



Design and Application of Online Teaching System of Police Physical Education Based on Web Application Development

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Abstract. Under the new social environment and development situation, the state has higher and higher standards and requirements for training police talents in public security colleges, and police physical education plays an important role in training police talents. Teaching in public security colleges should be based on reality and conform to the national conditions, deepen the reform of the educational mechanism of police physical education, and improve the quality of education and the comprehensive quality of police. Firstly, this paper expounds the importance of police physical education as a compulsory course in training in military academies, analyzes the omissions in current police physical education teaching mode and teaching method, and puts forward relevant solutions and specific implementation methods. The online teaching system of police physical education, developed by web technology, uses PHP language and initPHP framework to develop various functions of the server, so as to explore a new way for the teaching reform and optimization of police physical education, and improve the teaching mechanism and mode of police physical education.

Keywords: police physical education teaching online teaching · web technology · PHP language · initPHP

1 Introduction

Public security colleges and universities are teaching bases for training excellent police officers for the country, and police physical education courses are set as compulsory courses in training police officers. It makes use of scientific and appropriate teaching methods and forms to enable police school students to master a series of basic practical skills such as basic physical training, special catching and fighting, fighting and beating training, boxing training, Chinese martial arts Sanda, the use of police weapons and shooting techniques [3]. As an important part of police education, this course not only exercises and improves students' physical fitness, but also sharpens their ideological style of not being afraid of hardship and being determined through hard training, and casts their tough character of protecting the security of the motherland, social harmony and stability, and the safety of people's lives and property. At first, police physical education is a professional physical education course based on military physical education.

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Compared with ordinary physical education courses, it has the unique characteristics of police profession. In order to promote the construction of ruling the country by law in an all-round way, the police force is constantly growing, while their functions and responsibilities are also enriched and improved. The exercise standards for students in public security colleges require that the police physical training and evaluation standards should be put into practice in the teaching system and teaching methods, aiming at training police skills and improving physical fitness, so as to cultivate and improve the law enforcement level and actual combat ability of the police force in the future. Therefore, it is of real value, practical role and practical significance for colleges and universities to carry out standardized and scientific police physical education teaching organization. Police physical education is a discipline that studies and trains the special qualities and skills that people's police should have in actual work and in the battle of performing special tasks [10]. Therefore, from the macroscopic point of view, police sports training should include two aspects: theoretical training and practical training of police physical education in public security colleges. It is a course with special training and physical training as the main teaching means, physical training, tactical training and skill training as the specific contents, and has the characteristics of high training intensity, high pertinence and complexity. At present, the development of police physical education teaching in police schools has achieved remarkable results, and has been highly valued by the state. However, from an objective and long-term perspective, due to the influence of various factors, there are still many shortcomings in the development of police physical education practice teaching, and there is still much room for optimization and improvement in terms of prudent consideration. Police physical education teaching in police schools has not established and improved a unified operation system and mode, and some courses are still mainly based on P.E. courses and projects, lacking pertinence and professionalism, so it can't really be applied in actual combat. The content of police physical education is outdated, and it can't be saturated with the future professional needs. Teaching mode and teaching content can't be highly compatible, which leads to the low effect of police physical education teaching. Police sports training hours are limited, so students can't carry out extended training. And the current teaching focuses on practical training, ignoring the importance of theoretical teaching, and students' comprehensive quality and practical accomplishment are not fully valued [8].

To sum up, the author of this paper tries to use the concept of "Internet+education" to move the teaching work of police physical education to online development. The online teaching activities are changed from teacher-centered to student-centered, and the change of identity is conducive to the change of consciousness. Students regard learning as their own responsibility, take the initiative to use online teaching system to acquire knowledge or skill resources, and build a learning system suitable for themselves based on teaching objectives and actual needs. In view of this, this paper will design and develop an online teaching system of police physical education based on B/S design framework of web technology, apply PHP language and initPHP framework to develop various functions of the system server, and use Internet technology to provide opportunities for students to improve. Students can learn by consulting the electronic data in the system database, ask questions to teachers online, exchange experiences online, and incorporate actual combat

cases of police officers and training and teaching at home and abroad into the course, so as to improve students' comprehensive literacy and actual combat ability and lay a practical foundation for future work. Teachers reduce the spoon-feeding teaching and preaching components, and turn them into guiding, encouraging and helping students. Through questionnaires, they learn about students' individualized needs and upload teaching contents at different levels, so that the teaching contents and students' needs are mutually saturated. In the teaching module, there are not only a large number of actual combat courses but also rich theoretical guidance, which makes the combination of theory and actual combat closer. Let the students arrange the opportunities of independent study and training, and the teachers reserve more time and energy to answer questions to the students. You can also interact with real police officers and listen to their work experiences [6].

2 Technical Overview

2.1 PHP

PHP is a free and open scripting language, which incorporates the advantages of C language, Java and Perl into its grammar, and its main application field is web sites. The execution speed of dynamic web pages written by it is faster than CGI or Perl. Compared with other web programming languages, the dynamic page developed by PHP embeds the program into HTML documents for execution, which is much more efficient than CGI which completely generates HTML tags [9]. Dynamic Web pages are opposite to static web pages, that is, information forms composed of different source data are sent to users as web pages. The content of static web pages does not depend on the data input by users, but is usually directly parsed to users. The server-side script program developed by PHP can handle user requests by embedding when mixed with HTML files, or by encapsulating classes and functions in the form of templates. In any case, its basic principle is that the client makes a request for a certain page, the WEB server introduces a specified script for processing, and the script is loaded into the server. Then, the PHP parser specified by the server parses the script to form an HTML language, and finally the parsed HTML statement is sent back to the browser in the form of a packet. As shown in Fig. 1, Apache is configured to support PHP file parsing. It can be seen that after the page is sent to the browser, PHP has been converted and parsed into HTML statements, and it itself does not exist. As a dynamic file, the client's request does not actually exist. Instead, PHP parses and generates the corresponding web page, and then returns it to the browser. This page processing method is called "dynamic page".

2.2 InitPHP

InitPHP is an open source and free php development framework, which is lightweight and has strong team support. By adopting hierarchical architecture, the MVC design pattern is optimized, and the development structure of the system is roughly divided into control layer, view layer, service layer and data layer, which makes the project layering more reasonable and is suitable for developing large and medium-sized web architectures. It provides developers with rich library extension class library support, Util tool

PHP Version 7.0.30	
System	Windows NT LENOVO-PC 6.3 build 9200 (Windows 8.1 Home Premium Edition) AMD64
Build Date	Apr 24 2018 16:11:18
Compiler	MSVC14 (Visual C++ 2015)
Architecture	x64
Configure Command	<pre>cscript /nologo configure.js "--enable-snapshot-build" "--enable-debug-pack" "--with-pdo-oci=c:\php-sdk\oracle\x64\instantclient_12_1\sdk,shared" "--with-oci8-12c=c:\php-sdk\oracle\x64\instantclient_12_1\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet=shared" "--with-mcrypt=static" "--without-analyzer" "--with-pgsql"</pre>
Server API	Apache 2.0 Handler
Virtual Directory Support	enabled
Configuration File (php.ini) Path	C:\windows
Loaded Configuration File	(none)

Fig. 1. Apache supports PHP parsing interface

library and simplified framework extension mechanism, which is convenient for extension and use. InitPHP also provides a detailed development instruction manual. All API interfaces supported by InitPHP can be found in the instruction document. It is easy to use, improves the speed of developing programs, and makes web programmers feel simpler and more practical when using this framework to develop applications. Initphp implements the abstract DB layer, hierarchical architecture, cache seamless switching mechanism, simple template mechanism, multi-model deployment mechanism, and strong security system, and it is a sharp weapon for rapid development of PHP applications. InitPHP supports grouping, multi-entry, URL rewriting, multi-domain name and multi-template theme functions. InitPHP supports relational databases such as MYSQL and MSSQL, distributed databases and multi-database connections. InitPHP supports file cache, database cache, Memcache cache, etc., and it can easily switch cache types. InitPHP provides a strong security protection mechanism for developed web projects.

2.3 Development Environment

Based on the above technologies, the development environment of PHP, MySQL and Apache is deployed under the Windows operating system, and the initPHP project is created. First, download and install PHP 7.0.3, Apache 2.4.33win64, MySQL 8.0.28, initPHP 3.8.3, Zend Studio. Then configure the environment variables of MySQL, create a new MYSQL_HOME variable with the value of the installation path of MySQL, edit the path system variable, and add %MYSQL_HOME%\bin to the back of the PATH variable. Configure PHP, open the installation directory of PHP, copy php.ini-development first, then change php.ini-development to php.ini to save, modify the configuration information of php.ini file, and find it; Extension_dir = "ext" is changed to extension_dir = "directory of ext" [1]. Configure Apache, open the installation directory of Apache, find the httpd.conf file under the conf folder and open it. Find the item "Define SRVROOT", change the value in quotation marks to the installation directory of Apache, and add support for PHP and the installation path of PHP at the end of the file. Enable apache, find the bin folder in apache's installation directory, double-click the ApacheMonitor.exe, and then double-click to open Apache. Next, create a new phpinfo.php file in the directory of Apache installation directory /htdocs with the content of "< ? php phpinfo());

```

<?php
define('APP_PATH', dirname(__FILE__));
header("Content-Type:text/html; charset=utf-8");
require_once(APP_PATH . '/initphp/initphp.php');
require_once(APP_PATH . '/conf/comm.conf.php');
InitPHP::init();
?>

```

Fig. 2. Index.php

? >”, open the browser and enter 127.0.0.1/phpinfo.php The document shown in the Fig. 2 shows that the configuration is successful. Finally, open Zend Studio to create the initPHP project. The folder initphp is the newly downloaded initphp framework folder, conf/comm.conf.php places the project configuration file, web/controller/ folder places the controller file, index.php is the project entry file, and the project developed with initphp is a single entry. All requests will be distributed through index.php. Define an APP_PATH variable in the entry file, and then import it into the framework initphp.php file, as shown in the figure, that is, index.php configures the code of initPHP, and finally call InitPHP::init () in the framework to run the framework. The installation and configuration of the above environment ensure the feasibility of the development of online teaching system of police physical education.

3 Requirements Analysis

3.1 System Requirements Analysis

Public security college students’ skill level and physical quality are uneven before taking part in physical education, and students’ interest in sports events is also different. Long-term adherence to the exercise of various events makes a great difference in physical quality and coordination ability. Some students in sports colleges may have received professional physical fitness and fighting training, and even some students were professional fighters. The traditional police physical education classroom selects the unified teaching content, adopts the same teaching plan and teaching method, and always keeps the same teaching progress, which will lead to high repetition of the learning content of the students with good foundation, thus wasting teaching time, but the students with poor foundation are hindered in training progress and effectiveness due to high cognitive load or physical fitness [7]. In the online teaching system of police physical education, the online teaching mode has reversed the traditional indoctrination teaching mode. In the online environment, the student’s identity has changed from passive acceptance of the object to active absorption of the subject, and the teacher is responsible for supervising and guiding the students as an auxiliary identity. The right to choose courses is in the hands of the students themselves, and learning is more diversified and personalized. In the teaching system, students can choose the police physical education courses that need to be strengthened according to their own physical quality and learning needs, without worrying about whether it will affect the overall offline classroom learning progress, and can repeatedly watch the learning contents such as course videos and PPT materials to find out the difficulties and key points of knowledge, so as to realize individualized

learning at different levels, so as to improve students' enthusiasm and efficiency in learning police physical education courses. The learning time of online teaching is flexibly chosen by students, which makes up for the shortage of traditional classroom schedule and learning progress. Teachers can also collect students' outstanding problems and difficulties in police physical education courses, and answer them online, which can not only enhance the communication and interaction between teachers and students, but also stimulate students' enthusiasm for learning. Listen to the police officers telling the actual combat experience through the live lecture hall, and improve their sense of mission.

3.2 Global Design

Police physical education online teaching system is based on B/S architecture of web technology, with PHP language as the development technology of server application, combined with lightweight PHP web development framework initPHP, and completed the overall layout and design of system server according to MVC design pattern. The initPHP framework is an extension of MVC design pattern and has been optimized. It is a relatively small web framework developed by many PHP languages. It can freely set the project directory structure. In the initPHP framework, the basic structure of the project is divided into four layers. They are control layer (controller), template layer (view), service layer (service) and data layer (DAO), in which the control layer is responsible for receiving the requests sent by the server users and calling the corresponding methods to access the relevant data and services of the view layer and service layer and return them to the client, while the data layer is responsible for writing sql commands, interacting with MySQL database and processing data.

4 Functional Implementation

4.1 Student Client

When students log in to the system, they first fill in the questionnaire and pass on their needs to the teacher. The questionnaire will be saved into the system database and synchronized to the teacher's end, as shown in Fig. 3, which is the code written by PHP to control MySQL database.

Students enter the knowledge teaching module, which is divided into two sub-modules: theoretical knowledge and practical knowledge. The first part "theoretical knowledge" is the important theoretical basic knowledge for the next module to carry out practical teaching and training. This part of the teaching content is to guide students to clearly learn the origin, purpose and method of police sports, the basic concepts of fighting and shooting, laws and regulations, etc., so as to lay a good theoretical foundation for later study of actual combat knowledge. Students can also ask the teacher questions about the knowledge they don't understand during the learning process. Knowledge mainly includes two sub-functional areas: "learning and practicing guidance" and "training knowledge". By entering the sub-function of "Learning and Practice Guidance", students can know the concept, history, characteristics, functions in public security work, and basic methods, procedures and key points of skills, such as

“Classification and Usage Instructions of Machinery and Tools”. Through the study of “training knowledge”, students can master the basic physiological knowledge of human body movement, the prevention knowledge of sports injuries, the formation rules of motor skills and psychological skills, the components of actual combat ability and their relationships [5].

In the practical knowledge module, the course is divided into different chapters and units. Most of the video courses are the effect of switching back and forth between the first perspective and the third perspective, and you can practice your actions independently with the video. By studying the video of “Practical Knowledge” step by step, students can understand the use and characteristics of actual police combat and force means, understand the situation and form of actual combat confrontation, and master the content and actual application of force confrontation means. For example, the key fighting skills in police physical training, the design inspiration of the teaching content of fighting skills mainly comes from Sanda, boxing, wrestling, martial arts capture, Brazilian Jiu-Jitsu, and the action decomposition teaching is carried out in combination with the actual cases of police law enforcement and application of fighting skills. The whole actual combat training, including police equipment and weapons, is an important link to ensure the effectiveness of the whole actual combat training. Through the study in this link, students’ physical coordination, resistance and basic skills will be developed, and students’ actual combat awareness of violent confrontation will be cultivated, their technical movements will be mastered, and their actual combat awareness of physical attack and defense and coordination of movements will be cultivated [4]. Through the study of this part of knowledge, students’ physical quality and actual combat ability can be improved, and individual abilities of prevention and control, attack and shooting can be built, which will pave the way for the professional police to apply the learned technology to complete their work.

The expanded materials mainly include fighting match materials, police contests and combat videos. For example, sports fighting materials mainly include competition rules, competition videos and training videos of different fighting events, such as Muay Thai, Brazilian Jiu Jitsu, freestyle wrestling, mixed fighting and police skills. Adding the expanded data module can not only broaden students’ horizons, let them know the role of the learned skills in practical application, but also improve their understanding of control and defense technology. Moreover, by paying attention to these personalized materials, students will have a strong interest in the actual combat projects of police sports, and they will be encouraged to maintain greater enthusiasm in their study and training.

The live broadcast module mainly invites some police officers of special operations, anti-narcotics, public security, criminal offences and other types to tell their actual combat experiences. Students can communicate and interact with them online, ask questions, narrow the distance between students and their careers, and have a clearer understanding of their future obligations and responsibilities, and realize the importance of police physical training, so as to achieve comprehensive improvement of physical fitness and thinking.

```

<?php
$conn = mysqli_connect('localhost', 'root', '');
if (!$conn){ die('could not connect'.mysqli_error($conn));}
echo "The database link was successful!";<br>;
mysqli_query($conn,'set names utf8');
mysqli_select_db($conn, 'test');
$title = $_POST['title'];
$content = $_POST['content'];
$time = time();
$sql = "insert into msg"."(title,content,ptime)". "values"."('$title','$content','$time)";
print_r($sql.<br>);
$rs = mysqli_query($conn,$sql);
if (!$rs){die('Unable to insert data'.mysqli_error($conn));}
echo 'Data insertion was successful!';<br>;
$sql = "select * from msg"; //
$rs = mysqli_query($conn,$sql);
if(!$rs ){die('Unable to read the data:'.mysqli_error($conn));}
while ($row = mysqli_fetch_assoc($rs)){
    echo '<li><a href="du.php?id='.$row['id'].'">'. $row['title'].</a><li>';
}
mysqli_close($conn);
?>

```

Fig. 3. Php code for manipulating data

4.2 Teacher Client

Teachers learn about students' individualized requirements for training in the form of electronic questionnaires, upload relevant courses and extended materials according to them, learn about the quality of students' online learning by checking their learning progress, supervise them to complete their online learning goals, check students' online questions in time, answer questions and feedback their learning suggestions to students. If the class hours are limited, teachers can selectively teach this part of the content. For example, only boxing and individual wrestling are taught, but students must be familiar with the skills they have learned, and fully confront and practice the skills they have learned. The purpose is to improve students' coordination, sense of distance, awareness of attack and defense, and fighting strength, and lay a solid foundation for the subsequent application of technology in police law enforcement [2].

5 Conclusions

Web-based online teaching, a new teaching form, as a supplement to offline courses and a teaching channel in a special period, not only enriches the teaching form of police physical education, but also optimizes the teaching mode of police physical education, further broadens the breadth and depth of police physical education courses, and provides a new way for students to learn police physical education and acquire knowledge about police physical education and sports surroundings. It can help students better learn knowledge, master the essentials of movements and correct practice methods, improve students' physical quality and independent practice ability, and at the same time, it can also improve the teaching quality and efficiency of police physical education class, and promote the sound development of police physical education teaching.

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