

Current Status and Challenges of Online Physical Education among University Students in Vietnam

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Abstract:

Background: Online and blended learning have become increasingly important in higher education, but physical education (PE) presents distinctive challenges because learning outcomes depend on movement practice, observation, feedback, and safe participation. **Objective:** This study examined the current status of online PE from university students' perspectives, focusing on digital content and learning materials, teaching organisation, assessment and self-practice tasks, engagement and self-regulated learning, perceived barriers, technological infrastructure, and overall perceived effectiveness. **Methods:** A cross-sectional survey was conducted with 300 university students in Vietnam during the 2021–2022 period. A 39-item instrument organised into seven domains was developed through literature review, expert consultation, pilot refinement, and reliability testing. Items were rated on five-point Likert scales. Descriptive statistics were used; the analysis was explicitly interpreted as descriptive rather than causal. **Results:** Student engagement, self-learning capacity, and motivation received the highest domain mean ($M=3.71$, $SD=0.48$), followed by online content and digital learning materials ($M=3.66$, $SD=0.61$), teaching methods and organisation ($M=3.63$), and infrastructure/LMS/management ($M=3.61$, $SD=0.53$). Assessment and self-practice tasks were rated somewhat lower ($M=3.53$). Perceived barriers were generally low ($M=2.57$, $SD=0.51$), although maintaining concentration/self-discipline, safety or injury concerns, and time management remained notable. Overall perceived effectiveness was moderate-to-good ($M=3.43$, $SD=0.58$). Students particularly valued the suitability of combining online and face-to-face learning. **Conclusion:** Online PE was feasible for theoretical content, digital resources, task distribution, and progress monitoring, but its effectiveness was constrained by the practical nature of PE. The findings support a blended approach in which digital environments complement rather than replace face-to-face practice, technical correction, skill assessment, and safety supervision.

Keywords: *online physical education; blended learning; university students; digital learning materials; learning management system; self-regulated learning*

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1. INTRODUCTION

Digital transformation has reshaped higher education by expanding the use of online learning, learning management systems (LMSs), digital resources, synchronous communication, and data-supported learning processes. Online education is no longer limited to the transmission of lectures through the Internet; it increasingly involves the coordinated design of learning materials, interaction, assessment, feedback, and learning-process management [1]. The rapid transition to remote teaching during the COVID-19 pandemic further accelerated this development, while also demonstrating that emergency remote teaching and purposefully designed online learning should not be treated as equivalent [2].

Physical education (PE) is a particularly demanding context for digital delivery. Unlike predominantly theoretical courses, PE requires students to perform movements, observe demonstrations, receive technical corrections, regulate exercise intensity, and participate safely. D'Agostino et al. [3] highlighted issues of equity, access, learning tools, and support for physical activity in virtual PE. These characteristics mean that the effectiveness of online PE depends not only on technology, but also on the pedagogical design of practice tasks, the quality of digital demonstrations, teacher–student interaction, assessment procedures, and students' capacity for self-directed practice.

Blended learning may offer a more appropriate long-term direction for PE. It combines the flexibility and accessibility of online learning with opportunities for direct demonstration, supervised practice, correction of movement errors, and authentic skill assessment. Earlier higher-education research has described the transformative potential of blended learning [4], while more recent PE-specific evidence indicates that blended approaches can support learning when online and face-to-face components are deliberately aligned with different learning outcomes [5,6].

Student engagement and self-regulation are also central. Online learning requires students to manage time, prepare learning materials, monitor progress, sustain motivation, and complete learning tasks with less direct supervision. Research on self-regulated learning has consistently linked planning, monitoring, and regulation strategies with successful online learning [7,8]. Engagement is similarly influenced by interaction with instructors, peers, learning content, and the learning environment [9,10].

In Vietnam, the rapid expansion of digital higher education has created opportunities to integrate online components into university PE. However, evidence is still needed regarding how students experience the different components of online PE, particularly digital materials, teaching organisation, assessment, self-practice, engagement, barriers, and technological support. Importantly, these dimensions should not be reduced to a single satisfaction score because PE involves both cognitive and motor-learning requirements.

Accordingly, the purpose of this study was to describe the current status of online PE at a Vietnamese university from the student perspective. The study addressed seven domains: (1) online content and digital learning materials; (2) teaching methods and organisational forms; (3) assessment and self-practice tasks; (4) participation, self-learning capacity, and motivation; (5) barriers to online learning and self-practice; (6) technological infrastructure, LMS, and management; and (7) overall perceived effectiveness. The study was descriptive and did not seek to establish causal relationships among these domains.

Materials and Methods

Study design and context

A cross-sectional descriptive survey design was used. Data were collected mainly during 2021–2022, when university teaching was still affected by the COVID-19 period and was transitioning from extensive online delivery toward face-to-face and blended formats. Therefore, the findings represent the conditions at the time of data collection and should not be interpreted as a complete description of the university's technological infrastructure or policy environment in 2026.

Participants

The survey included 300 university students who had experience with online components of PE courses. Students were drawn from multiple academic faculties. The largest proportions came from high-quality training programmes (27.3%), Economics (15.3%), and Mechanical Engineering (14.0%), with the remainder distributed

across other faculties. By year of study, 71.7% were second-year students, 22.3% were third-year students, and 6.0% were fourth-year students. First-year students were not included in the main survey because they had not yet fully participated in the relevant elective PE course sequence.

Instrument development

The questionnaire was developed in three stages: initial item construction based on the theoretical and empirical literature; expert review and pilot interviewing followed by revision; and reliability testing before final use. The final instrument contained 39 items across seven domains. The domains were: online content and digital learning materials (6 items); teaching methods and organisation (6); assessment and self-practice tasks (6); participation, self-learning capacity, and motivation (6); barriers to online learning and self-practice (6); technological infrastructure, LMS, and management (6); and overall perceived effectiveness (3).

Items were rated on five-point Likert scales. Depending on the statement, response anchors ranged from 1 (strongly disagree/very dissatisfied/very unimportant) to 5 (strongly agree/very satisfied/very important). For the barrier domain, higher scores indicated greater perceived difficulty. Internal consistency was examined on the 300 valid responses using Cronbach's $\alpha \geq .70$ and corrected item-total correlation $\geq .30$ as acceptance criteria. All seven scales met the stated reliability threshold, and no item was removed. Reliability was treated as evidence of internal consistency only and not as proof of structural validity.

Data analysis

Descriptive statistics (mean and standard deviation) were used to summarise item- and domain-level responses. Domain means were compared descriptively to identify relative strengths and areas requiring improvement. Because the study was cross-sectional and descriptive, differences among domain means were not interpreted as causal effects or as a ranking of causal importance.

Ethical considerations

The source dissertation does not provide sufficient information in the sections used for this article to state a formal institutional ethics approval number. The final journal submission should therefore include the exact institutional approval/exemption and informed-consent statement supported by the author's official documentation. No ethics approval number should be added without documentary evidence.

Results

Overall profile of the seven domains

The strongest student-rated domain was participation, self-learning capacity, and motivation ($M=3.71$, $SD=0.48$). Online content and digital learning materials ($M=3.66$, $SD=0.61$), teaching methods and organisation ($M=3.63$), technological infrastructure/LMS/management ($M=3.61$, $SD=0.53$), and assessment/self-practice tasks ($M=3.53$) were all evaluated positively. Overall perceived effectiveness was $M=3.43$ ($SD=0.58$). The barrier domain had a mean of 2.57 ($SD=0.51$); because higher barrier scores indicate greater difficulty, this value represents a generally low level of perceived barriers.

To provide an overall comparison of students' perceptions across the seven dimensions examined, Table 1 summarises the domain-level mean scores, standard deviations where available, and their descriptive interpretations.

Table 1. Summary of student evaluations across the seven survey domains (n=300).

Domain	Mean	SD	Interpretation
Online content and digital learning materials	3.66	0.61	Positive
Teaching methods and organisation	3.63	—	Positive
Assessment and self-practice tasks	3.53	—	Positive
Participation, self-learning capacity, and motivation	3.71	0.48	Positive
Barriers to online learning and self-practice*	2.57	0.51	Low barriers
Technological infrastructure, LMS, and management	3.61	0.53	Positive
Overall perceived effectiveness	3.43	0.58	Moderate-to-good

*Higher scores indicate greater barriers. "—" indicates that a domain-level SD was not available in the extracted dissertation results used for this manuscript and was not estimated.

Online content and digital learning materials

The domain mean was 3.66 (SD=0.61). Students rated the contribution of online content to understanding PE theory most highly (M=3.84, SD=0.77), followed by alignment of online content with course objectives (M=3.78, SD=0.80). Digital materials supporting preparation before class scored 3.66 (SD=0.70), and the clarity of technical demonstration videos scored 3.62 (SD=0.75). Lower ratings were observed for the usefulness of digital materials for self-learning and self-practice (M=3.55, SD=0.68) and for the completeness, updating, and accessibility of materials (M=3.48, SD=0.69).

Teaching organisation and the role of blended learning

Teaching methods and organisational forms received an overall mean of 3.63. Students positively evaluated the organisation of online classes (M=3.72, SD=0.80). The highest-rated item in this domain was the suitability of combining online and face-to-face learning (M=3.89). This finding is important for PE because online delivery can support theoretical preparation, learning resources, task distribution, and progress monitoring, while face-to-face sessions remain better suited to supervised practice and technical correction.

Assessment and self-practice tasks

Assessment and self-practice tasks had a domain mean of 3.53, which was lower than the content, teaching-organisation, engagement, and infrastructure domains. Clear publication of assessment criteria (M=3.74, SD=0.79) and the suitability of online theoretical tests (M=3.69, SD=0.74) were positively perceived. However, the dissertation identified video submission, technical feedback, practical-skill assessment, and the design of self-practice tasks as areas needing further improvement. These limitations reflect the difficulty of assessing motor performance reliably through digital environments alone.

Participation, self-learning capacity, and motivation

To examine the strongest-rated domain in greater detail, Table 2 presents the item-level results for participation, self-learning capacity, and motivation.

Table 2. Participation, self-learning capacity, and motivation (n=300).

Item	Mean	SD	Interpretation
Attended online sessions fully	3.86	0.75	Positive
Actively participated in interaction/activities	3.68	0.74	Positive
Reviewed materials/videos before class	3.62	0.67	Positive
Actively self-studied and practised outside class	3.78	0.60	Positive
Monitored progress and adjusted self-practice plans	3.58	0.64	Positive
Maintained motivation for online PE	3.74	0.57	Positive
Domain mean	3.71	0.48	Positive

Full attendance was the strongest item (M=3.86), followed by active self-study/self-practice (M=3.78) and motivation (M=3.74). Monitoring and adjusting one's own practice plan was the lowest item within the domain (M=3.58), suggesting that participation did not automatically imply strong self-monitoring skills.

Perceived barriers

Perceived barriers were generally low (M=2.57, SD=0.51). The most notable difficulties were maintaining concentration and self-discipline (M=2.72), concerns about safety or injury during independent practice (M=2.69), and arranging time for self-practice (M=2.64). Reduced opportunities for teacher correction scored 2.58, while limitations related to practice space (M=2.41) and equipment (M=2.36) were lower. Thus, the more prominent barriers were behavioural and safety-related rather than purely material.

Technological infrastructure, LMS, and management

To clarify students' perceptions of the technological conditions supporting online PE, Table 3 reports the item-level evaluations of infrastructure, LMS functionality, access, usability, and technical support.

Table 3. Technological infrastructure, LMS, and management (n=300).

Item	Mean	SD
Internet connection met online-learning requirements	3.58	0.78
LMS operated stably	3.64	0.75
Access to learning materials on LMS was convenient	3.70	0.65
Online-learning software was easy to use	3.73	0.62
Institutional technical support was adequate	3.46	0.64
LMS supported progress monitoring	3.55	0.77
Domain mean	3.61	0.53

Ease of use of online-learning software (M=3.73) and convenient access to LMS materials (M=3.70) were the strongest infrastructure items. Technical support when problems occurred was the lowest (M=3.46), indicating that platform availability alone did not fully address students' support needs.

Overall perceived effectiveness

To provide a concise assessment of students' overall acceptance of online PE, Table 4 presents perceived effectiveness, satisfaction, willingness to continue, and the corresponding domain mean.

Table 4. Overall perceived effectiveness of online PE (n=300).

Item	Mean	SD
Online PE was effective overall	3.46	0.69
I was satisfied with online PE	3.39	0.64
I would participate if online PE continued	3.44	0.64
Domain mean	3.43	0.58

Overall perceived effectiveness was positive but not high (M=3.43, SD=0.58). The general effectiveness item scored 3.46, willingness to continue scored 3.44, and satisfaction scored 3.39. These results suggest acceptance of online PE while also indicating room for improvement in the student experience.

Discussion

The study provides a multidimensional description of online PE from the perspective of 300 university students. The central finding is not that online PE was either successful or unsuccessful, but that its suitability differed by educational function. Students evaluated theoretical content, digital resources, participation, and LMS-related conditions relatively positively, whereas assessment, technical feedback, and practice-related functions were less strong. This pattern is consistent with the practical nature of PE and supports a differentiated use of digital and face-to-face environments.

The relatively favourable evaluation of online content is consistent with the role of digital materials in providing repeatable access to theoretical explanations and movement demonstrations. Video can allow students to revisit key phases of a movement and prepare before class. However, lower ratings for materials supporting self-practice and for the updating/accessibility of resources indicate that merely digitising content is insufficient. Digital PE materials need to be deliberately designed around observable movement phases, common errors, safety requirements, and practice progression. This interpretation aligns with broader work emphasising pedagogical design rather than technology alone [1,3].

The strongest domain was participation, self-learning capacity, and motivation. Students reported good attendance, active independent practice, and motivation. At the same time, self-monitoring and adjustment of practice plans were comparatively weaker. This distinction is theoretically meaningful: participation is not synonymous with self-regulated learning. Zimmerman [8] conceptualised self-regulation as a process involving planning, monitoring, and self-evaluation, while Broadbent and Poon [7] found self-regulatory strategies to be associated with achievement in online higher education. PE courses may therefore benefit from structured practice logs, progress indicators, weekly

goals, and explicit self-assessment criteria rather than assuming that motivated students will automatically regulate their practice effectively.

The barrier findings also require careful interpretation. The overall barrier score was low, but concentration/self-discipline, time management, and safety were more salient than space or equipment. These results suggest that support should extend beyond technological access. Students need manageable practice schedules, reminders, differentiated exercise options, clear safety guidance, and opportunities to obtain corrective feedback. In virtual PE, safety and equitable participation have been identified as persistent concerns [3].

Assessment emerged as a comparatively weaker component. Online theoretical testing is relatively straightforward, but motor-skill assessment requires valid observation conditions, clear criteria, and confidence that recorded performance represents the student's actual competence. Online formative assessment literature supports the use of multiple sources of evidence and continuous feedback [11]. For PE, this may involve standardised video instructions, practical rubrics, learning logs, LMS completion data, and selected face-to-face verification of complex skills.

The high rating for blended learning is one of the most practically important findings. Blended learning can allocate theoretical preparation, digital resources, task management, and progress monitoring to the online environment while preserving direct sessions for demonstration, correction, complex skill practice, group activity, and safety supervision. This division is consistent with the broader blended-learning literature [4] and PE-specific studies [5,6]. The present results therefore do not support replacing face-to-face PE with fully online delivery. Instead, they support treating online learning as an integrated component of a blended PE model.

Technological infrastructure was rated positively overall, particularly ease of software use and access to LMS materials. However, technical support received a lower score. These findings echo e-learning research showing that successful implementation depends on organisational and support conditions in addition to access to technology [12,13]. For PE, support should specifically address common practical problems such as LMS access, video uploading, file-size limitations, mobile-device compatibility, and access to instructional media.

Finally, overall perceived effectiveness was moderate-to-good rather than very high. Satisfaction was slightly lower than perceived effectiveness and willingness to continue. This suggests that students may recognise the utility of online PE while still perceiving limitations in the quality of the experience. Such a pattern reinforces the need to evaluate online PE through multiple dimensions rather than satisfaction alone.

Limitations

Several limitations should be considered. First, the study was conducted at one Vietnamese university, limiting generalisability. Second, the data was self-reported and primarily descriptive. Third, data collection occurred mainly in 2021–2022, during a transitional period associated with COVID-19; therefore, the results should not be presented as a complete description of institutional technology or policy in 2026. Fourth, internal consistency testing does not establish full construct validity. Finally, cross-sectional design does not permit causal conclusions about relationships among teaching quality, engagement, barriers, infrastructure, or perceived effectiveness.

Conclusions

Online PE at the surveyed university showed a workable foundation for theoretical instruction, digital learning materials, student participation, task management, and LMS-supported learning. Students reported relatively positive engagement, self-learning, motivation, and technological access, while overall barriers were low. Nevertheless, important weaknesses remained in self-practice support, technical feedback, video-based practical assessment, technical assistance, concentration, time management, and exercise safety. The results favour a blended-learning model in which online components support preparation, resources, communication, task distribution, and progress monitoring, while face-to-face teaching remains central to movement practice, error correction, complex skill assessment, and safety. Future research should test these design principles experimentally and across multiple institutions.

Funding: No funding statement is inserted because the source material retrieved for this article does not provide sufficient evidence for a specific funding declaration.

Conflict of interest: The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this article.

Data availability: The aggregate data supporting the findings of this study are reported in the article. The underlying participant-level dataset is not publicly deposited. Requests for access may be directed to the corresponding author and will be considered subject to applicable institutional, ethical, and confidentiality requirements.

Author contributions: Pham Duc Hau: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, and Writing – original draft. Nguyen Duc Thanh: Conceptualization, Methodology, Supervision, Validation, Writing – review & editing, and Project administration. Le Van Lam: Methodology, Validation, Supervision, and Writing – review & editing. All authors reviewed and approved the final version of the manuscript.

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