

Smart Classroom and Multimedia Network Teaching Platform Application in College Physical Education Teaching

Baiyu Zhou

Hunan First Normal University, Changsha 410205, Hunan, China

Abstract

With the development of information technology, multimedia teaching has become the main trend of college teaching. At the same time, cloud computing can dynamically allocate computing resources according to the number of users, as well as the complexity of the application. In this paper, the author analyzes multimedia network teaching platform application in college physical education teaching based on cloud computing. Through the questionnaire survey, the results show that the use rate of multimedia teaching in physical education is 75.6%. And multimedia technology has a positive impact on physical education, especially in teaching concept (47.56%), teaching environment (39.02%), teaching content (50%) and innovative methods (63.41%). In conclusion, modern educational technology has a profound influence on the teachers' teaching, and has a great significance to the whole teaching process.

Keywords: *Multimedia network, Cloud computing, Physical education, Teaching platform*

1. Introduction

With the rapid development of modern educational technology, the approaching of knowledge economy era, postgraduate education in China's higher education physical education professional research facing the new opportunities and challenges[1]. Due to the popularization of computer, multimedia, Internet and other modern educational media, the modern education technology is no longer limited to traditional teaching conditions audio-visual teaching mode, its advantage is interactive learning, sharing of resources, obtain the information fast, information transmission is not limited by time and space, the route of transmission wide[2-3]. Physical education graduate education is an important part of higher education, which is the higher level of education in China. It is an important stage for the country to cultivate high level physical education professionals[4]. Modern education technology is a modern educational technology, which is full of vitality and has great development prospects. It plays an important role in promoting the development of sports theory and practice[5]. Sports teaching, sports science and management is a part of education of physical education study students, indispensable, its development must keep pace. The development of sports education is bound to affect the quality of postgraduate education. We know that the education quality of higher sports colleges and universities sports education specialized research is affect the quality of education is one of the key factors, must cause enough attention of our educators. This paper focuses on the analysis and sum up the influence of modern educational technology in all aspects of the teaching of physical culture in Institutions of higher learning. The modern educational technology as a powerful means of the modernization of education can produce the following functions of education and teaching research: students can fully develop and utilize all kinds of learning, combination of scientific research resources, expand the space of thinking; teaching and learning information can break through the single limitation of diversification so that teachers and students access to information, broaden the students obtain information channels, have to improve the enthusiasm of the interaction between

teachers and students; can help teachers overcome the limitations of their own conditions, reduce the teaching load, increase the capacity of the curriculum content; effective implementation of individualized teaching, truly individual differences, respect students' abilities; to fully mobilize the students to actively participate in teaching, to play students initiative and enthusiasm and creative.

With the development and wide application of information technology, all walks of life in the field of network information has been rapid development. Education information promotion is also in the major colleges and universities in full swing, the use of multimedia teaching has become the mainstream trend of College teaching. However, there are still some problems in the application and implementation of multimedia teaching methods[6-7]. The emergence of cloud computing plays an important role in building an open, secure and efficient multimedia teaching platform in Colleges and universities. The multimedia teaching is the trend and direction of development of future of information technology in education, education informationization is only way to realize the digital campus and the modernization of education, which requires the whole society into enormous financial and human resources, planning and design to provide the support of multimedia teaching management system for college teaching, the real demand is strong[8]. At this time, the emergence of cloud computing for the establishment of network teaching platform for colleges and universities, the integration of teaching resources, to carry out the digital campus construction provides a new network environment and solutions. Cloud computing technology into the multimedia teaching management system construction, to integrate the existing software and hardware environment, the optimization of teaching management, service and cooperation the become strong function, safe and reliable operation, can complete the workload of multimedia teaching management system platform, in Colleges and universities to carry out the study and practice of the multimedia teaching platform has very important practical significance.

2. Multimedia Teaching

In today's world, rapid development of science and technology, the competition of comprehensive national strength is becoming increasingly fierce, in the competition of modern society of China, is the competition in the competition of economic strength, science and technology, information and cultural competition, especially in use of computer based, with information technology as the premise, on the satellite communications technology for the rise of the Internet media. Educational technology development and progress of the traditional mode of education, educational methods, educational thought by the violent impact, leading education major change, the education to the development of lifelong education, regional education to the development of distance education, closed type education to the development of open education and traditional education to the development of international education, has a profound impact on people's traditional way of learning, inspired major innovation in the modern education thought, idea and behavior. New application of educational technology in the field of education has been general consensus in the education community can popularizing use, increasing the level of science and technology to promote the innovation of education concept, continuous innovation in practice of educational technology, educational mode changing, making educational technology itself are endowed with a new connotation and significance, educational technology itself has been an unprecedented development.



Figure 1. Multimedia Classroom

2.1. Cloud computing

Cloud computing is a computing mode based on Internet, is a can make use of the Internet will be dynamic, scalable, and virtualized computing resources available to users of a service cloud computing except with traditional computer technology and network technology can realize the network distributed, parallel and utility computing, but also has a storage network, virtualization, load balance and can many computer entity integrated by cluster and the formation of powerful computing ability, is the product of the combination of traditional computer technology and network technology. Cloud computing can be super large and complicated calculation program is divided into smaller subprogram module via the Internet, and then by large multi server network is calculated and analyzed. And the analysis results feedback to the user. This process, users can do not have professional computer knowledge, also do not need to directly control, can even do not know do not know "cloud" is a concept, you can enjoy the use of past traditional computer technology and network technology, more high-quality, convenient, rich than web services. Cloud computing model shown in Figure 2:

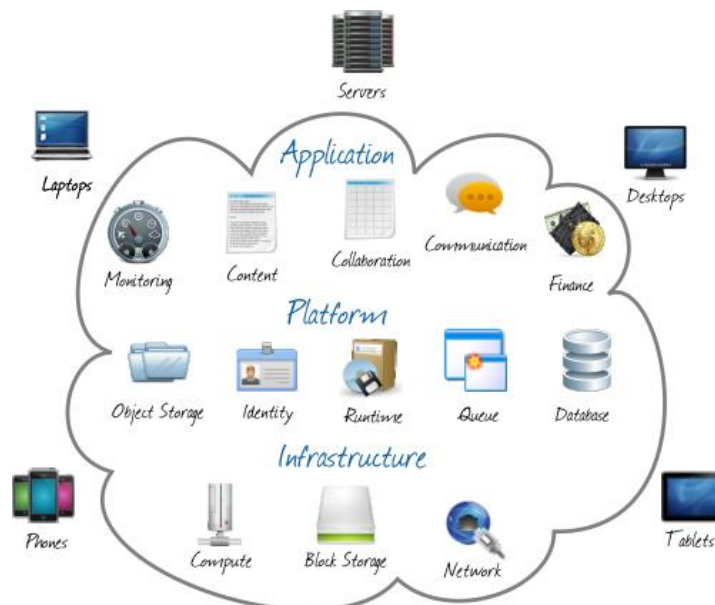


Figure 2. The Cloud Computing Model

Cloud computing can dynamically allocate computing resources according to the number of users and the complexity of the application. Cloud computing platform, the hardware facilities can be updated at any time according to need, so that the cloud platform can continue to a higher level of sustainable development. Users through the computer or mobile terminal, you can through the Internet access "cloud" servers, according to need to get their own resources and services, and even get only through super computer to computing power. Cloud computing reference architecture as shown in Figure 2 shows. SaaS service is the provider of the uniform application software is deployed in the cloud server, users can use terminal connected to the Internet, using the browser or client connecting to the cloud server to obtain the needed software service, also can according to their own needs to order related software services, and pay a fee. So as long as there is an internet terminal, the user can enjoy the time and place to enjoy the cloud services, cloud server hardware and software maintenance upgrades are managed by the vendor. PAAS is a cloud platform for the development needs of the enterprise development environment, make its to develop the specific needs of Cloud Applications in a cloud environment, in the enterprise for a cloud environment at the expense of at the same time, the company can also provide services to the user using the platform for the development of specific programs, which is convenient to the service of resources among corporate users sharing.

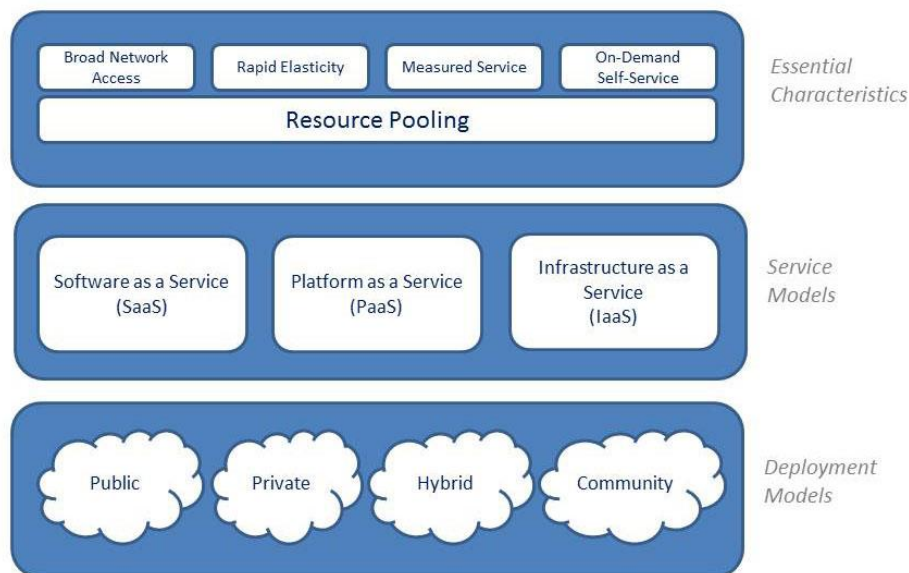


Figure 3. Cloud Computing Reference Architecture

2.2. College Multimedia Teaching Platform Based on Cloud Computing

Based on cloud computing in college multimedia teaching platform needs to high-speed network and multimedia classrooms and other hardware facilities and running as the basis and need to knowledge management and the construction of teaching resources as the center, to "cloud" technology as the basic framework that teaching to provide multi angle, multi-level service for the purpose, fully mixed and integration of teaching management in Colleges and universities. The resources, construction of teaching, management and service integration teaching environment and able to large and complex calculation, analysis and storage of cloud computing platform, realize the teaching resources on campus, sharing, for teachers and students to provide comprehensive service support. Currently multimedia network teaching system can be divided into two

subsystems remote teaching subsystem and the remote guidance subsystem in teaching subsystem, end the computer by students to teachers in the end computer information issued active request, teachers end computer receives students end computer sent to request, give timely response; in the remote guidance subsystem, the teacher terminal computer terminal computers to students issued requests for information resources, the student terminal computer according to their own situation to respond to the teacher computer terminal and accept teachers end computer operation.

In the multimedia teaching subsystem, the teacher can release the video, and the students can understand the operation of the teacher's computer to learn the related knowledge. In the system, the teacher sends the information to the students, so that the computer can watch the related operation of the computer and the information related to the computer through the screen information. In the multimedia teaching system, teachers and students through the organization tools and teaching of multimedia teaching system, we can according to the process of teaching students and teachers in the computer two different communication mode, the system is divided into teaching and counseling two large subsystems. As shown in Figure 4, the teaching process of multimedia teaching system in Colleges and universities.

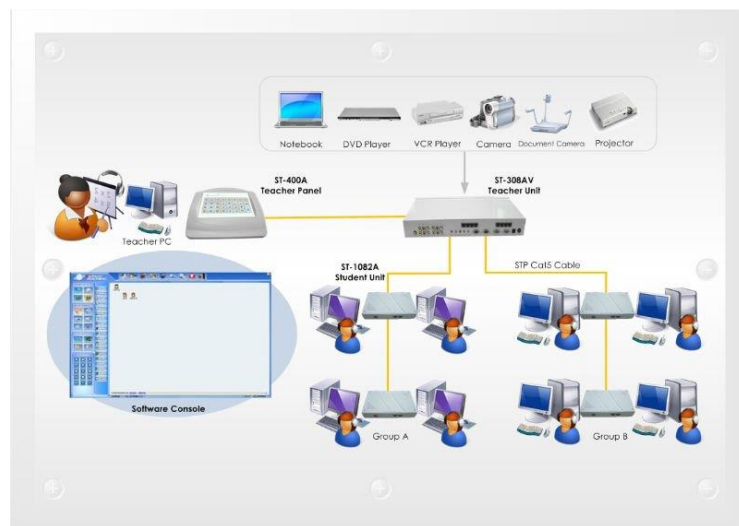


Figure 4. Multimedia Teaching System

- Teachers teaching demonstration: teaching subsystem, teachers use teaching subsystem for the teaching demonstration, and teachers in the computer screen display information and teacher to transmit voice information to the students through the Internet, students can watch the teacher through the window of the computer operation, at the same time teachers end computer can information through the form of animation recorded production is saved to a file, transfer to other teachers and students to learn from.
- Students to submit homework: students use the teaching subsystem can be submitted online to complete the work, and the work can be on-line correction, but also to achieve a better job can be delivered for other students to learn and exchange.
- Electronic responder function: teaching subsystem, the teacher can using set teachers end computer electronic responder button released to students answer, students can answer in their computer implementation, many students online to answer, the competitive mode can stimulate online learning atmosphere, increase the class of interest and through the electronic vies to answer first, teachers can discover weak link for students to learn, found that students in learning problems encountered in the process, to the students to answer in a timely manner.

- Teaching playback function: the teacher's computer demonstration of the video, can be made in the form of multimedia, playback, easy for a moment did not listen to clear the students to learn and watch, so as to improve the teaching effect. In the course of teaching, the teacher can also be recorded by a video recording, and can be used in the future after the use of a number of times and is conducive to the smooth progress of teaching.
- Electronic pointer function: the instruction subsystem is designed for electronic pointer function. Electronic pointer function refers to the teacher courseware, can for the demo courseware are all marked so that students can more easily grasp the teaching content, the electronic pointer function can be as the teaching tool to help teachers to maximize the teaching effect.
- Remote theater: the student through the teaching system in the remote theater function to observe the teacher's computer on the video material, to achieve the effectiveness of remote theater. Of course, teachers can also be video materials (including teaching playback multimedia video transmit to the students the computer on, by the students through their own computer with related playback software to open, the students will be able to achieve in the student terminal computer for autonomous learning.



Figure 5. Multimedia Teaching Platform

3. Research Method

- **Literature data method:** a large number of literature data collected by computer retrieval. Read carefully in recent years with the topic about professional books, papers and journals, by finishing, induction, analysis and summary to determine the research direction and content of this subject, through learning and studying the system, understand both at home and abroad of the research status and development trend, for this topic research provides theoretical and empirical basis. Literature data method is the main source of the research data and information, and it is also the basic way to analyze and prove the basis.
- **Expert interviews:** according to the needs of this study, and experts and professional sports colleges and universities responsible person interview, on some problems in the research, collection to the new point of view, listen to expert advice and valuable suggestions
- **Methods:** 330 questionnaires, 86 questionnaires, questionnaires were recovered, 227 questionnaires were received, the recovery rate was 94.85%, 82 valid questionnaires were recovered, 219 questionnaires were received, and the effective recovery rate was 91.21%,

- **Validity test:** through the reference and selection of the existing literature questionnaire, combined with the research direction of this subject, the research on the impact of modern educational technology on the physical education professional graduate education was made. In order to ensure the validity of the questionnaire, the questionnaire was conducted to test the validity of the questionnaire, and the validity of the questionnaire was tested by the method of qualitative evaluation, which was divided into five grades.

Table 1. Questionnaire Recovery

	Physical education teacher	Graduate student	Total
Total sample	90	240	330
Recovery number	86	227	313
Rate of recovery	95.56%	94.58%	94.85%
Effective recovery rate	91.11%	91.25%	91.21%

Table 2. Validity Evaluation Results

Satisfaction degree	Content design		Measurement design	
	N	%	N	%
High	6	28.57	7	33.33
Higher	13	61.9	12	57.14
Commonly	2	9.52	2	9.52
Relatively low	0	0	0	0
Low	0	0	0	0

4. Empirical Analysis

4.1. The Application of Modern Technology in Physical Education

Combination of the 21st century modern education and modern education technology undoubtedly enhance the education itself production ability and innovation ability, network education, virtual teaching, cross-border education, life-long education and the new educational concept under the background of modern education technology conditions further emerged, education level rise is always in the shadow of the development of educational technology is educational technology revolution, is the result of social change. On modern education technology powerful function, the full performance of various ways of education combined role and influence, if the a way to occur a change in the structure and function will break the original structure of a stable equilibrium state, resulting in changes of education, teaching as an adaptive program must reflect the education change and make the function of adaptation and change, in view of this, modern educational technology in sports education specialized graduate education process shows strong innovation and new innovation model. Through the survey of the effective recycling survey, the basic situation of the application of modern educational technology media software in education, as shown in Table 3, the basic statistics of modern educational media equipment for teachers, as shown in table 4.

From table 3 it can be frequently used word processing software word accounted for 100%, accounted for 74.14% of the Excel data processing software, computer network software thunder accounted for 75.61%, more than 50% of the teachers often use the software word/wps, Excel, download software and other media equipment, more than 50% of the students often use software word/wps Excel,

download software, LAN software; the teachers don't use software in a larger proportion of 3DMax64.63%, Dreamweaver60.98%, VB/VFP/C61.71% value, from the above data can be found in the media software operation is simple, convenient and practical by teachers and students welcome, with a higher proportion in Teachers' teaching and students' learning, especially word processing software and computer network software, a large number of high frequency. Compare teachers and students to use software similarities and differences can be found in the most frequently used software teachers and students to their proportion is close, the numerical difference is not too large, the frequently used software exists obvious difference is that computer network software. Table 4 teachers use the basic situation of the equipment of modern education media, in teaching process often use teaching media classrooms for 75.61%, video presenter 64.63%, projector for 87.84%, while using more projector only 6.10% in the past, we can found that teachers are often used in the past as part of the education media devices now use less, but with the teachers' teaching is closely related to the media devices today use more.

Table 3. Application of Modern Educational Technology

Software	Often use	Occasionally use	Not use
word/wps	100	0	0
PowerPoint	42.68	35.64	21.68
SPSS	42.68	31.7	25.61
Excel	74.14	16.34	9.51
Photoshop	53.66	19.51	26.83
3DMax	19.51	15.85	64.63
Dreamweaver	7.32	31.71	60.98
VB/VFP/C	16.82	21.46	61.71
Thunder	75.61	14.63	9.76
LAN software	51.49	24.63	23.88

Table 4. Modern Educational Media Equipment

Multi-Media	Often use		Occasionally use		Not use	
	N	%	N	%	N	%
Audiovisual room	62	75.61	12	14.63	8	9.76
Slide projector	5	6.10	12	14.63	65	79.27
Video booth	7	64.63	22	26.83	53	8.63
Recorder	2	32.44	6	45.32	74	22.24
Movie camera	18	21.95	12	4.63	52	63.41
Projector	72	87.84	6	7.32	4	4.88
Other media equipment	26	31.70	18	25.00	38	46.34

4.2. The Influence of Multimedia Technology on Teachers' Physical Education

Can be drawn, different subjects of physical education teachers in teaching using multimedia equipment and skilled degree has obvious difference, because most of the times, theory of teacher teaching is completed in the classroom, the use of multimedia

teaching time is relatively large. The technical teachers pay more attention to technical mastery, a large part of the time is to be done outdoors. Therefore theory teachers of using multimedia than skilled teacher ratio reached 74.4%, and gym teachers to use multimedia than skilled teacher ratio only 54%, two kinds of course have teachers proportion was 68.9%. No matter is the gym teacher or teachers there are still quite a few teachers use modern educational media can not skilled in using the, the ratio is in more than 20%. Teacher's modern educational technology knowledge base and knowledge structure are very important to physical education teaching, and a teacher's teaching skill base is the foundation of the application of modern educational technology. Only teacher really have a mastery of the ability to use modern educational technology, has its own content knowledge, have discipline and specialty of the most basic knowledge of the contents of the. Rapid development also has its own basic teaching methods, in order to effectively obtain professional, to meet the educational and cultural needs of the growing, modern educational technology is a new type of educational technology, is a powerful educational technology, is a kind of recessive tacit knowledge. Lack of modern educational technology in the teaching process, the teaching process will be separated from the teaching process of teachers in the classroom performance, but also does not adapt to the future development of sports education professional graduate education.

According to the results of the survey (Table 5), all to participate in the survey of teachers of modern educational technology that teachers' teaching concept (47.56%), the teachers and the teaching environment (39.02%), teaching content (50%) and innovative teaching methods and means (63.41%) impact and the teaching management (9.76%), teacher evaluation (18.29%) is relatively small, integrated all the data analysis that has a far-reaching influence on modern educational technology in teaching of teachers, for teachers in the whole teaching process has important significance.

Table 5. The Influence of Multimedia Technology on Teachers' Physical Education

Content	Great influence		Greater impact		No influence	
	n	%	n	%	n	%
Teaching idea	39	47.5	38	46.3	5	6.1
Teaching environment	32	39.0	29	35.37	21	25.61
Content of courses	41	50	39	47.56	2	2.44
Teaching methods	21	25.61	36	43.9	25	30.49
Teaching attitude	29	35.37	52	63.41	1	1.22
Teacher evaluation	15	18.29	52	63.41	15	18.29

Multimedia technology to teacher's teaching idea influence, survey 94.9% teachers think that modern educational technology affects teachers' teaching concept, this is because the traditional teaching concept of teachers by the strong impact of modern educational technology in teaching mode, the scope of traditional teaching is subject to the textbook, the influence of teaching environment and the time limit. Breakthrough and the modern education technology this bottleneck, teachers' teaching methods become diversified, broaden the teaching content to textbooks, such as the higher sports colleges and universities teaching is no longer limited developed in the school curriculum development of Internet, the local area network, multimedia technology and its

application and broadcast through the network expert lectures, network video, network classroom and other content, extends well beyond the textbook of the teacher's teaching.

4.3. The Influence of Multimedia Technology on Students' Learning

Survey results (Table 6) shows, all in the survey of students of modern educational technology in the learning beliefs (80.83%) and learning environment (86.31%), learning effects of range (91.78%) more prominent, students of modern educational technology in teaching approval degree higher. And in the learning mode (67.12%), the role of learning (66.21%), learning motivation (37.44%), learning effect (55.7%), and other aspects of the relatively small. Comparison table 7 and table 4-9, teachers and students view on the function of modern education technology in the teaching existence certain difference, teachers recognized the application of modern educational technology in teaching and learning, and students on the state of learning in the teaching mode of modern education technology not satisfied with, return the reason, some teachers in the teaching process did not give full play to the role of modern educational technology, not modern educational technology teaching learning mode into students' mind, and for students to the idea of modern educational technology in teaching is not completely rooted in the learning process.

Table 6. The Influence of Multimedia Technology on Physical Education

Content	Great influence		Greater impact		No influence	
	n	%	n	%	n	%
Learning concept	84	38.36	93	42.47	42	19.18
Learning style	76	34.7	71	32.42	72	32.88
Learning environment	102	46.58	87	39.73	30	13.7
Learning scope	126	57.53	75	34.25	18	8.22
Learning motivation	27	12.33	55	25.11	137	62.56
Learning effect	79	36.07	43	19.63	97	44.29

5. Conclusions

The application of modern education technology change the students' learning, teachers through the adoption of modern educational technology to help students master the methods of learning, students have their own personalized way of learning, students are no longer subject to learning a single media, narrow channels of knowledge and information exchange is not smooth external conditions of learning control can autonomous learning, and the diverse ways of learning, learning from the time, place, space, by choosing a suitable for their own way of learning, we strengthen discipline knowledge accumulation and optimize the knowledge structure, to meet the needs of education and scientific research in the future. Modern educational technology has changed the environment of students' learning, strengthened the interaction between teachers and students, and asked students to explore the nature of learning. The thinking mode of modern education and technology education network platform for students learning increases the chance of communication, between teachers and students, students

information anytime, anywhere interaction. Teachers and students can through the network platform: view of the problem, put forward methods to solve the problem.

Modern educational technology has been the attention of the sports teachers in Institutions of higher learning, and actively applying modern educational technology to optimize the teaching content, innovation of teaching methods, improve students' cognitive level, stimulate student's desire for knowledge, to improve teachers' and students' scientific research level and teaching quality. Under the environment of modern educational technology in information resources greatly enrich and improve the information literacy of teachers and students, namely to improve the in sports teaching, scientific research and learning process consciously to capture, analyze, judge and absorb information ability, to improve the ability of information processing, improve the information retrieval skills, especially the all-round improvement of students' information literacy, strengthen subject consciousness and teachers' previous knowledge teaching authority impact, communication between teachers and students has changed, the information and knowledge transfer from one-way transmission to the two-way transmission mode change "Teacher - student". Modern education technology of sports education specialized graduate study and research produced profound influence, information sharing is realized in the scientific research, strengthen the between teachers and students, students with communication and learning, promote the cooperation between teachers and students in scientific research, is beneficial to the improvement of subject information interaction and students' ideological construction and scientific research ability, helping students to build up the consciousness of innovation and scientific.

Schools need to strengthen the construction of the facilities of modern educational technology, attach importance to the construction of the teaching staff, carry out the training of teachers' modern educational technology curriculum system, improve the teachers' ability to apply the modern educational technology and equipment, change the teachers thought the old concept of education and teaching, teachers make full use of the limited education resources in the school, integrating the advantages of modern educational technology and traditional education technology of rational use of the sports teaching, giving play to the role of its efficient together. In the process of teaching teachers should pay attention to the application of modern educational technology in cultivating students' innovative spirit, for students to build a conducive to learning, research, exchange and cooperation of education informatization environment, to cultivate students' divergent thinking, logical thinking and image thinking and dialectical thinking provides a wealth of resources and development space. Teachers in the teaching of modern education ideas into students' minds, around the students' Learning Center, innovative teaching methods, teaching content, teaching environment, improve the quality of teaching.

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Authors



Zhou Baiyu, 1982.2, Changsha, Hunan, P.R.China
Current position, grades: the lecturer of Physical Education Institute, Hunan First Normal University, Changsha, Hunan, China
Scientific interest: traditional sports
Publications: Published fifteen provincial publications, published a monograph
Experience: In the 10 years of university education, the subject of the three ministries Bureau presided