

Development of a Hybrid Course Management Model to Enhance Uniball Skills for Students in Jiangxi Environmental Engineering Vocational College*



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Abstract

This study aimed (1) to investigate the needs of students for enhancing Uniball skills through hybrid courses, and (2) to develop a hybrid course management model to enhance Uniball skills for students. An exploratory mixed-methods design was employed. In Phase 1, a questionnaire survey was conducted among 411 vocational college students to analyze their learning needs and the challenges they faced. In Phase 2, focus group interviews were held with 9 experienced physical education teachers to gather insights into key instructional challenges, teaching experiences, and the feasibility of hybrid implementation.

The research result was found that:

1. A significant gap between students' current learning experiences and their expectations was identified, with key areas for improvement including the enhancement of technical and tactical skills, increased opportunities for interactive and collaborative learning, and the need for richer teaching resources and more flexible course structures. Students also highlighted challenges related to insufficient feedback, limited access to systematic learning materials, and a lack of diverse teaching methods.

2. The model was structured around five instructional phases and supported by three core components: collaborative learning management strategies, digital tools and platform integration, and a process-oriented multidimensional evaluation system.

Keywords: Uniball; Hybrid Learning; Course Management; Cooperative Learning

Introduction

China's "Healthy China 2030" policy underscores the importance of physical education in promoting students' overall development. In this context, Uniball—a culturally significant new sport—has expanded rapidly, reaching 22 provinces, over 110 universities, and 190 schools as of 2024 (General Administration of Sport of China, 2024). Despite this growth, Uniball education faces major challenges: limited teaching resources, narrow curriculum focus on

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technical skills, lack of standardized instructional frameworks, and unequal regional access (Yu, 2021).

Hybrid learning in physical education offer multiple advantages by providing abundant digital learning resources beyond class time (Graham, 2018), supplementing textbook limitations and enriching instructional strategies, balancing practical skill training with theoretical knowledge, facilitating cross-regional resource sharing (Li & He, 2023), and enhancing flexibility, student engagement, and differentiated instruction (Wang et al., 2023). In the context of hybrid sports courses—particularly Uniball instruction—the Course Management Model enhances instructional quality by establishing a systematic instructional process to improve teaching organization (Sabrina et al., 2022), standardizing instruction to ensure consistency in course delivery (Huber & Skedsmo, 2017), integrating multi-source data to construct a comprehensive evaluation system (Chango et al., 2021; Xu, 2024), and facilitating real-time feedback mechanisms to strengthen instructional adaptability and responsiveness (Cai et al., 2023). This study therefore aims to develop a hybrid course management model to enhance Uniball skills, offering a structured framework to support standardized, flexible, and equitable delivery and to promote its sustainable development systematically.

Objectives of the Research

This study aimed:

1. To investigate the needs of students for enhancing uniball skills through hybrid courses.
2. To develop a hybrid course management model to enhance uniball skill for students.

Research Methodology

This study adopts an exploratory sequential mixed-methods design to develop hybrid course management model for Uniball instruction in vocational education. The design begins with needs identification, proceeds to model construction, and integrates both quantitative and qualitative methods at different stages of the research process.

1. Population and samples

In Phase 1, the target population comprised students from Jiangxi Environmental Engineering Vocational College, which has approximately 15,000 enrolled students. Using Yamane's (1973) sample size formula, the minimum required sample was calculated to be 390. To enhance representativeness and data robustness, a final sample of 411 students was selected.

In Phase 2, the sample included 9 professional teachers specializing in physical education and Uniball instruction. Participants were selected through purposive sampling, and

all had over seven years of teaching experience. Notably, two of the teachers also held administrative positions related to curriculum planning and educational management, ensuring a diverse range of instructional and managerial perspectives.

2. Research instrument

In Phase 1, a structured questionnaire was used to investigate students' awareness, expectations, and learning needs related to Uniball skill development. The instrument utilized a five-point Likert scale, along with an open-ended item designed to elicit qualitative insights. The content validity of the questionnaire was assessed by 5 experts using the Index of Item-Objective Congruence (IOC) method to ensure alignment with the study's objectives.

In Phase 2, a semi-structured focus group discussion guide was developed to explore instructors' teaching experiences and perceptions regarding the feasibility and implementation of hybrid Uniball instruction. The guide was structured around five core instructional stages—Preparation, Instruction, Collaboration, Checking, and Assessment. The guide was reviewed by 2 doctoral-level experts in teaching and curriculum management and pilot-tested by two Uniball instructors, whose feedback led to revisions that improved its logical flow, question formulation, and overall alignment with the research objectives.

3. Collection of data

In Phase 1, data were collected via an online questionnaire distributed to students, enabling broad participation and efficient data acquisition.

In Phase 2, qualitative data were gathered through online focus group interviews with the participating instructors. All sessions were audio-recorded with participants' written informed consent. The recordings were transcribed verbatim and proofread twice for accuracy. Anonymized codes were used to replace identifying information to maintain participant confidentiality throughout the data management process.

4. Data analysis

In Phase 1, descriptive statistical methods—including mean, standard deviation, and percentage—were used to analyze the questionnaire responses. These statistics offered a comprehensive overview of students' perceptions, needs, and expectations regarding the Uniball course.

In Phase 2, content analysis and thematic analysis were applied to the qualitative data collected from focus group discussions. Transcripts were systematically coded, and recurring statements were categorized into thematic clusters based on their frequency, relevance, and conceptual alignment. Direct quotes were used to illustrate commonly reported teaching experiences, instructional challenges, and attitudes toward hybrid course implementation, thereby capturing the depth and diversity of participants' views.

Research Results

The 1st objective is to investigate the needs of students for enhancing Uniball skills through hybrid courses. It was found that the survey of 411 vocational students revealed that 72.7% were first-year students, and 58.2% were male. 52.3% had prior exposure to Uniball. In terms of satisfaction, 56.93% of students expressed satisfaction (24.57% very satisfied, 32.36% quite satisfied), but 38.20% remained neutral, signaling the need for improved course engagement. As for preferred learning formats, 57.66% favored a hybrid approach, combining online and offline instruction.

Gap analysis comparing current perceptions to expected levels identified priority areas for course improvement:

Important Learning Components: The greatest perceived gap was in *technical skills* (PNI = 0.184), followed by *tactical strategy* (0.173) and *competition rules* (0.165), indicating strong student demand for skill-based and strategic training.

Attractiveness of Course Aspects: *Teamwork* had the highest gap (PNI = 0.219), highlighting the value students place on interactive and collaborative learning.

Improvement in Course Aspects: The *richness of teaching resources* showed the largest gap (PNI = 0.263), followed by *class schedule* (0.193) and *feedback timeliness* (0.163), suggesting a need for enhanced content and structural organization.

Learning Difficulties: The *lack of systematic resources* was the top challenge (PNI = 0.145), along with *intensive scheduling* (0.123) and *inadequate teacher feedback* (0.110).

Teaching Method Challenges: The largest gap was in *lack of interactive and diverse teaching methods* (PNI = 0.123), followed by imbalance between theory and practice (0.122).

Support Types: Students most needed *group discussion and teamwork* opportunities (PNI = 0.162), *teacher feedback* (0.142), and *video teaching* (0.120), reflecting a clear preference for hybrid, interactive, and multimedia-supported learning environments.

In conclusion, the findings highlight the urgent need to enhance technical and tactical skill training, interactive learning opportunities, and resource-rich hybrid instruction in Uniball courses to better align with student expectations and learning needs.

The 2nd objective is to develop a hybrid course management model to enhance Uniball skills for students. It was found that thematic analysis of the interviews revealed five recurring challenges in current teaching practices: low student engagement, fragmented resources, difficulty in differentiated instruction, weak group collaboration, and incomplete evaluation systems. These challenges were analyzed across the five instructional stages—Preparation, Instruction, Collaboration, Checking, and Assessment—highlighting stage-specific issues and gaps. Teachers also provided detailed insights into the appropriate balance of online and offline tasks per stage, supporting a task-driven, flexible hybrid approach. Furthermore, the study examined cooperative learning management, media and technology needs, and current evaluation practices. Table 1 summarizes the key instructional tasks, hybrid

learning configurations, management approaches, assessment methods, and digital tools associated with each stage—constituting the essential structure and functional modules of this hybrid course management model.

Table 1: Hybrid Course Management Model for Uniball Instruction

Teaching Phase	Core Tasks	Hybrid Configuration	Management	Evaluation	Digital Tools
1. Preparation	Content preview, goal setting	Mainly online; videos, LMS	Group coordination, tracking	Online quizzes, self-checks	Superstar, Rain Classroom, LMS
2. Instruction	Skill demonstration, correction	Mainly offline; online for review	Role rotation, layered tasks	Teacher observation, AI feedback	AI motion analysis, PPT archive
3. Collaboration	Tactical practice, team tasks	Offline drills; online planning	Task boards, rotating leaders	Peer/self-evaluation	Tencent Docs, task boards
4. Checking	Skill diagnosis, peer feedback	Hybrid walkthroughs	Self-reports, peer review	Micro-assessments	Tencent Forms, practice uploads
5. Assessment	Final skill/tactical evaluation	Offline performance; online portfolio	Rubrics, reflection logs	AI-assisted and portfolio-based	e-Portfolio, rubric tools

Based on the findings from the focus group discussions with 9 experienced vocational college teachers, a Hybrid Course Management Model for Uniball Instruction was developed to address the challenges identified in current teaching practices. This structured model aims to enhance students' Uniball skills, tactical awareness, and collaborative competence (see Figure 1).

Rooted in the philosophy of task-driven collaborative learning, the model integrates both online and offline instructional strategies across five core teaching phases: Preparation, Instruction, Collaboration, Checking, and Assessment. Each phase is aligned with specific pedagogical tasks and supported by a set of cooperative learning management strategies, digital tools and platforms, as well as process-based and multidimensional evaluation mechanisms.

Together, these integrated components are designed to promote effective collaboration, flexible instruction, and formative assessment within a hybrid learning environment tailored to Uniball skill development.

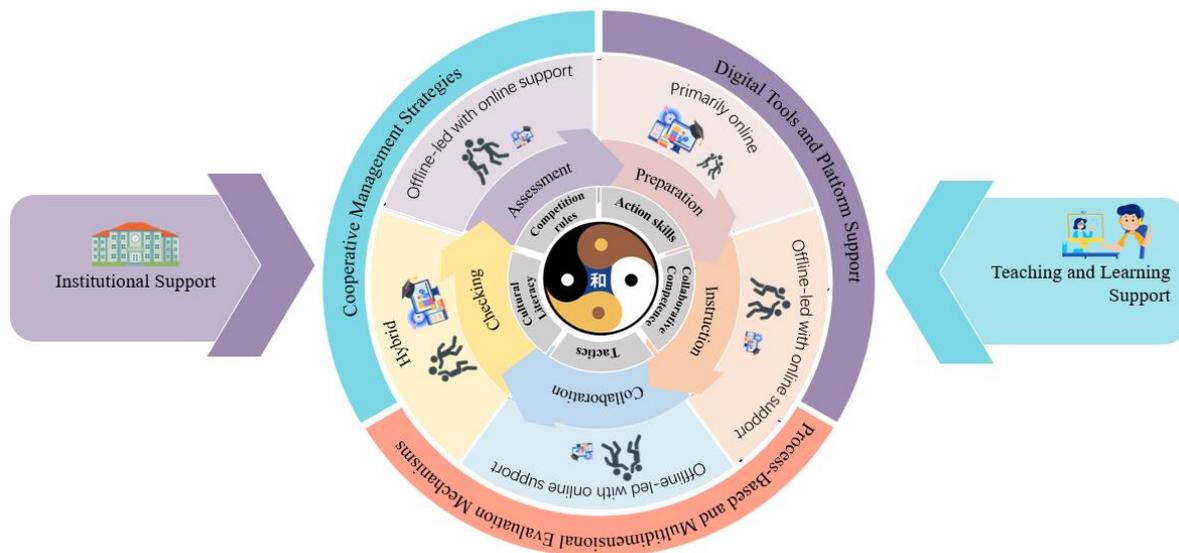


Figure 1: Hybrid Course Management Model for Uniball

The New Body of Knowledge

This study produced a Hybrid Course Management Model to enhance Uniball skills in vocational students. The model combines clear instructional steps (Preparation, Instruction, Collaboration, Checking, Assessment) with teaching, learning and institution support systems. It improves learning by blending online resources with face-to-face practice, ensures consistent teaching quality, and expands access to education. Schools can adopt this structured approach to develop skills-based courses, promote student engagement, and reduce regional disparities.

Discussion of Research Results

From the research result of the 1st objective, it was found that students showed a strong preference for a hybrid course combining online and offline learning (57.66%), along with high expectations for technical skill development, teamwork, resource-rich instruction, and personalized feedback. This is because the current Uniball course lacks systematic curriculum design, sufficient digital support, and interactive learning opportunities, which hinder students' ability to engage in self-directed and collaborative learning. These findings are consistent with the concept, theory, and research work of Garrison and Vaughan's (2008) Community of Inquiry framework, which emphasizes the integration of cognitive, teaching, and social presence in blended learning environments, and Wang et al. (2022), who highlighted the benefits of hybrid models in enhancing flexibility, personalization, and learning outcomes in sports education. Furthermore, the identified need for digital resources, such as structured video tutorials and mobile-friendly learning platforms, aligns with the work of Casey et al. (2017) and Østerlie et al. (2023), who emphasized the role of digital infrastructure in supporting

learning beyond the physical classroom. Students' demand for more collaborative and group-based activities also echoes findings from Dyson (2001) and Fernandez-Rio & Casey (2021), who reported that cooperative learning increases motivation and shared responsibility. The emphasis on real-time teacher feedback and context-specific formative assessment is consistent with Black and Wiliam's (1998) formative assessment theory and Nicol and Macfarlane-Dick's (2006) self-regulated learning model.

From the research result of the 2nd objective, it was found that the development of the hybrid course management model was effectively guided by practical insights from Uniball instructors. This is because the challenges they raised—such as unclear group roles, limited digital resources, monotonous instruction, and insufficient feedback—highlighted key gaps in current Uniball pedagogy and directly shaped the model's design. These findings are consistent with the concepts and research of Dyson and Grineski (2001) on structured collaboration, Østerlie et al. (2023) on meaningful technology integration, and Garrison and Vaughan's (2008) Community of Inquiry framework. In addition, the emphasis on clearer group roles and accountability aligns with Fernandez-Rio and Casey (2021), while the recommended use of online platforms for theory and reflection, alongside face-to-face skill correction, reflects findings by Kao (2019) and Yang et al. (2021). The integration of formative tools, such as video reviews and skill checklists, responds to feedback gaps and supports the principles of Black and Wiliam (1998) and Nicol and Macfarlane-Dick (2006).

Conclusion

This study developed a Hybrid Course Management Model to enhance Uniball skills among vocational college students. The students faced challenges such as insufficient feedback, limited access to systematic learning materials, and a lack of diverse teaching methods. To address these needs, the model was designed with clear instructional phases—Preparation, Instruction, Collaboration, Checking, and Assessment—supported by institutional and teaching resources. Expert evaluation confirmed its appropriateness and feasibility, while teacher and student feedback highlighted its potential to improve learning outcomes. The model offers a structured, flexible approach that blends online and offline methods, aiming to raise teaching quality, support equitable access, and promote effective skill development in vocational education.

Suggestions

Based on the findings of this research, the following recommendations are proposed:

1. The suggestions from the research

The results from the 1st objective revealed that students experienced difficulties due to insufficient online resources, lack of practical training opportunities, and unbalanced theory and practice in Uniball courses. Therefore, educational institutions and curriculum

development departments should enhance teaching infrastructure by integrating digital learning tools, increasing hands-on practice sessions, and adjusting content to ensure a better balance between theory and practice.

The results from the 2nd objective found that the newly developed Hybrid Course Management Model comprises five instructional phases—Preparation, Instruction, Collaboration, Checking, and Assessment—and two support systems. Therefore, educational administrators and vocational colleges should adopt and adapt this model to structure Uniball and other skill-based courses, offering training to instructors on how to implement the model effectively.

2. The suggestions for future research

Future research should be built upon this study by focusing on the following topics:

2.1 A longitudinal study to examine the long-term impact of the hybrid model on students' skill development and learning outcomes.

2.2 A comparative study between traditional and hybrid models in teaching Uniball or similar sports in vocational education.

2.3 The effectiveness of digital teaching materials and online platforms specifically tailored to Uniball instruction.

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