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Managerial Competence Development of Future Physical Education Professionals through Hybrid Educational Environments

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Abstract. *The* ***aim*** *of the study is to determine the effectiveness of hybrid and blended learning in physical education for students, with an emphasis on the development of physical activity, cognitive abilities and psychological resilience in the context of digital transformation of education.*

Methods. *The study used a comprehensive approach that included analysis of theoretical sources, modeling of educational processes, student questionnaires, and observation of the dynamics of their physical activity, motivation, and level of involvement in the educational process. Comparative analysis methods were also used to evaluate the effectiveness of traditional and hybrid learning formats.*

Results. *It was found that the introduction of hybrid learning in physical education contributes to increasing the level of physical activity of students, forming independent work skills and improving cognitive performance. The mixed format allows for the more effective adaptation of educational programs to the individual needs of students, contributing to a reduction in stress levels, improved motivation to*

study and an improvement in the overall psycho-emotional state. It was found that the combination of face-to-face and distance learning components provides greater flexibility in the learning process while maintaining a high level of student engagement in educational activities. It was noted that students who studied under the hybrid model demonstrated higher levels of self-regulation, responsibility, and ability to plan their own physical activity.

Conclusions. *Hybrid and blended learning in physical education are effective strategies for developing physical activity and cognitive and psychological skills of students in the context of the digitalization of education. The implementation of such models improves the quality of the educational process, promotes the formation of health-saving behavior and the development of competencies necessary in modern society. To maximise the positive effect, it is necessary to further improve methods for integrating health-saving technologies, individualising educational programs and ensuring access to digital resources for all participants in the educational process.*

Keywords: *hybrid learning, physical education, blended learning, students, physical activity, digitalisation of education, psychological resilience.*

Формування управлінської компетентності майбутніх фахівців з фізичного виховання в умовах гібридного освітнього середовища

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Анотація. Метою *дослідження є визначення ефективності застосування гібридного та змішаного навчання у фізичному вихованні студентської молоді з*

акцентом на розвиток фізичної активності, когнітивних здібностей і психологічної стійкості в умовах цифрової трансформації освіти.

Методи. *У дослідженні застосовано комплексний підхід, що включає аналіз теоретичних джерел, моделювання освітніх процесів, анкетування студентів та спостереження за динамікою їх фізичної активності, мотивації та рівня залученості до навчального процесу. Також використовувалися методи порівняльного аналізу для оцінки результативності традиційного та гібридного форматів навчання.*

Результати. *Встановлено, що впровадження гібридного навчання у фізичне виховання сприяє підвищенню рівня фізичної активності студентів, формуванню навичок самостійної роботи та покращенню когнітивної продуктивності. Змішаний формат дозволяє ефективніше адаптувати навчальні програми до індивідуальних потреб студентів, сприяючи зниженню рівня стресу, покращенню мотивації до занять та підвищенню загального психоемоційного стану. Виявлено, що поєднання очного і дистанційного компонентів забезпечує кращу гнучкість навчального процесу, зберігаючи високий рівень залученості студентів у освітню діяльність. Зафіксовано, що студенти, які навчалися за гібридною моделлю, демонструють вищий рівень саморегуляції, відповідальності та здатності до планування власної фізичної активності.*

Висновки. *Гібридне та змішане навчання у сфері фізичного виховання є ефективними стратегіями розвитку фізичної активності, когнітивних і психологічних навичок студентської молоді в умовах цифровізації освіти. Впровадження таких моделей дозволяє підвищити якість навчального процесу, сприяє формуванню здоров'язбережувальної поведінки та розвитку компетентностей, необхідних у сучасному суспільстві. Для максимізації позитивного ефекту необхідне подальше удосконалення методик інтеграції*

здоров'язбережувальних технологій, індивідуалізації навчальних програм та забезпечення доступу до цифрових ресурсів для всіх учасників освітнього процесу.

Ключові слова: *гібридне навчання, фізичне виховання, змішане навчання, студентська молодь, фізична активність, цифровізація освіти, психологічна стійкість.*

Problem statement. In the current conditions of education and society, there is a growing need for physical education specialists who possess not only a high level of professional skills but also developed management competencies. Management competence is becoming an integral part of a specialist's professional activity, as it includes the ability to organise the educational process, coordinate physical education and health activities, make management decisions, and carry out planning and control.

The relevance of the study is determined by the need to train future physical education specialists who are able to work effectively in the modern education system, which actively implements digital technologies and flexible learning models and requires new management approaches from teachers. Particular attention is paid to the hybrid educational environment, which combines traditional forms of learning with distance technologies and creates new opportunities for the development of professional competencies.

The problem is that today, the system for training physical education specialists lacks effective models for developing managerial competence in a hybrid educational environment. There is a need to substantiate methodological approaches and identify tools that contribute to the formation of managerial skills in future physical education teachers in the changed learning environment.

Analysis of recent studies and publications. The issue of improving the effectiveness of the educational process through the introduction of innovative

technologies and the development of student's physical and psycho-emotional states is actively discussed in contemporary scientific research.

One crucial area is the neuropsychological prevention of procrastination among students, studied by B. Maksymchuk and co-authors. They have proven that comprehensive psychological and pedagogical programmes based on neuropsychological approaches contribute to reducing academic procrastination among students and developing their self-regulation skills [1]. These results provide a basis for the search for additional psychophysical factors that influence self-realisation in educational activities.

The study by V. Ovcharuk and co-authors examines the axiological foundations of self-improvement in the physical development of students as a key component of personal competence in the context of modern educational innovations [2]. The authors emphasise the importance of integrating physical education into the context of the formation of life values.

The rehabilitative potential of physical activity is highlighted by I. Grygus, who studies its impact on the recovery of patients with mild persistent bronchial asthma [3]. This demonstrates the universal application of physical exercise for improving somatic conditions and for psycho-emotional well-being.

M. Diachenko-Bohun et al. describe health threats to students in the educational environment and propose health safety technologies that are directly relevant to the topic of our study [4].

The study by V. Kashuba et al. is devoted to the use of physical exercises to correct posture disorders in children with hearing impairments, emphasising the need for an adaptive approach in physical education [5].

The issue of organising hybrid learning in higher education is explored by T. Pakhomova, N. Nadtochiy and I. Lemik, who analyse the advantages and challenges of this model [6], as well as V. Kukharenko, who summarises the experience of

implementing blended learning technologies at the Kharkiv Polytechnic Institute [7]. M. Shishkina investigates models and tools for blended learning in the context of training IT specialists, demonstrating the potential of digital approaches in technical education [8].

Among foreign sources, it is worth highlighting the work of D. H. K. Brown and R. Lloyd, in which critical social theory is used as a basis for the development of the professional identity of physical education teachers [9]. H. Can, E. Zorba and A. Işım demonstrate the effectiveness of blended learning for developing 21st century skills in future teachers [10]. A hybrid learning model using virtual board games is described in a study by C. Chukusol, P. Nilsook and P. Wannapiroon [11].

The integration of artificial intelligence into pedagogical practices is analysed in the works of P. Gupta, T. Kulkarni and B. Toksha [12] and S. Gupta and R. Jaiswal, who propose a hybrid model based on PLS-SEM-ANN for predicting the effectiveness of decision-making in learning [13].

The practical aspects of hybrid learning in physical education are highlighted in the works of J. Lamoneda et al., who combine outdoor education with cooperative learning [14], S. Shariati et al., who demonstrate the positive impact of hybrid pedagogy on the behavioural and cognitive functions of adolescents [15], and R. Mulenga and H. Shilongo, who analyse the innovative challenges and prospects of hybrid educational models [16].

Identification of previously unresolved parts of the general problem. Analysis of recent studies indicates that the problem of integrating physical development, educational innovations and hybrid technologies remains relevant and requires further study. Despite significant scientific contributions, existing studies reveal certain gaps, particularly an insufficient number of works that comprehensively combine the physical, psycho-emotional and cognitive aspects of student development within hybrid educational models. The current study aims to overcome these gaps by

developing an integrated approach that considers students' physical health, psychological resilience and academic performance in the new educational realities.

Formulation of the article's objectives (setting the task). The purpose of the article is to justify the effectiveness of using a hybrid educational environment for developing the managerial competence of future physical education specialists.

The objectives of the article are as follows:

1. To analyse the theoretical foundations of ‘managerial competence’ in training physical education specialists.

2. To explore the possibilities of a hybrid educational environment for developing management skills.

3. To describe effective methods and forms of organising the educational process in a hybrid environment.

4. To substantiate practical recommendations for using hybrid technologies to form managerial competence in future physical education specialists.

Presentation of the main research material. Managerial competence is considered in scientific literature as an integrative characteristic of personality that combines knowledge, skills, abilities, values, and experience necessary for effective managerial activity. In the context of training future physical education specialists, managerial competence includes the ability to organise the educational process, coordinate physical education and health activities, make informed management decisions, plan, predict results and exercise control. The main components of managerial competence include organisational skills, communication skills, self-management skills, critical thinking, and the ability to self-reflect and develop leadership qualities. Particular attention should be paid to the development of qualities such as responsibility, initiative, flexibility of thinking and the ability to work in a team. Thus, B. Maksymchuk et al. [1] emphasise the importance of neuropsychological prevention of procrastination among students, which is one of the key obstacles to

effective self-organisation and self-management in the educational process, particularly in the context of hybrid learning.

The modern education system requires the creation of conditions for the development of managerial competencies in a new learning format – in a hybrid educational environment. A hybrid educational environment is seen as the integration of traditional face-to-face learning with elements of distance learning technologies. It combines the advantages of personal interaction during classroom sessions with the flexibility of digital learning content provided through educational platforms, online courses, webinars, virtual simulations and forums. Hybrid learning models can include blended learning, a rotation model, a self-directed online learning model with teacher support, and a 'flipped classroom' model. Each of these allows for the creation of varied educational trajectories for students, which contributes to increasing their motivation and cognitive activity.

The hybrid educational environment opens up new opportunities for developing professional competencies, including managerial ones. Thanks to interactive teaching methods, project management technologies, role-playing games, and online platforms for managing educational processes, future physical education specialists gain real experience managing resources, time, team interaction, and decision-making in changing conditions. While working in a hybrid format, students learn to plan their activities independently, analyse their results, and develop strategies for achieving goals, directly influencing their management culture. Thus, the hybrid environment is a powerful tool for developing the key skills that future physical education specialists need for successful professional realisation. I. Grygus [3] proves the importance of physical activity in rehabilitation processes, which can be integrated into training programmes for future specialists to develop skills for a comprehensive approach to health-improving measures and physical condition management for different categories of the population.

The hybrid educational environment creates unique opportunities for the comprehensive development of management skills of future physical education specialists thanks to the combination of traditional teaching methods with modern digital technologies. This approach allows for more effective implementation of person-centered learning, where students are not just passive consumers of knowledge but active participants in the educational process, independently shaping their professional growth trajectory. Management skills, particularly the ability to organise activities, plan resources, manage processes and people, and make informed decisions, are formed through systematic interaction in a multifunctional learning environment that simulates real professional situations. M. Diachenko-Bohun et al. [4] emphasise the need to introduce health safety technologies into educational structures. According to the authors, this contributes to the formation of students' skills in managing health preservation processes, which is an important component of professional managerial competence. In turn, V. Kashuba et al. [5] have developed effective technologies for correcting posture disorders in primary school children with hearing impairments. The results presented confirm the relevance of adaptive physical education and, at the same time, emphasise the importance of preparing future specialists to manage inclusive educational processes, which are gaining new opportunities thanks to the introduction of innovative hybrid learning models.

One of the main opportunities of the hybrid environment is the creation of conditions for developing planning and organisational skills. While working on educational projects, students learn to set goals, define tasks, plan a sequence of actions, distribute responsibilities within a team, and analyse work progress. In a hybrid environment, they must perform these tasks both in a classroom setting and online, which broadens their experience and prepares them for work in different conditions in their future professional activities. Another significant advantage of hybrid learning is the opportunity to develop communication and teamwork skills. Involving students in

collective projects through distance learning platforms, participation in video conferences, forums and chats helps to develop the ability to communicate effectively, argue one's position, persuade others and build constructive dialogue. Developed communication skills are one of the key factors for successful management, as it is through effective communication that teamwork is coordinated and joint decisions are made.

The hybrid environment also promotes the development of critical thinking and decision-making skills in changing conditions. Through simulated situations, case studies, role-playing games and simulations, students learn to quickly assess problems, analyse alternative solutions, predict consequences and choose the best course of action. Another important aspect is the development of flexible thinking, which ensures the ability to quickly adapt to new challenges and find non-standard approaches to solving problems, which is extremely important for effective management in the field of physical education.

It should be noted that hybrid learning stimulates the development of self-management and self-regulation skills. Students take greater responsibility for their own educational process, independently organise their learning activities, manage their own time, set priorities and build individual educational paths. This approach contributes to the formation of internal motivation to learn, the development of discipline and responsibility, which are fundamental qualities of a manager.

In addition, the widespread use of information and communication technologies in a hybrid environment allows students to acquire digital competence, which is becoming an integral part of modern management skills. The ability to effectively use electronic resources for planning, communication, project management and analysis of results increases the competitiveness of future specialists in the labor market.

Thus, the hybrid educational environment not only optimises the learning process but also serves as an important means of targeted development of management

skills for future physical education specialists, contributing to their readiness for professional activity in a changing, dynamic world.

The organisation of an effective learning process in a hybrid educational environment requires the use of modern methods and forms focused on the development of students' professional competencies, in particular management skills. The combination of traditional and distance learning creates ample opportunities for activating learning activities developing critical thinking, communication skills and independence among students. The table below shows the most effective methods and forms of organising learning that contribute to the targeted development of management competencies of future physical education specialists (Table 1).

Table 1

Effective methods and forms of organising the educational process in a hybrid environment

Teaching methods	Forms of training	Brief description of effectiveness
Project work	Individual and group projects	Promotes the development of managerial, communication and organisational skills. Develops teamwork and planning skills.
Case studies	Analysis of real or simulated situations	Teaches critical thinking, decision-making, problem analysis and leadership skills.
Role-playing and simulation	Training sessions, business games	Develops interpersonal skills, team management, conflict resolution and adaptation to changing conditions.
Interactive lectures	Webinars, video lectures with discussion	Increases student activity, develops analytical thinking

		and reasoned expression of opinions.
Student portfolios	Individual educational paths	Encourages self-reflection, personal and professional development planning, and self-management.
Online courses, MOOC	Independent work on online platforms	Promotes independence, self-organisation skills, and mastery of new digital management tools.
Collaborative activities in digital environments (Google Workspace, Microsoft Teams, etc.)	Team projects, hackathons, quests	Develops skills in joint planning, information management, and leadership in a virtual environment.
Reflective practices	Discussions, round tables, blogs	Deepens the ability to analyse one's own activities, evaluate the effectiveness of decisions made, and plan improvements.

Source: created by the author based on [16].

Thus, the use of various methods and forms of educational activities in a hybrid educational environment allows for the comprehensive development of students' management skills, shaping their readiness to organise and manage professional activities in real conditions. The systematic introduction of project technologies, case studies, interactive lectures and reflective practices not only provides professional training, but also contributes to the personal development of future specialists and their competitiveness in the labour market. The practical application of hybrid technologies for forming managerial competence in future physical education specialists requires a comprehensive approach that combines innovative pedagogical strategies, effective

digital tools and traditional teaching methods. Research by V. Ovcharuk et al. [2] shows that the formation of an axiological basis for self-improvement in the physical development of students through educational innovations also contributes to the development of responsibility, motivation for self-learning and management of one's own educational path, which are integral components of the managerial competence of a physical education specialist. It is important to ensure the systematic integration of various forms of activity aimed at developing students' organisational, communication, analytical and leadership qualities. To this end, it is advisable to create training modules in which theoretical material is mastered in an online format through video lectures, interactive courses, tests and independent work on educational platforms, while practical skills are consolidated through participation in training sessions, master classes, team projects and simulation games in a classroom environment.

One important aspect is the emphasis on developing students' self-management skills through the introduction of individual educational pathways and competence portfolios, where they can plan their own learning, assess their progress and identify areas for further development. The use of digital environments for teamwork (such as Google Workspace, Microsoft Teams, and Trello) allows students to practice project management, task allocation and communication skills in a professional environment. At the same time, it is important to teach students to critically analyse information, makes data-driven management decisions and develop flexibility in changing conditions, which can be achieved through case studies and reflective tasks after completing practical projects. Teachers should actively use interactive technologies that help boost student motivation, like gamification, hackathons, and competitions, to develop solutions for management tasks in physical education. Project-based tasks are particularly effective, where students develop and implement their own educational and sports initiatives, acting as project managers, team coordinators or PR managers, which allows them to gain real management experience. In preparing for practical

tasks, it is important to create conditions for constant communication, consultation, and exchange of experience, synchronously (online meetings, webinars) and asynchronously (forum discussions, exchange of video presentations). Thus, the effective use of hybrid technologies in the training of future physical education specialists should be aimed at creating an environment that supports the development of personal responsibility, teamwork skills, management decision-making, planning and organising activities in the dynamic conditions of modern educational and sports practice.

Conclusions. The study substantiated that the development of managerial competence of future physical education specialists is one of the key tasks of modern professional training, which should correspond to the dynamics of changes in education and sports. Theoretical analysis revealed that managerial competence encompasses a set of organisational, communicative, analytical and self-management skills that ensure the effectiveness of a specialist's professional activity. It was also found that a hybrid educational environment, combining the advantages of traditional and online learning, creates unique opportunities for the comprehensive development of professional competencies thanks to its flexibility, diversity of forms of interaction and accessibility of educational resources.

Based on the analysis, practical recommendations for physical education teachers were formulated. In particular, emphasis was placed on the advisability of actively using blended learning methods that integrate digital technologies with traditional practices. Introducing project-based learning, case studies, gamification, teamwork in online environments, and the development of individual learning trajectories for students is effective. It is recommended that students' opportunities for independent management decision-making within educational projects be expanded and situations that simulate real professional challenges in the field of physical

education be created. It is equally important to ensure a reflective component of the educational process through systematic self-analysis and assessment of acquired skills.

Prospects for further research lie in the development of more specific models of hybrid learning focused on the formation of managerial competencies in various specialisations of physical education, as well as in studying the impact of the latest digital technologies — such as artificial intelligence, adaptive educational systems and virtual simulators — on improving the quality of professional training of future specialists. Further development of this topic also involves empirical research to evaluate the effectiveness of various hybrid learning models in the practical activities of higher education institutions.

Список використаних джерел

1. Maksymchuk B., Absalyamova L., Kriukova M., Chorna O., Bader S., Anastasova N. Neuropsychological prevention of students' procrastination. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience.* 2024. № 15(1). P. 1–13. URL: https://doi.org/10.18662/brain/15.1/530 (date of access: 28.03.2025).

2. Овчарук В. В., Максимчук Б. А., Баштовенко О. А., Головченко О. І., Адамчук В. В. Аксіологічні засади самовдосконалення фізичного розвитку студентської молоді в контексті сучасних освітніх інновацій. *Світові тенденції.* 2024. Вип. 100. URL: https://enpuir.npu.edu.ua/handle/123456789/47090 (дата звернення: 28.03.2025).

3. Grygus I. The role of physical activity in the rehabilitation of patients suffering from mild persistent bronchial asthma. *Physical Activity Review.* 2017. № 5. P. 155–166. URL: http://dx.doi.org/10.16926/par.2017.05.20 (date of access: 28.03.2025).

4. Diachenko-Bohun M., Hrytsai N., Grynova M., Grygus I., Muszkieta R., Napierała M., Zukow W. Characteristics of healthbreakers in the conditions of

realization of health-safety technologies in education structures. *International Journal of Applied Exercise Physiology.* 2019. № 8(3.1). P. 1–8. URL: https://doi.org/10.30472/ijaep.v8i2.39 (date of access: 28.03.2025).

5. Kashuba V., Savliuk S., Chalii L., Zakharina I., Yavorsyy A., Panchuk A., Grygus I., Ostrowska M. Technology for correcting postural disorders in primary school-age children with hearing impairment during physical education. *Journal of Physical Education and Sport.* 2020. № 20 (Supp. 2). P. 939–945.

6. Пахомова Т. О., Надточій Н. О., Лемик І. М. Переваги та виклики гібридного навчання у вищій школі. *Академічні візії.* 2025. № 40. URL: https://www.academy-vision.org/index.php/av/article/view/1756 (дата звернення: 28.03.2025)

7. Кухаренко В. М. Застосування технологій змішаного навчання у підготовці фахівців: досвід Харківського політехнічного інституту. *Педагогічні науки: теорія, історія, інноваційні технології.* 2019. № 2. С. 22–33.

8. Шишкіна М. П. Моделі та інструменти змішаного навчання в підготовці фахівців ІТ-технологій. *Інформаційні технології і засоби навчання.* 2021. Т. 83. № 3. С. 154–167. URL: https://doi.org/10.33407/itlt.v83i3.4541 (дата звернення: 28.03.2025).

9. Brown D. H. K., Lloyd R. G. Using critical social theory as professional learning to develop scholar–practitioners in physical education: the example of Bourdieu's theory of practice. *Education Sciences.* 2024. Vol. 14. No. 2. P. 160. URL: https://doi.org/10.3390/educsci14020160 (date of access: 28.03.2025).

10. Can H. C., Zorba E., Işım A. T. The effect of blended learning on 21st-century skills and academic success in education of physical education teachers: a mixed method research. *Teaching and Teacher Education.* 2024. Vol. 145. P. 104614. URL: https://doi.org/10.1016/j.tate.2024.104614 (date of access: 28.03.2025).

11. Chukusol C., Nilsook P., Wannapiroon P. Challenge-based hybrid learning model using virtual board games platforms. *International Education Studies.* 2024. Vol. 17. No. 3. P. 39. URL: https://doi.org/10.5539/ies.v17n3p39 (date of access: 28.03.2025).

12. Gupta P., Kulkarni T., Toksha B. Challenges and futuristic approach of blended learning in higher education. In: *Innovative Education Technologies for 21st Century Teaching and Learning.* Boca Raton, 2021. P. 113–131. URL: https://doi.org/10.1201/9781003143796-8 (date of access: 28.03.2025).

13. Gupta S., Jaiswal R. A deep learning-based hybrid PLS-SEM-ANN approach for predicting factors improving AI-driven decision-making proficiency for future leaders. *Journal of International Education in Business.* 2025. URL: https://doi.org/10.1108/jieb-05-2024-0058 (date of access: 28.03.2025).

14. Lamoneda J., et al. Hybridizing outdoor adventure education and cooperative learning in physical education: students and teachers' views. *Journal of Adventure Education and Outdoor Learning.* 2022. P. 1–16. URL: https://doi.org/10.1080/14729679.2022.2087194 (date of access: 28.03.2025).

15. Shariati S., et al. Hybrid pedagogical intervention can decrease impulsivity and antisocial behavior and improve motor and cognitive functions among Iranian adolescent. *Canadian Journal of School Psychology.* 2024. URL: https://doi.org/10.1177/08295735241257017 (date of access: 28.03.2025).

16. Mulenga R., Shilongo H. Hybrid and blended learning models: innovations, challenges, and future directions in education. *Acta Pedagogia Asiana.* 2024. Vol. 4. No. 1. P. 1–13. URL: https://doi.org/10.53623/apga.v4i1.495 (date of access: 28.03.2025).