

Retraction

Retracted: The Teaching Method of Basketball Training Based on Intelligent Network Multimedia Technology

Mobile Information Systems

Received 31 October 2023; Accepted 31 October 2023; Published 1 November 2023

Copyright © 2023 Mobile Information Systems. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] C. Han, M. Wang, and A. Yan, "The Teaching Method of Basketball Training Based on Intelligent Network Multimedia Technology," *Mobile Information Systems*, vol. 2021, Article ID 3879597, 7 pages, 2021.

Research Article

The Teaching Method of Basketball Training Based on Intelligent Network Multimedia Technology

Chao Han,¹ Mei Wang,² and Aiping Yan ³

¹School of Department of Physical Education, Taiyuan Normal University, Shanxi, China

²School of Physical Education Institute, Hebei Normal University, Shijiazhuang, China

³School of Physical Education Institute, Shanxi Normal University, Shanxi, China

Correspondence should be addressed to Aiping Yan; yuiu3452021@163.com

Received 11 August 2021; Revised 13 September 2021; Accepted 1 October 2021; Published 26 October 2021

Academic Editor: omar cheikhrouhou

Copyright © 2021 Chao Han et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

In the traditional sports basketball teaching, people gradually find that the simple use of body language and oral language as the carrier of teaching sports skills and theoretical knowledge has certain limitations. Therefore, we begin to focus on the combination of network multimedia technology (NMT) and basketball training teaching (BTT). This article mainly studies the teaching method of basketball training based on NMT. This article expounds the concept and function of multimedia teaching, puts forward suggestions on BTT methods based on NMT, and studies the making method of multimedia basketball training (MBT) courseware. Through the questionnaire survey and experimental research, this article analyzes the influence of MBT on basketball teaching, the effectiveness of multimedia basketball students' mastery, the evaluation results of MBT, and the evaluation of experimental group students on MBT. In this study, 100 students were selected as the experimental objects, a group of 50 people for the basic basketball action test, one group had a period of multimedia basketball teaching, and the other group still carried on according to the traditional basketball teaching method. The results show that in the experiment of MBT, the total proportion of the experimental group is 56.61% and the control group is 33.72%; the experimental group is 57.28% and the control group is 42.35%; the experimental group is 63.26% and the control group is 32.79%; and the experimental group is 70.56% and 37% in the control group.

1. Introduction

With the continuous development of big data, the current multimedia technology has been tried to be applied to physical education (PE) [1, 2]. The traditional PE teaching methods have been gradually eliminated from the contemporary PE classroom, which makes the reform and innovation of BTT methods more important. In school PE curriculum, basketball is one of the favorite sports for students [3, 4]. How to have a good basketball sports course has become an important research topic for contemporary sports experts and scholars and also a requirement for the development of students' physical health and lifelong sports [5, 6]. In addition to the traditional basketball sports teaching method, only PE teachers are in front of students to explain and demonstrate, and few teachers will use some pictures or videos and other media teaching methods, which

causes students in learning PE courses more boring, and also cannot quickly master the basic technical action, learning efficiency decline [7, 8]. Traditional PE teaching methods cannot meet the development needs of modern society. In order to explore this research topic, this article studies the BTT method based on NMT [9, 10].

In the research on the application of NMT in BTT methods, many scholars at home and abroad have studied it and achieved certain results. Simarmata J and others believe that the use of MBT can make students intuitively feel the charm of basketball technical action through video, collection, slow motion playback, courseware, and so on. Third, MBT can set up the image of correct action in students' brain [11]. Xia B points out that basketball is a favorite sport for students, and the quality of basketball teaching directly affects students' love for sports and their interest in exercise. This article puts forward the advantages of MBT technology, such as the

combination of diagram and theory and the combination of video and technical action. Let the students master the basketball theory and technical movements [12]. Since the appearance of the first computer-aided teaching system in 2006, foreign countries began to combine the multimedia system with the theory of various disciplines, while due to the development of pedagogy, psychology, and the development of the network. The invention of the Pc making the multimedia auxiliary teaching system has made a considerable progress; foreign scholars in the study of Pc auxiliary teaching have more advanced theory and experience and also developed some more advanced multimedia system softwares, but the real in the basketball tactical training application of the multimedia system based on Pc and computer software-aided training does not see more [13, 14].

This article mainly discusses the teaching method of basketball training based on NMT. This article expounds the concept and function of MBT, puts forward suggestions on BTT methods based on NMT, promotes the development of sports teaching modernization, and studies the making method of MBT courseware. Through the questionnaire survey and experimental research, this study analyzes the influence of MBT, the effectiveness of multimedia basketball students' mastery, the evaluation results of MBT, and the evaluation of experimental group students on MBT. Through this research and practice, we can explore the problems existing in the auxiliary training process of the multimedia system based on the PC machine and computer software, study the results of multimedia system auxiliary basketball tactical training, and put forward conclusions and suggestions, which can provide a certain basis for the later discussion of such problems. Cultivate teachers' professional quality of teaching with the multimedia system and better combine modern educational technology with basketball tactical training. At the same time, make information technology play a greater role in basketball tactical training and promote the process of the combination of information technology and basketball training.

2. The Teaching Method of Basketball Training Based on NMT

2.1. The Role of MBT Concept. The use of modern science and technology in teaching can further improve the quality of teaching. MBT has become the need of the development of modern science and technology and modern teaching. It is one of the more effective methods of modern teaching methods. It integrates the elements in the teaching content and makes MBT courseware. Based on the original teaching materials, multimedia courseware is processed by multimedia elements, so as to better serve the teaching. According to the interaction of multimedia technology, we can make the main points of action technology, key and difficult points, and easy to make mistakes into teaching courseware, which can improve students' self-learning ability. In the indoor teaching, watch the correct standard technical action at the same time with the error prone action for comparative analysis and form the overall concept of correct technical action. MBT can enhance students' consolidation and

strengthening of motor skills and improve teaching efficiency and quality. Students will be more flexible in the use of sports technology, so that MBT and basketball sports classroom are closely combined and improve the efficiency of PE teaching. In the teaching of multimedia courseware, we can form a new technical action representation from the students' hearing and vision through the multimedia elements such as video, audio, text, and animation. MBT can stimulate students' learning enthusiasm, broaden their horizons, and promote their all-round development. The use of MBT improves the effectiveness of teaching content transmission, a large amount of information, is conducive to the efficiency of students' learning, and stimulates students' imagination. It can also shorten classroom teaching hours, which plays an irreplaceable role in classroom teaching.

2.2. Suggestions on Teaching Methods of Basketball Training Based on NMT

2.2.1. Vigorously Promote the Application of MBT in PE. MBT as a modern teaching method applied to basketball teaching is an inevitable trend, which is conducive to the development of PE reform. With the students' continuous understanding of new things, MBT methods have a strong interest in students' learning. Therefore, we should keep up with the trend of the times and vigorously promote the application of MBT in PE. The development of school sports and competitive sports is inseparable from the intervention of MBT, and it is also an indispensable part of college sports classroom activities, which can be better carried out sports and improve students' interest in exercise and learning.

2.2.2. PE Teachers Should Strengthen Their Research and Development Ability of Multimedia Courseware. PE teachers can not only skillfully master and use traditional teaching methods but also learn to use MBT methods for teaching, which requires continuous improvement of PE teachers' comprehensive quality and ability. PE teachers should use their spare time to actively learn the comprehensive knowledge of other subjects, participate in the training and study of MBT, and make and develop excellent MBT courseware to be applied to teaching.

2.2.3. Developing Multimedia Courseware Making Training for PE Teachers. MBT methods continue to be applied to classroom teaching, but due to some subjective and objective reasons, many PE teachers have poor level of making and using multimedia courseware. Therefore, the relevant departments of the school should actively carry out the training of making multimedia courseware, so as to apply multimedia courseware to teaching and improve the teaching effect and quality. Under the background of higher education, college PE is developing on the right track.

2.2.4. Increase Investment in the Construction of MBT Environment to Promote the Modernization of PE. Under the influence of the rapid development of information technology

dominated by computer technology, modern education is developing in the direction of modernization. In order to adapt to the development of modern education, the application of modern teaching means in PE teaching has become an inevitable trend. Schools should increase construction investment, build large screen projection TV or projector, user terminal in sports venues, connect the campus network to form a MBT environment suitable for PE teaching, and create conditions for multimedia-assisted PE teaching, so as to adapt to the development trend of modern education.

2.3. Making Method of MBT Courseware. PPT is a special software for making and demonstrating multimedia slides. It is one of the most suitable softwares for demonstrating courseware. At present, most teachers use ppt as the display of multimedia courseware, and the main reason is that it is simple and practical. When making multimedia courseware, we need to collect a lot of relevant information about basketball technology. After the collection, we use certain software processing technology to process and integrate the text, pictures, and animation, finally, the use of good data resources to make a perfect multimedia courseware; through this means the basic purpose is to extract valuable and meaningful information to show to the students, so that students can more easily understand the basic technical movements of basketball.

2.3.1. Generation of Text Content. In short, text processing is the integration and beautification of text content, which can be divided into three categories: static words, dynamic words, and artistic words. These three kinds of words are obtained through different ways. The most common collection of static words is obtained by copying and pasting other words. This kind of text acquisition is the most simple and fast. Its advantage is to save time and reduce the occurrence of typos. In addition, we should keep the text concise while processing, and the content theme is obvious. When encountering important and difficult points or highlighted teaching contents, we can use bold, enlarged, slanted, changed font color, and other methods for processing. In this way, the text can be made more beautiful on the whole, and the text is no longer monotonous. Its main purpose is to attract students' attention, strengthen students' awareness, and enhance their memory effect, so that students unconsciously learn the technical action essentials of basketball and cultivate students' ability of autonomous learning. Dynamic words play an irreplaceable role in attracting students' attention. It can make classroom teaching no longer boring and make the content more vivid and interesting. The production of WordArt is mainly used in the title and the key content needs to be emphasized. Fixed template can be used. Its advantage is that it makes the slides more vivid, artistic, beautiful, and attractive. At the same time, the content that needs to be explained is highlighted, which forms a sharp contrast with other contents, highlights the main part of the teaching content, and improves the teaching effect. Of course, we should pay attention to the use of text processing technology when

designing and making multimedia courseware, but we can not blindly use and ignore the real purpose of making multimedia courseware.

2.3.2. Image Processing Technology. Picture plays an important role in the teaching of multimedia courseware making. It can replace the text and even express the information that the text cannot state, so that students can understand the most basic sports knowledge and learn the technical action more intuitively. Pictures avoid the situation that students are tired of learning because of the pure text statement. Most of the pictures in courseware production are taken from network resources. Pictures from network resources cannot be inserted directly after downloading. It also needs to be processed and edited by relevant software tools, so that the selected pictures are more suitable for the basketball teaching content. The button function can make the picture enter the picture more conveniently. But in order to keep the page of multimedia courseware simple, we can choose the same type of button, so that we can realize the function of selecting the same button, the button is simple, and clear at a glance. In the light of the beauty of multimedia courseware making, we can insert some buttons brought by software, but it is important to note that when designing buttons, it is better not to present them in the form of pictures. This is to find the teaching content that needs to be explained more quickly. This requires us to make courseware buttons, try to put the buttons with the same logo, and function in the multimedia courseware in order and rules. The purpose is to explain the process more smoothly, explain the process more wonderful, and improve the teaching quality and teaching effect.

2.3.3. Video Processing Technology. In the teaching of basketball technology, some key points, difficulties, doubts, and action essentials of some action techniques are difficult to explain in language or professional terms, which cause the students to understand the technical action error, which requires video to solve these problems and fill in the shortcomings in teaching. Through video technology, the main points of basketball, easy to make mistakes, key points, difficulties, and other intuitives, concrete and image can be presented in front of students, so that students can learn basic technical actions of basketball in a short time, save the teaching hours of PE, and improve teaching efficiency. The video materials selected in the multimedia courseware production are all real-time shooting. The video shot can be played in all directions from different angles, and the specific details of each action can be clearly seen. Through the video processing software tool, the video is edited, and the correct demonstration and wrong action in basketball technical action are selected and then integrated into multimedia courseware, so that students can find their own ordinary mistakes by watching the video, so as to correct the wrong actions to obtain the standard and qualified shooting, dribbling, technical tactics, cooperation, and other technical actions.

2.4. BP Neural Network Algorithm Research. The neural network can carry out online learning and training and can train samples through network training and learning. This work studies the teaching method of basketball training based on NMT. We can use the BP neural network to train the basketball learning method, control its error, and get a result of the training method within the expected range. The BP algorithm is adjusted according to the partial derivative of sample training error to weights, and the error formula of the network is as follows:

$$E = \frac{1}{2} \sum_j (y_j^t - y_j)^2, \quad (1)$$

where y_j^t is the expected output of the j^{th} output node and y_j is the actual output of the j^{th} output node. Generally, the gradient value is calculated by calculating the partial derivative of the error function for each weight, and the calculation formula of partial derivative of error to connection weight is as follows:

$$\frac{\partial E}{\partial w_{ji}} = \frac{\partial E}{\partial y_j} \frac{\partial y_j}{\partial w_{ji}}. \quad (2)$$

Therefore, the partial derivative of the error to the sample is

$$\frac{\partial E}{\partial y_j} = -(y_j^T - y_j). \quad (3)$$

3. Experimental Study

3.1. Subjects. The main content of this study is the research of the BTT method based on NMT. In order to understand the research of MBT, this study selects 100 students as the experimental object, a group of 50 people for the basic basketball action test, the experimental group for a period of MBT, and the control group is still in accordance with the traditional basketball teaching method.

3.2. Experimental Process Steps. This study mainly uses the questionnaire survey method and experimental research analysis method. This work mainly studies the teaching method of basketball training based on NMT. This study expounds the concept and function of MBT, puts forward suggestions on BTT methods based on NMT, and studies the making method of MBT courseware. Through the questionnaire survey and experimental research, this study analyzes the influence of MBT on basketball teaching, the effectiveness of multimedia basketball students' mastery, the evaluation results of MBT, and the evaluation of the experimental group students on MBT.

4. Experimental Research and Analysis of the BTT Method Based on NMT

4.1. The Influence of MBT on Basketball Teaching. In order to study the feasibility of MBT on basketball teaching and training, this study carried out a questionnaire survey. Through the distribution of 50 questionnaires, the students who received basketball teaching and training were

investigated to study the students' feelings on the application of multimedia technology in basketball training and teaching. This study sorts out the questionnaire data and summarizes it as given in Table 1.

From Figure 1, we can see that 78% of the students in all the questionnaire surveys think that MBT has an impact on BTT, 16% of students think that MBT has general influence on BTT, and 6% of students think that MBT has no impact on BTT. At the same time, 41 of these students like to combine MBT, 7 students have general sense of MBT, and 2 students do not like MBT.

4.2. MBT. In order to better understand the effectiveness of multimedia basketball students' mastery of the situation and further understand the application of multimedia methods in basketball teaching, this study selects 100 students and divides them into the experimental group and control group. A group of 50 students carries out the basic basketball action test. The experimental group has carried out MBT for a period of time, while the control group still carries on the traditional basketball teaching method. The test results of all the students' basic basketball movements are given in Table 2.

As can be seen from Figure 2, in the experiment of multimedia basketball, the total proportion of the experimental group in the jump shot and push is 56.61%, the control group is only 33.72%, this shows that MBT can effectively improve the shooting success rate of different shooting positions, the experimental group does not press the wrist to pull the ball is 57.28%, the control group is only 42.35%, the experimental group in the jump shot and throw the ball is 63.26%, the control group is only 32.79%, MBT can effectively improve the accuracy of jump shot, the experimental group in the shooting is 70.56%, and the control group is only 53.37%. It can be seen that the results of basketball teaching and training in the experimental group are much better than those in the control group.

4.3. MBT Evaluation Results. In order to clarify the effect of MBT on students, this study selects 50 students in the experimental group for a period of MBT and then compares the teaching test results of the experimental group before and after the MBT; the results are given in Table 3.

As can be seen from Figure 3 that after MBT, the number of excellent students increased from 9 to 11, the number of good students increased from 7 to 8, the number of passing students increased from 15 to 23, and the number of failing students decreased from 19 to 8. The use of MBT can improve the efficiency and quality of teaching.

4.4. The Evaluation of the Experimental Group on MBT. After the completion of the MBT test experiment, according to the students' achievements, the students in the experimental group made a questionnaire survey on the application of multimedia technology in basketball training and teaching, and the students in the experimental group made an evaluation on the teaching effect. The results are shown in Figure 4.

TABLE 1: The influence of MBT on basketball teaching.

	Influence degree			Attitude		
	Influential	Commonly	No impact	Like	Commonly	Unlike
Number	39	8	3	41	7	2
Proportion	78%	16%	6%	82%	14%	4%

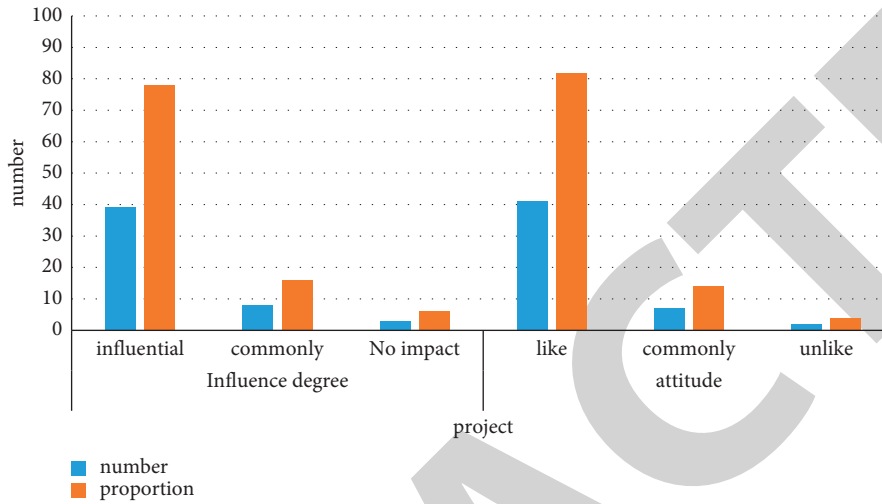


FIGURE 1: The influence of MBT on basketball teaching.

TABLE 2: Comparison of MBT.

	Jump shot and push	No pressure wrist paddle	Jump shot toss	Shoot
Experience group	56.61	57.28	63.26	70.56
Control group	33.72	42.35	32.79	53.37

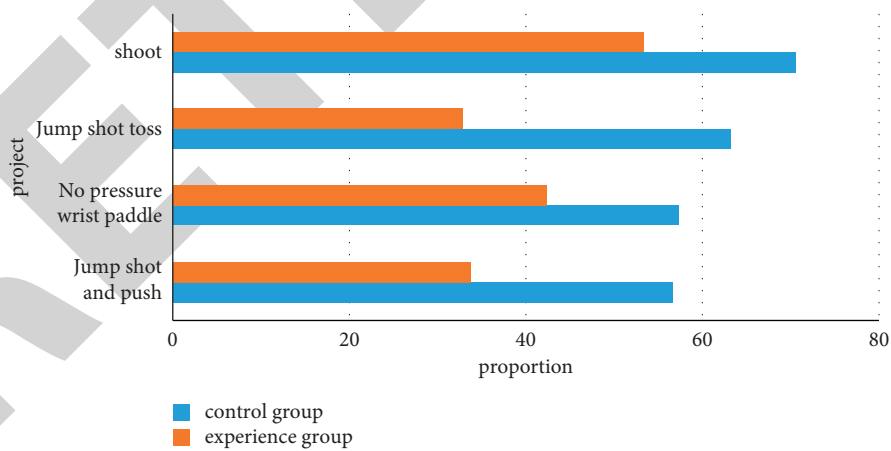


FIGURE 2: Comparison of MBT.

TABLE 3: Evaluation results of MBT.

		Excellent	Good	Pass	Fail
		Experience group	Before	9	7
	After	11	8	23	8

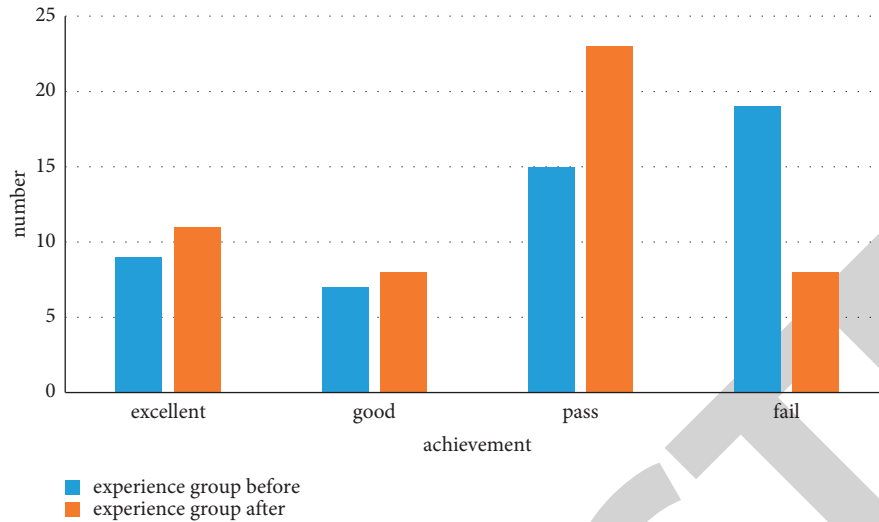


FIGURE 3: Evaluation results of MBT.

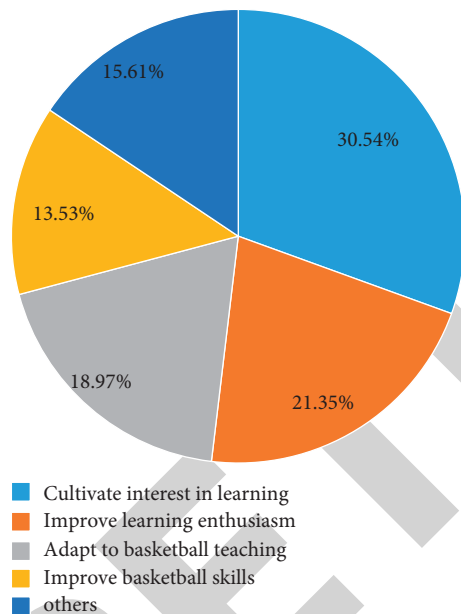


FIGURE 4: The evaluation of the experimental group on MBT.

It can be seen from Figure 4 that after the MBT test, 30.54% of the students in the experimental group think that MBT has cultivated their interest in basketball learning, 21.35% of the students think that MBT has improved their enthusiasm for basketball learning, 18.97% of the students say that they have adapted to this teaching method, and 15.61% of the students improved their basketball skills.

5. Conclusions

NMT will only be more developed, and its role in education will be more important, so it is imperative to change the traditional way of education. This work studies the teaching method of basketball training based on the NMT, using MBT to improve the effectiveness of teaching content transmission, improve the efficiency of students' learning,

improve the progress of classroom teaching, and cultivate students' ability of autonomous learning, which plays an irreplaceable role in classroom teaching. The basketball training method based on MBT proposed in this study improves the success rate of jump shot and push to 56.61%, no pressure twist pad to 57.28, jump shot toss to 63.26%, and shot to 70.56%. The application of multimedia in teaching is the integration of traditional teaching and science and technology, which has the practical value and great significance.

Data Availability

The data used to support the findings of this study are included within the article.

Disclosure

The authors confirm that the content of the manuscript has not been published or submitted for publication elsewhere.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

- [1] X. Wang, "An optimization method of basketball teaching and training system design based on motion capture technology [J]," *Revista de la Facultad de Ingenieria*, vol. 32, no. 12, pp. 498–504, 2017.
- [2] C. Yan, "Study on neural network model-based senior high school men's basketball training strategy and approach," *Journal of Computational and Theoretical Nanoscience*, vol. 13, no. 12, pp. 10059–10063, 2016.
- [3] Z. Ma, F. Wang, and S. Liu, "Feasibility analysis of VR technology in basketball training," *IEEE Access*, vol. 99, p. 1, 2020.
- [4] X. Feng and H. Fang, "An English teaching method based on network technology platform," *Boletin Tecnico/Technical Bulletin*, vol. 55, no. 12, pp. 221–226, 2017.

- [5] S. Feng and S. Sheng, "Construction of multifunctional video conversion-based multimedia teaching system for college basketball," *International Journal of Emerging Technologies in Learning*, vol. 13, no. 6, pp. 176–178, 2018.
- [6] C. Ma, "An improved method for basketball skills and teaching mode optimization based on visual action simulation," *Boletin Tecnico/Technical Bulletin*, vol. 55, no. 16, pp. 698–704, 2017.
- [7] F. Zhang, "Design and implementation of FLASH multimedia technology in basketball video software," *IPPTA: Quarterly Journal of Indian Pulp and Paper Technical-A*, vol. 30, no. 8, pp. 611–615, 2018.
- [8] T. Yue and Y. Zou, "Online teaching system of sports training based on mobile multimedia communication platform," *International Journal of Mobile Computing and Multimedia Communications*, vol. 10, no. 1, pp. 32–48, 2019.
- [9] L. Li and W. Dan, "Training management of professional basketball clubs based on the big data thinking method," *Agro Food Industry Hi-Tech*, vol. 28, no. 1, pp. 2076–2079, 2017.
- [10] J. Zhang and W. Zhang, "A network digital teaching mode of basketball based on ecological learning space," *International Journal of Emerging Technologies in Learning (iJET)*, vol. 14, no. 17, p. 59, 2019.
- [11] J. Simarmata, T. Limbong, and E. Napitupulu, "Learning application of multimedia-based-computer network using computer assisted instruction method," *International Journal of Engineering & Technology*, vol. 7, no. 2, pp. 341–344, 2018.
- [12] B. Xia, "A study of English situational teaching in the context of multimedia network," *Boletin Tecnico/Technical Bulletin*, vol. 55, no. 6, pp. 766–771, 2017.
- [13] P. Zhou, "Selection of cross-border E-commerce import model based on intelligent data analytics AHP algorithm," *Mobile Information Systems*, vol. 2021, Article ID 1351178, 8 pages, 2021.
- [14] Y. M. Lei, "Teaching method of 3-3 practice in basketball training," *Journal of Ningde Teachers College*, vol. 31, 2010.