

Using Double-Person Teaching Method Enhances the Effectiveness of Students' Sports Learning at Guangxi Vocational Institute of Technology

Zhang Yu¹ Phitorn Bhothisarn²

Abstract

This study aimed to 1) to study the connotation, extension, and classification of the double-person teaching method, and investigate the implementation path and practical mode of the double-person teaching method, 2) to compare the double-person teaching method and traditional teaching method, and compare the teaching effects before and after using the double-person teaching method and 3) to study examines the effectiveness of sports learning among students at the college using the paired teaching method. A quantitative research design was employed. The sample consisted of 86 students selected through stratified convenience sampling. Data were collected using structured questionnaires, a sports knowledge test, a motor skill assessment, and a physical activity perception scale to evaluate students' learning outcomes. The data were analyzed using SPSS 26.0 and AMOS 24.0. Statistical techniques included descriptive statistics, reliability and validity analyses, correlation analysis, multiple regression analysis, and group difference analysis.

The findings revealed that the implementation of the double-person teaching method in physical education courses was generally effective. Among its six dimensions, the task division model received the highest rating, whereas the encouragement mechanism received the lowest and requires further improvement. All six dimensions were found to have significant positive effects on students' sports learning effectiveness, particularly in sports knowledge, sports skill mastery, and movement perception. The feedback mechanism and task division model emerged as the strongest predictors of

¹ A student in MEC Master of Curriculum and Instruction of Pathumthani University.

² Curriculum lecturer of Pathumthani University.

learning effectiveness. Significant differences were also observed across student groups. Male students achieved higher learning outcomes than female students, sophomores outperformed freshmen, and students enrolled in ball sports courses demonstrated greater learning effectiveness than those participating in track and field or other sports courses. The study concludes that the double-person teaching method effectively enhances students' sports learning. The findings provide practical implications for teachers, students, and educational institutions seeking to improve the quality of physical education through collaborative teaching practices.

Keywords: Double-Person Teaching Method, Physical Education, Sports Learning Effectiveness

Introduction

In recent decades, higher education has undergone significant transformation as educational systems increasingly emphasize competency development rather than simple knowledge transmission. Traditional teacher-centered instructional approaches are gradually being replaced by student-centered learning models that promote interaction, collaboration, and active participation. As a result, innovative teaching strategies that enhance classroom engagement and learning effectiveness have attracted considerable attention from educators and researchers worldwide (Darling-Hammond et al., 2020).

Among these instructional innovations, the double-person teaching method, commonly referred to as co-teaching or team teaching, has emerged as an effective approach for improving teaching quality and learning outcomes. This method involves two instructors working collaboratively in the same classroom to design, deliver, and evaluate instruction. Typically, one instructor assumes the role of the lead teacher responsible for delivering core instructional content, while the other supports classroom management, facilitates learning activities, and provides individualized guidance to students (Friend et al., 2010). Through this collaborative structure, teaching becomes more flexible and responsive to students' diverse learning needs.

Previous studies have shown that collaborative teaching models can significantly enhance student engagement and learning performance. For example, Cook and Friend (2014) found that co-teaching improves instructional effectiveness by allowing teachers to divide responsibilities and provide more individualized support to learners. Similarly, Villa et al. (2013) reported that team teaching enhances classroom interaction and allows teachers to better monitor students' learning progress. By sharing instructional responsibilities, teachers are able to provide immediate feedback and address learning difficulties more efficiently.

The advantages of collaborative teaching are particularly evident in courses that involve practical skills and experiential learning, such as physical education. University physical education courses require students not only to understand theoretical knowledge but also to develop motor skills through repeated practice and demonstration. In traditional single-teacher classrooms, instructors often face challenges in simultaneously demonstrating sports techniques, monitoring students' movements, and providing immediate corrective feedback. This limitation may reduce learning efficiency and increase the risk of incorrect movement patterns or sports injuries (Casey & Goodyear, 2015).

The double-person teaching method provides a practical solution to these challenges. By dividing instructional responsibilities, one instructor can focus on demonstrating techniques and explaining theoretical concepts, while the other observes students' performance and offers real-time feedback and correction. This collaborative structure enhances the precision of skill instruction and allows students to receive more individualized support during practice sessions. Moreover, the presence of two instructors improves classroom supervision and safety management, which is particularly important in sports activities that involve physical contact or complex motor skills.

Another important aspect of university physical education is the diversity of students' athletic backgrounds and physical abilities. Students often vary greatly in terms of physical fitness, sports skills, and learning motivation. Some students may possess advanced sports experience, while others may have limited exposure to physical training. Traditional teaching methods often struggle to accommodate these differences effectively. However,

collaborative teaching enables instructors to organize differentiated learning activities and provide targeted guidance for different student groups, thereby improving participation and learning outcomes (Dyson et al., 2016).

Although collaborative teaching has been widely studied in general education contexts, research focusing on the application of the double-person teaching method in university physical education remains relatively limited, particularly in vocational colleges in China. Guangxi Vocational Institute of Technology, like many higher education institutions, seeks to improve the effectiveness of physical education by adopting innovative teaching approaches that enhance students' sports learning outcomes and participation.

Therefore, this study aims to examine the implementation and effectiveness of the double-person teaching method in physical education courses at Guangxi Vocational Institute of Technology. Specifically, the study investigates how this teaching method influences students' sports knowledge, motor skill development, and perception of physical activity. The findings are expected to provide empirical evidence for improving physical education instruction and contribute to the development of more effective teaching strategies in vocational higher education.

Research questions

1. At what level is the dual teaching method in the physical education teaching method system of vocational colleges in Guangxi Vocational Institute of Technology?
2. What are the main differences between the double-person teaching method and traditional teaching?
3. What positive impacts does the dual-teacher teaching method have on physical education learning among students at this college?

Research Objectives

- 1.To study the connotation, extension, and classification of the double-person teaching method, and investigate the implementation path and practical mode of the double-person teaching method.

2. To compare the double-person teaching method and traditional teaching method, and compare the teaching effects before and after using the double-person teaching method.

3. To study examines the effectiveness of sports learning among students at the college using the paired teaching method.

Research hypotheses

H1: The use of two person teaching method has a significant positive impact on college students' physical education learning.

H2: There is a significant positive correlation between the two-person teaching method and college students' sports knowledge, sports skills and sports feelings.

H3: the effectiveness of sports learning among students at the college using the paired teaching method.

Significance of the study

Theoretical significance: Conduct practical research and attempt to fill research gaps. The policy document has completed the top-level design, and the continuous research of experts and scholars has formed a mid-level understanding, providing a solid foundation for physical education teaching in universities. How to integrate teaching, learning, practice, and competition, how to operate them in an integrated manner, and how to continuously optimize them are the key to the implementation of the integration of "teaching, diligent practice, and regular competition". Through long-term teaching practice and in-depth research, we will explore stable and smooth teaching and competition styles, form a dual teaching mode for physical education, and try to fill the research gap to form a complete path from top-level design to micro practice.

Practical significance: Explore practical operation modes and strive to form a closed loop of practice. Attempt to promote the practical transformation and mechanism transformation of university physical education teaching through the dual teaching method, explore the coupling mechanism, operation mechanism, and optimization mechanism of

the dual teaching method to promote university physical education teaching mechanism, coordinate the methods of university physical education teaching and competition, connect the stages of university physical education teaching and competition, build a closed-loop channel for students' physical skills to steadily improve, and strive to form a practical closed-loop for university physical education teaching to promote students' physical practice improvement through dual teaching.

Research Instruments

The combination of "structured questionnaire + skill test scale + knowledge test paper" is adopted to collect data from multiple dimensions to ensure the comprehensiveness and accuracy of the measurement of dependent variables:

1) Questionnaire on the implementation of two-person teaching method (self-variable test)

Drawing on cooperative learning theory and physical education assessment frameworks, we developed a self-compiled questionnaire comprising 22 items across two dimensions: "Practical Implementation" (3 dimensions with 12 items) and "Operational Mechanism" (3 dimensions with 10 items). The evaluation uses a five-point Likert scale (1=not at all, 5=exactly), with examples including "My partner and I clearly divide tasks during practice, such as one practicing while the other corrects us" (task division model) and "Teachers provide targeted guidance based on our group's performance" (feedback mechanism).

2) Sports knowledge test paper (measurement of dependent variable 1)

Based on the compulsory physical education curriculum guidelines of Guangxi Polytechnic University (including textbooks like "College Physical Education" and project-specific teaching syllabi), we developed knowledge assessment tests for various sports disciplines. The test format includes multiple-choice questions (10 items, 2 points each), true/false questions (10 items, 1 point each), and short-answer questions (2 items, 10 points each), with a total score of 50 points. The content covers event rules (e.g., basketball foul calls), technical principles (e.g., force generation in badminton smashes),

and safety protocols (e.g., emergency injury management). This ensures the assessment closely aligns with students' actual learning content.

3) Motor skill test scale (measurement of dependent variable 2)

Three physical education instructors from Guangxi Vocational Institute of Technology (with over 5 years of teaching experience in specialized sports disciplines) jointly developed standardized scoring criteria for different sports. The system adopts a three-tier evaluation framework: Technical Standardization (60%), Proficiency (30%), and Application Ability (10%), with a total score of 100 points. For example, the scoring criteria for basketball .

Research Results

Based on the comprehensive analysis of the research data, the core conclusions of this study are as follows:

The implementation of the two-person teaching method in vocational colleges in Guangxi is generally good: The mean values of each dimension of the two-person teaching method are between 3.72 and 4.12 (5-point Likert scale), among which the Task Division Model has the highest implementation level ($M=4.12$), and the Encouragement Mechanism has the lowest implementation level ($M=3.72$). This indicates that the two-person teaching method has been initially applied in physical education teaching of Guangxi Vocational Institute of Technology, and the task division between two-person groups is relatively clear, but the incentive measures need to be further improved.

The two-person teaching method has a significant positive impact on students' physical education learning achievements:

Understanding of sports knowledge: The two-person teaching method can explain 31.5% of the variation in students' understanding of sports knowledge. Among them, the Feedback Mechanism ($\beta=0.213$) has the greatest impact, followed by the Task Division Model ($\beta=0.185$) and Frequency of Interactive Guidance ($\beta=0.162$).

Mastery of sports skills: The two-person teaching method can explain 37.2% of the variation in students' mastery of sports skills. The Feedback Mechanism ($\beta=0.235$) has the

strongest impact, followed by the Task Division Model ($\beta=0.203$) and Evaluation Mechanism ($\beta=0.169$).

Sports movement perception: The two-person teaching method can explain 41.0% of the variation in students' sports movement perception. The Feedback Mechanism ($\beta=0.254$) has the largest impact, followed by the Task Division Model ($\beta=0.226$) and Frequency of Interactive Guidance ($\beta=0.189$).

There are significant group differences in the learning effects of the two-person teaching method:

Gender differences: Male students' scores in understanding of sports knowledge, mastery of sports skills, and sports movement perception are significantly higher than those of female students ($p < 0.05$).

Grade differences: Sophomores' learning effects are significantly better than those of freshmen ($p < 0.05$).

Sports project differences: Students in ball games (basketball, football, badminton) have better learning effects than those in track and field and other projects ($p < 0.01$).

The key factors affecting the effect of the two-person teaching method are the Feedback Mechanism and Task Division Model: The correlation and regression analysis results show that the Feedback Mechanism and Task Division Model have the highest correlation and impact coefficients with the three dependent variables, indicating that these two factors are the core of ensuring the teaching effect of the two-person teaching method.

Discussion

This study examined the effectiveness of the double-person teaching method in enhancing students' learning outcomes in physical education at Guangxi Vocational Institute of Technology. The findings indicate that the overall implementation of the double-person teaching method in the institute was relatively high, with mean scores ranging from 3.72 to 4.12 on a five-point Likert scale. Among the dimensions, the task division model

demonstrated the highest implementation level, while the encouragement mechanism showed the lowest score. These findings suggest that collaborative instructional practices have already been incorporated into physical education teaching; however, motivational strategies still require further improvement. These findings are consistent with Villa et al. (2013), who argued that clearly defined roles, shared responsibilities, and systematic collaboration among co-teachers are essential components of effective co-teaching and contribute to improved student learning outcomes. The results also revealed that the double-person teaching method significantly improved students' learning outcomes in three key dimensions: understanding of sports knowledge, mastery of sports skills, and sports movement perception. Regression analysis showed that the teaching method explained 31.5% of the variance in sports knowledge understanding, 37.2% in sports skill mastery, and 41.0% in sports movement perception. These results indicate that collaborative teaching can effectively support both cognitive learning and practical skill development in physical education. This finding is consistent with previous studies suggesting that cooperative instructional approaches enhance both knowledge acquisition and motor skill development in sports education (Casey & Goodyear, 2015; Dyson et al., 2016).

Among the influencing factors, the feedback mechanism emerged as the most significant predictor of learning outcomes. This finding highlights the importance of timely and continuous feedback in skill-based learning environments. In physical education, immediate feedback enables students to correct incorrect movements and refine their techniques more effectively. Previous research has also emphasized that feedback plays a crucial role in improving motor learning and performance in sports education (Hattie & Timperley, 2007; Dyson & Casey, 2016). The presence of two instructors in the classroom allows for more frequent and individualized feedback, thereby enhancing students' learning experiences. The task division model was identified as another key factor influencing the effectiveness of the double-person teaching method. Clear role distribution between instructors enables more efficient classroom management and improves instructional quality. One teacher can focus on demonstrating sports techniques and explaining theoretical concepts, while the other monitors students' performance and provides

individualized guidance. This division of instructional responsibilities increases the efficiency of teaching and ensures that students receive adequate support during practical activities. These results align with the findings of Friend et al. (2010), who reported that clearly defined roles are essential for the success of collaborative teaching models.

In addition, the study revealed significant differences in learning outcomes among different student groups. Male students demonstrated higher scores in sports knowledge, sports skills, and sports movement perception than female students. This result may be related to differences in prior sports experience, physical fitness levels, or participation in sports activities. Similar gender differences in physical education performance have been reported in previous studies (Fairclough & Stratton, 2005). The findings also showed that sophomores achieved better learning outcomes than freshmen, which may be attributed to their greater familiarity with university physical education courses and higher levels of sports experience.

Furthermore, the results indicated that students participating in ball games achieved better learning outcomes than those involved in track and field activities. Ball games often require teamwork, interaction, and continuous feedback during practice, which may enhance the effectiveness of collaborative teaching strategies. Previous research has also suggested that cooperative learning approaches are particularly effective in team sports contexts where interaction and communication are essential (Dyson et al., 2016).

Overall, this study provides empirical evidence supporting the effectiveness of the double-person teaching method in vocational physical education. By improving instructional interaction, providing more frequent feedback, and enabling clearer task distribution, this teaching approach can significantly enhance students' sports learning outcomes.

Conclusion

This study aimed to investigate the effectiveness of the double-person teaching method in physical education at Guangxi Vocational Institute of Technology. The findings indicate that the implementation level of this teaching approach is relatively high, suggesting

that collaborative teaching practices have been successfully integrated into physical education instruction.

The results confirm that the double-person teaching method significantly improves students' sports learning outcomes, including their understanding of sports knowledge, mastery of sports skills, and perception of sports movement. The regression analysis demonstrated that this teaching method explains a substantial proportion of variance in students' learning outcomes, indicating its effectiveness in supporting both theoretical learning and practical skill development in physical education.

Among the various factors examined, the feedback mechanism and task division model were identified as the most influential elements affecting learning effectiveness. The presence of two instructors in the classroom enables more frequent feedback and more efficient instructional management, which contributes to improved learning performance. These findings highlight the importance of structured collaboration and effective role distribution in implementing the double-person teaching method.

The study also revealed significant differences in learning outcomes across student groups. Male students showed higher learning performance than female students, sophomores performed better than freshmen, and students participating in ball games demonstrated higher learning effectiveness than those involved in track and field activities. These results suggest that both learner characteristics and the nature of sports activities influence the effectiveness of collaborative teaching strategies.

In conclusion, the double-person teaching method represents an effective instructional model for improving learning outcomes in vocational physical education. The findings of this study provide empirical support for the adoption of collaborative teaching strategies in higher vocational institutions and offer practical insights for improving physical education teaching practices.

Practical Implications

The findings of this study provide several important implications for physical education teaching in vocational colleges.

First, teachers should emphasize the design of effective feedback mechanisms to enhance students' learning outcomes. Providing continuous feedback during practice sessions can help students improve their technical skills and learning performance.

Second, teachers should implement clear task division strategies in cooperative learning activities. This approach can increase students' participation and improve teamwork effectiveness.

Third, vocational colleges should support the implementation of collaborative teaching approaches by providing teacher training programs and sufficient teaching resources. Institutional support is essential for the successful application of innovative teaching models.

Recommendations for Future Research

Although this study provides valuable insights into the effectiveness of the double-person teaching method in vocational physical education, several directions for future research should be considered.

First, future studies should expand the research scope by including a larger and more diverse sample from multiple vocational colleges and universities. Comparative studies across different institutions and regions would provide a more comprehensive understanding of how the double-person teaching method functions in various educational contexts. Such research could also examine potential cultural, institutional, or curriculum-related factors that influence the effectiveness of collaborative teaching approaches.

Second, longitudinal research designs should be conducted to investigate the long-term impact of the double-person teaching method on students' learning outcomes. While the present study focused primarily on short-term learning achievements, future studies could explore whether this teaching approach contributes to sustained improvements in students' physical fitness, sports skill development, and long-term motivation toward physical activity.

Third, future research could explore the integration of modern educational technologies with the double-person teaching method. Emerging technologies such as

online learning platforms, motion analysis systems, and virtual simulation tools may enhance the effectiveness of physical education instruction by providing additional learning resources and feedback opportunities. Combining collaborative teaching approaches with digital learning technologies may further improve teaching efficiency and student engagement.

Finally, future studies may examine additional variables that influence the effectiveness of the double-person teaching method, such as students' learning motivation, attitudes toward physical activity, and teamwork skills. Investigating these factors could provide deeper insights into how collaborative teaching models influence both cognitive and affective aspects of students' learning in physical education.

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