teaching mode favours the latter.

Personalised Learning Space for Students

Traditional college PE teaching is focused on teachers, classrooms and teaching materials. Given the number of students and available teaching time, it is difficult to carry out targeted, personalised instruction and teaching. Hence, the difficulty of realising students' independent and individualised learning. But, multimedia network teaching of physical education allows students to conduct self-learning and personalised learning through the teaching resources information database of the multimedia network teaching platform. This can break through the limitations of traditional PE teaching in colleges and universities; thus, realising personalised teaching, in which students are regarded as the main focus of learning.

Sharing College PE Teaching Resources

The application of multimedia network teaching to college PE teaching brings about reform and innovation for information resource-sharing and the optimisation of the college PE teaching network. The multimedia network teaching platform provides various information resource databases from a variety of the world's most advanced schools and research institutes, providing material for college PE teaching. There are many types of on-line resource for PE teaching, including physical education news, statistical data and physical education research papers. The Internet has available teaching content, teaching materials, teaching methods and teaching auxiliary methods. Material can be chosen according to personal preference, with many choices available.

Improving the Teaching Efficiency of PE Teachers

College PE courses make great demands on PE teachers. In reality, it is difficult for one teacher to have a complete understanding of the technical actions and be able to demonstrate them for many sports. Thus, PE teaching is hampered by many obstacles and factors, such as a teacher's age, gender and personal abilities. Multimedia teaching can produce standardised demonstrations for PE teaching, so as to ensure students receive complete and correct information.

Reducing Regional Differences in PE Teaching

Due to the regional imbalance of economic development in China, the teaching of physical education varies by area. The application of multimedia network teaching can reduce this variation. Resource-sharing of the multimedia network teaching platforms enables effective interaction between universities and colleges. Through the help of timely communications, the multimedia network platform allows *face-to-face* expert guidance from thousands of kilometres

away. The remote camera allows the remote teaching of physical education. Meanwhile, college students in various regions can have timely communications and discussions.

CONCLUSIONS

After making a qualitative and quantitative analysis of the application of multimedia technology to the teaching of Taijiquan, it was found that multimedia technology stimulated the students' interests in learning and improved the quality of teaching. Also, it developed the students' self-learning ability and strengthened their conscious awareness of a life-long involvement in sports. In addition, it provides a basis for the modernisation of Wushu College teaching.

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