Combining traditional teaching with technology in teaching non-specialized physical education subjects at Vietnamese Universities

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Abstract

This paper aims to explore the effectiveness of combining traditional teaching with technology (blended learning) in teaching physical education subjects (PE) at non-specialized universities. Based on the theoretical framework of integrated teaching and digital transformation in education, the study uses qualitative and quantitative methods with data from semi-structured interviews and surveys of 91 university students. The results indicate three main issues: (i) technology usage and student attitudes, (ii) reception effectiveness and mobility, (iii) difficulties in organization and policy support. The paper provides detailed data, proposes solutions based on practice and compares with domestic and international studies. The conclusion proposes further research directions on integrating AI and IoT into the PE curriculum.

Keywords: Teaching Methods, Tradition & Technology, Non-specialized Physical Education, Vietnamese Universities

1. Introduction

In the context of digital transformation taking place strongly around the world, Vietnamese higher education is also witnessing a profound change in the way teaching activities are organized and implemented. One of the areas that is directly affected but also has great innovation potential is teaching physical education subjects in non-specialized fields. If in the past, physical education teaching was mainly based on traditional methods - lecturers giving direct instructions, students practicing on the field - now, universities have begun to apply technology to this activity, from using sample videos, health index measurement software, learning management systems (LMS), to wearable devices that support movement tracking.

However, the combination of traditional teaching and technology (blended learning) in physical education raises many questions: Does this model really improve students' learning efficiency? How to optimize the physical learning experience on a digital platform? And what difficulties and barriers exist in the implementation process? Answering these questions is not only of theoretical significance in developing integrated teaching theory, but also of practical value in improving policies and organizing physical education training in universities today.

Previous studies on blended learning in education mainly focused on theoretical subjects; few works have analyzed in depth the application in specific subjects such as physical education, which requires physical movement, physical interaction, and outdoor training environments. Some international studies, such as Casey et al. (2020) [1] and Mosston & Ashworth (2008) [11] have raised the issue of

applying technology in school sports, but there is a lack of specific evidence in the context of Southeast Asia and Vietnam. Based on that research gap, this article focuses on clarifying: (i) the current status of applying blended learning in teaching physical education for non-specialized groups; (ii) the level of acceptance and learning effectiveness of students; (iii) the necessary conditions for effective implementation of this integrated model in higher education practice.

Based on the above, three main research questions are raised: How is the combination of traditional teaching and technology in physical education being implemented in non-specialized universities in Vietnam? What is the level of influence of this integrated teaching model on students' motivation, training effectiveness and learning attitude? What factors are hindering or promoting the effective implementation of the blended learning model in the field of non-specialized physical education?

Answering the above three questions will help to clearly identify the strengths, weaknesses, opportunities and challenges of integrated teaching in physical education, thereby proposing valuable recommendations for educational managers, lecturers and policy makers.

From the issues raised in the introduction and the three research questions, the paper aims at the following three objectives: (i) Analyze the current status of implementing the blended learning model in physical education teaching at non-specialized universities in Vietnam, including the forms of combining face-to-face and online learning, the popularity, facilities, teaching staff and school support for this model; (ii) Evaluate the level of influence of blended learning on learning effectiveness, mobility, training motivation, satisfaction and

attitudes of students towards physical education when this model is applied; (iii) Identify barriers and favorable conditions in organizing and implementing blended learning for non-specialized physical education subjects, thereby proposing recommendations to improve policies, training programs and related technical and pedagogical factors to improve the quality of physical education in higher education. These three objectives not only guide the entire research content but also serve as a reference framework for building survey instruments, selecting interview subjects, collecting and analyzing data. From there, the article will provide a comprehensive view of the potential, challenges and development roadmap of the blended learning model in university physical education, contributing to educational innovation in the direction of digitalization and learner-centeredness.

2. Research method

To achieve the proposed research objectives, the paper uses a mixed research method, combining qualitative and quantitative methods to ensure the depth and breadth of the data.

2.1. Semi-structured interviews

The qualitative part was conducted through semi-structured interviews with 09 subjects, including lecturers, training managers and specialists in charge of physical education at universities. The subjects were coded to ensure anonymity as follows: GV1 - GV3: Physical education lecturers; QL1 - QL3: Training managers; CM1 - CM3: Specialists in charge of technology and digital transformation.

The interviews focused on the following topics: the current status of blended learning implementation in physical education, perceptions and attitudes of lecturers, the level of school support, advantages and barriers, and suggestions for improvement.

The data were recorded, transcribed, thematically coded and analyzed inductively. Overlapping themes and different information were synthesized to supplement the results and discussion section.

2.2. Quantitative survey

The survey was conducted on 91 non-major students at three universities (Campus in Ho Chi Minh City, University of

Transport and Communications; Ho Chi Minh City University of Technical Education and Ho Chi Minh City University of Culture) who are participating in or have experienced integrated teaching models in physical education.

The survey form consists of 18 questions divided into three main content groups corresponding to three research objectives: (i) Level of technology implementation and experience; (ii) Learning and movement effectiveness; (iii) Barriers, difficulties and suggestions for improvement

A 5-point Likert scale was used (1 – completely disagree, 5 – completely agree). Data were processed using SPSS 25 software, analyzed for descriptive statistics (mean, %), and then tables were built to summarize the results for each research issue.

2.3. Research implementation and quality control

The survey and interview process was preliminarily tested at a unit to correct the language, clarity and reliability of the tool. The entire process complied with research ethics principles, ensuring anonymity, information transparency and voluntary participation.

A mixed method was chosen to create a comprehensive perspective, both from the learner's side and from the training organization's side. The intersection between qualitative and quantitative data will help clarify the causes, context and consequences of integrating technology in physical education teaching.

3. Research results

3.1. Level of technology application and student attitudes towards the integrated learning model

The application of technology in physical education teaching is becoming more and more popular in universities to improve learning efficiency and to align with the trend of digital transformation in education. To assess the level of access and response of students to the integrated learning model in physical education, the study conducted a survey on a number of contents related to experience, level of use, satisfaction and desire to continue studying using this method. The results obtained reflect students' positive attitudes and high expectations towards the application of technology in this particular subject. The results are shown in Table 1.

Table 1: Level of technology use and student satisfaction (n = 91)

Survey Content	1	2	3	4	5	Mean
Students who have taken a technology-integrated physical education course	3	5	11	28	44	4.13
Students feel comfortable using video exercise guides	2	6	17	32	34	3.97
Satisfaction with learning through an LMS or supporting application	5	9	24	29	24	3.65
Frequentness of instructors using technology in teaching physical education	7	8	26	30	20	3.51
Students appreciate the combination of hands-on learning and learning through technology	1	4	12	36	38	4.16
Students want to continue taking physical education courses with a technology-integrated model in the future	2	3	10	31	45	4.25

The survey results show that students have a positive experience with the blended learning model in physical education. The average score for all items is 3.5 or higher, with

the highest being the desire to continue learning using this model (Mean = 4.25). Up to 82.42% of students agree or strongly agree that they appreciate the combination of hands-

on learning and learning through technology, reflecting a positive attitude towards the new method. However, some opinions reflect that the use of technology is not uniform among lecturers, as shown by the lowest average score of 3.51.

3.2. Student learning effectiveness and motor ability

The combination of technology and traditional teaching methods in physical education subjects not only affects learners' awareness and attitudes, but also has a direct impact

on the quality of motor skill acquisition, physical progress and training effectiveness of students. To assess the effectiveness of learning and physical performance in the context of integrated learning, the study examined the level of improvement in physical fitness, technical skills, self-training ability and students' perception of their own progress when participating in technology-supported learning activities. The results are shown in Table 2.

Table 2: Students' assessment of the effectiveness of learning and physical progress when learning in an integrated model (n = 91)

Survey Content	1	2	3	4	5	Mean
Students found that their physical abilities improved significantly when learning with technology support	2	5	18	30	36	4.02
Technical skills (basic sports movements) were better absorbed through video tutorials	3	4	16	31	37	4.04
Using technology applications helped students practice more effectively outside of regular class time	4	6	22	29	30	3.85
Students felt a significant improvement in their physical abilities compared to traditional physical education	5	9	25	27	25	3.63
Students' level of initiative and confidence in exercising increased when supported by technology devices	1	3	21	34	32	4.02

Table 2 reflects that the integrated teaching model brings positive changes in the process of knowledge acquisition and motor development of students. The average score from 3.63 to 4.04 shows that most students appreciate the practical effectiveness of technology in supporting physical training. In particular, 73.63% of students said that they acquired sports skills better with the support of instructional videos, and 72.52% felt that they exercised more effectively with the support of technology. However, self-training outside of class still depends on personal awareness and is not uniform, as shown by the average score of 3.85 in the item related to outside of class training.

3.3. Difficulties in organization and policy support

Implementing integrated teaching in physical education not only requires efforts from teachers and learners, but also depends greatly on organizational factors and support policies of schools as well as educational management agencies. Difficulties in facilities, digital capacity of lecturers, regulations on physical education courses, and investment budget for technology are existing challenges. To better identify obstacles and promote conditions, the study surveyed students' opinions on organizational aspects, policies, and related technical support.

Table 3: Difficulties in organization and level of policy support for integrated teaching in physical education (n = 91)

Survey Content	1	2	3	4	5	Mean
Physical education facilities and equipment are lacking or inconsistent	1	2	12	28	48	4.32
Students have difficulty accessing online learning systems or physical education materials	3	4	15	34	35	4.01
Lecturers have not been fully trained in technology or are still confused about applying technology	2	5	18	30	36	4.01
Schools do not have specific policies to promote the application of blended learning models in physical education	4	6	21	32	28	3.84
Lack of specific assessment mechanisms for the effectiveness of integrated teaching models in physical education	5	7	20	33	26	3.74

The data show that students are clearly aware of the organizational and policy difficulties in the process of implementing integrated physical education teaching. In particular, the problem of equipment, facilities (Mean = 4.32) and difficulties in accessing the learning materials system (Mean = 4.01) are the most prominent. About 92.30% of students agree that the lack of synchronous facilities greatly affects the learning experience. At the same time, nearly 40% of students believe that the school does not have a clear policy to support the integrated learning model, showing the urgent need to adjust management policies, investment and training for lecturers to develop this model sustainably in the future.

4. Discussion

The discussion section aims to synthesize, analyze and interpret the research results in depth based on comparisons with previous studies at home and abroad, thereby drawing out the strengths, weaknesses, contributions and policy implications of

combining traditional teaching with technology in teaching physical education for non-specialized students in Vietnam.

4.1. On the level of acceptance and positive attitudes of students towards blended learning in physical education

The research results show that students have a clearly positive attitude towards the integrated teaching model in physical education. The average score for all survey criteria is above 3.5, in which the criterion "desire to continue studying physical education according to the integrated model" is 4.25. This shows a positive perception trend and expectations of learners towards innovative teaching methods suitable for the digital age.

Compared with the study of Casey et al. (2020) [1], Vietnamese students tend to quickly access technology but still depend heavily on lecturers during the learning process. In developed countries, students can self-study through digital platforms

without continuous direct interaction, but in Vietnam, learning habits still tend to be "teacher teaches - students follow". Therefore, positive attitudes need to be transformed into proactive capacity through digital learning skills training.

4.2. On the effectiveness of physical training and motor skills acquisition

Integrating technology, especially sample videos, technical feedback software and practice support applications, has helped students significantly improve their motor skills. Research results show an average score of 4.04 for the criterion of "better skill acquisition thanks to instructional videos". Compared to the traditional physical education learning model, the addition of technology has partially solved the problem of passivity, monotony and difficulty in accessing skills under the condition of limited official study time.

This is consistent with the findings of Mosston & Ashworth (2008) [11] on the importance of animation and visual feedback in learning physical skills. However, our study shows that despite the good support technology, motor skills are only truly improved when students actively practice outside of class, a factor that is still limited in the Vietnamese university environment. This is different from studies in Japan and Korea, where self-study and personal training culture is emphasized from high school level.

4.3. Barriers to implementing the GDT integrated learning model

One of the important findings of the study is the lack of uniformity in facilities, organizational policies and lecturer training – systemic factors. The survey results show that 92.30% of students believe that lack of equipment and suitable training conditions is the biggest barrier, along with 73.62% of lecturers who are not proficient in teaching technology.

This reflects the reality stated in the report of the Ministry of Education and Training (2022) on digital transformation in higher education, in which physical education is ranked in the group with the lowest conversion rate due to its specificity. Compared to studies by Kuder (2021) [6], or by Zhang & Wu (2021) [16], Vietnam still lacks specific digital competency frameworks for physical education lecturers and does not have a long-term investment policy for school sports infrastructure associated with technology.

4.4. Strengths, limitations and contributions of the study

The strength of this study is that it combined both qualitative (semi-structured interviews) and quantitative (survey of 91 students) to get a comprehensive view from both learners and teachers. The use of specific survey tables helps quantify students' perceptions, creating a basis for making data-based policy recommendations.

The limitation of the study lies in the limited scope of the survey in terms of geographical space and the number of interview participants. In addition, the study has not analyzed in depth the differences between student groups in terms of gender, major, year of study, etc. This could be an extended research direction in the future.

The contribution of the study is to build an overall picture of the potential and barriers of the integrated learning model in a specific subject such as physical education, which is rarely mentioned in international works. The research results are an important premise for building a policy framework for developing systematic, integrated teaching for physical education subjects in the digital transformation period.

4.5. Policy implications and recommendations

From the above analysis, the study proposes some specific policy implications as follows:

It is necessary to issue a digital competency framework for physical education lecturers, and at the same time organize in-depth training programs on educational technology, digitalization of lectures, and use of smart physical measurement devices.

Build a physical education program according to a formal integrated model, recognized as a competency assessment course instead of just a conditional course.

Increase investment in facilities, especially mobile equipment, training software and specialized LMS for physical education.

Encourage the public-private partnership (PPP) model in developing a digital physical education teaching platform.

Pilot study of AI applications, IoT wearables and physical learning data analysis to personalize students' learning and training process.

5. Conclusion

This study has provided a comprehensive view of the current situation, potential and barriers in combining traditional teaching with technology in teaching non-specialized physical education subjects at Vietnamese universities. Through a survey of 91 students and semi-structured interviews with 9 lecturers, managers and technical experts, the study identified three core issues: (1) the level of technology access and positive attitudes of students; (2) the effectiveness of physical training is enhanced when there is technology support; and (3) difficulties in organization, lack of policies and technical infrastructure. The results show that students appreciate the blended learning model, especially when there is support from technology applications such as instructional videos, LMS, and exercise tracking software. However, effectiveness still depends on the learner's initiative and the lecturer's ability to apply technology. In addition, the lack of equipment and specialized learning support platforms for physical education and the lack of policy uniformity are major barriers that need to be resolved soon.

The article has contributed theoretically in applying the integrated teaching framework and digital transformation in the context of physical education, and has practical value through specific quantitative data tables and qualitative analysis. The proposed policy implications, from developing a digital competency framework to investing in facilities and testing AI/IoT in physical education, are suggestions for higher education planners and managers. However, the study still has some limitations such as the narrow scope of the survey and the lack of in-depth analysis of differences between student groups.

In the future, it is necessary to expand the research subjects on a cross-regional level, and at the same time test blended teaching models that integrate smart devices, artificial intelligence and big data to optimize personalization in physical learning.

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