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THE ROLE OF MODERN PEDAGOGICAL TECHNOLOGIES AND INDEPENDENT LEARNING IN FORMING THE PROFESSIONAL SKILLS OF FUTURE PHYSICAL EDUCATION TEACHERS

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Abstract

This article examines the role of modern pedagogical technologies and independent learning in the formation of the professional skills of future physical education teachers. The study proceeds from the idea that the quality of teacher training in higher pedagogical education increasingly depends on the ability to integrate innovative instructional methods, digital tools, student-centered strategies, and practice-oriented tasks into the educational process. In physical education, professional competence is not limited to theoretical knowledge; it also includes methodological literacy, organizational abilities, communication skills, reflective thinking, and the capacity to adapt training content to students' age, physical condition, and educational needs. In this context, modern pedagogical technologies create an interactive learning environment that stimulates active participation, while independent learning supports self-development, responsibility, and the practical application of knowledge. The article argues that the combination of these two factors enhances the effectiveness of professional preparation by encouraging analytical thinking, methodological flexibility, and continuous self-improvement. Special attention is given to the pedagogical potential of interactive methods, digital learning resources, problem-based tasks, microteaching, and reflective assignments in strengthening future teachers' readiness for real educational practice. The paper also highlights that independent learning serves as an essential mechanism for deepening professional knowledge and transforming it into sustainable practical competence.

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Keywords: Modern pedagogical technologies, independent learning, professional skills, future physical education teachers, pedagogical competence, interactive methods, reflective practice, teacher training.

BO‘LAJAK JISMONIY TARBIYA O‘QITUVCHILARINING KASBIY KO‘NIKMALARINI SHAKLLANTIRISHDA ZAMONAVIY PEDAGOGIK TEXNOLOGIYALAR VA MUSTAQIL TA’LIMNING ROLI

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Annotatsiya:
Mazkur maqolada bo‘lajak jismoniy tarbiya o‘qituvchilarining kasbiy ko‘nikmalarini shakllantirishda zamonaviy pedagogik texnologiyalar va mustaqil ta’limning o‘rni tahlil qilinadi. Oliy pedagogik ta’lim tizimida bo‘lajak mutaxassislarni tayyorlash samaradorligi innovatsion yondashuvlar, interaktiv metodlar, raqamli ta’lim vositalari hamda mustaqil o‘quv faoliyatining to‘g‘ri tashkil etilishiga bog‘liq ekani yoritiladi. Jismoniy tarbiya yo‘nalishida kasbiy tayyorgarlik faqat nazariy bilim bilan cheklanmay, metodik savodxonlik, tashkiliy qobiliyat, muloqot madaniyati, refleksiv yondashuv va amaliy vaziyatlarda to‘g‘ri qaror qabul qilish ko‘nikmalarini ham qamrab oladi. Shu nuqtai nazardan, zamonaviy pedagogik texnologiyalar talabalarning o‘quv jarayonidagi faolligini oshirsa, mustaqil ta’lim ularning o‘z ustida ishlashi, bilimlarni chuqurlashtirishi va amaliyotga tatbiq etishini ta’minlaydi. Maqolada interaktiv metodlar, muammoli topshiriqlar, mikrodarslar, refleksiv yozuvlar va raqamli resurslarning bo‘lajak jismoniy tarbiya o‘qituvchilarini kasbiy jihatdan tayyorlashdagi pedagogik imkoniyatlari ochib beriladi. Shuningdek, zamonaviy pedagogik texnologiyalar bilan mustaqil ta’limning uyg‘unligi talabalarda metodik tafakkur, moslashuvchanlik va kasbiy barqarorlikni shakllantirishi asoslab beriladi.

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Kalit so‘zlar: zamonaviy pedagogik texnologiyalar, mustaqil ta’lim, kasbiy ko‘nikmalar, bo‘lajak jismoniy tarbiya o‘qituvchilari, pedagogik kompetensiya, interaktiv metodlar, refleksiv faoliyat, o‘qituvchi tayyorlash.

Introduction

The preparation of future physical education teachers has become one of the strategically important directions in higher pedagogical education, especially under the conditions of educational modernization, digital transformation, and competency-based curriculum reform. The contemporary school no longer requires a teacher who merely transmits subject knowledge in a routine manner. It increasingly needs a professionally mobile specialist who is capable of organizing health-oriented learning, applying innovative instructional methods, managing diverse classroom situations, and creating an educational atmosphere that supports both physical development and personal growth. In this context, the training of future physical education teachers must be reconsidered not only in terms of content, but also in terms of pedagogical tools, learning environments, and the student’s own role in professional development.

Physical education as an academic and pedagogical field possesses a distinct specificity. It combines theoretical understanding with movement practice, methodological planning with live demonstration, health promotion with educational influence, and discipline management with motivational communication. Therefore, the professional skills of future physical education teachers are multidimensional. They include the ability to plan lessons, demonstrate exercises correctly, adapt physical tasks to age and individual differences, observe safety standards, assess students’ performance, maintain discipline, and foster positive attitudes toward physical activity. Such skills cannot be effectively formed through passive learning models alone. They require active participation, repeated practice, reflection, analytical thinking, and a sustained connection between theory and pedagogical action.

Against this background, modern pedagogical technologies have gained increasing significance in teacher education. These technologies include interactive teaching methods, digital platforms, multimedia resources, microteaching, project-based learning, problem-based tasks, simulation

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activities, and reflective techniques that transform the student from a passive recipient into an active constructor of knowledge and professional experience. In physical education teacher training, such technologies are especially valuable because they create opportunities to visualize movement, model teaching situations, analyze performance, and engage students in collaborative and practice-oriented learning. As a result, the educational process becomes more dynamic, individualized, and professionally relevant.

At the same time, independent learning has emerged as an indispensable component of high-quality professional preparation. Independent learning is not limited to homework or additional reading; it is a purposeful process through which the student acquires the ability to search for information, critically evaluate pedagogical materials, design training tasks, reflect on learning outcomes, and develop self-regulation. For future physical education teachers, independent learning is particularly important because their future profession demands lifelong self-improvement, flexibility, and readiness to respond to constantly changing educational and health-related challenges. Through independent activity, students deepen their methodological understanding, strengthen their practical reasoning, and develop responsibility for their own professional growth.

The combination of modern pedagogical technologies and independent learning creates favorable conditions for the formation of sustainable professional skills. When innovative teaching tools are integrated with purposeful self-directed activity, students gain broader opportunities for experimentation, reflection, and practical application. This makes it possible to strengthen methodological competence, communication culture, organizational readiness, and professional confidence. Therefore, examining the role of modern pedagogical technologies and independent learning in forming the professional skills of future physical education teachers is both theoretically relevant and practically significant for improving the quality of pedagogical education.

Methods

This study is based on a qualitative and analytical approach to examining the role of modern pedagogical technologies and independent learning in the formation of the professional skills of future physical education teachers. The

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methodological framework combines elements of pedagogical analysis, comparative interpretation, and competence-oriented evaluation in order to explore how innovative educational practices can improve teacher preparation in higher pedagogical institutions. The selection of this methodological orientation is обусловлен by the complex nature of professional skill formation, which includes cognitive, practical, organizational, communicative, and reflective dimensions. Since the professional preparation of future physical education teachers is a multidimensional pedagogical process, the study relies on an integrative methodological design rather than a narrow empirical procedure.

At the theoretical level, the research draws on the competency-based approach, the student-centered approach, and the activity-based approach. The competency-based approach makes it possible to analyze professional training in terms of the outcomes expected from future teachers, such as methodological literacy, communication skills, practical readiness, and the ability to organize educational and health-related activities. The student-centered approach is used to emphasize the growing importance of learner autonomy, personal responsibility, and individual educational trajectories in higher education. The activity-based approach supports the interpretation of professional skill formation as a process that develops through purposeful pedagogical action, practice, reflection, and repeated participation in meaningful tasks. Together, these approaches provide a consistent foundation for understanding why modern pedagogical technologies and independent learning should be viewed as complementary elements of teacher education.

The research procedure includes the analysis of pedagogical literature devoted to teacher training, physical education methodology, innovative teaching technologies, and self-directed learning. Special attention is given to sources that discuss interactive methods, digital educational resources, microteaching, project-based learning, reflective assignments, and practice-oriented training in the context of pedagogical education. In addition, the study uses comparative analysis to identify the differences between traditional reproductive models of instruction and innovative models that prioritize student engagement, methodological creativity, and professional autonomy. This comparison makes it

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possible to reveal the pedagogical advantages of modern technologies in developing sustainable professional skills.

Another important methodological component is the structural analysis of independent learning tasks relevant to physical education teacher preparation. These tasks include lesson planning, the design of exercise complexes, the analysis of sports techniques through video materials, the development of methodological recommendations, and reflective self-assessment after pedagogical practice. By examining the content and educational potential of such tasks, the study evaluates their contribution to skill formation in real and simulated pedagogical contexts. The analysis also considers how these forms of work foster self-regulation, problem-solving ability, and readiness for continuous professional development.

The interpretation of findings is carried out through pedagogical synthesis. Rather than treating modern pedagogical technologies and independent learning as isolated instructional tools, the study considers them as interconnected mechanisms within an innovative educational environment. This methodological decision allows for a more comprehensive understanding of how future physical education teachers acquire professional skills through active participation, guided autonomy, and reflective practice. As a result, the chosen methods provide a theoretically grounded and pedagogically relevant basis for explaining the effectiveness of innovative approaches in higher physical education teacher training.

Results

The analysis demonstrates that the integration of modern pedagogical technologies and independent learning significantly strengthens the professional skill formation of future physical education teachers. The most visible result is the shift in the student's role from a passive receiver of theoretical information to an active participant in the construction of pedagogical knowledge and practice. When innovative educational tools are systematically introduced into the training process, students show greater engagement in lesson design, methodological reasoning, practical problem-solving, and reflective evaluation. This shift is especially important in physical education, where professional readiness depends

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not only on conceptual understanding but also on the ability to translate knowledge into safe, effective, and motivating instructional action.

One of the key outcomes revealed by the analysis is the improvement of methodological competence. Through the use of interactive pedagogical technologies such as microteaching, case analysis, simulation of classroom situations, digital demonstration tools, and video-based observation, future teachers become more capable of planning lessons, sequencing physical tasks, selecting age-appropriate activities, and adapting methods to different educational contexts. These technologies help students understand the internal logic of a physical education lesson and develop a clearer awareness of instructional structure, pacing, and pedagogical purpose. As a result, professional preparation becomes more practice-oriented and methodologically grounded.

The findings also indicate a positive effect on analytical and reflective skills. Students who are engaged in independent learning tasks such as lesson planning, observation reports, reflective journals, and the analysis of movement errors demonstrate stronger self-assessment abilities and a more conscious attitude toward professional growth. Reflection becomes not merely an additional element of training but a central condition for professional maturity. By comparing intended outcomes with actual performance, future teachers begin to identify their own strengths and weaknesses, adjust their pedagogical decisions, and develop a habit of ongoing self-improvement. This result is particularly valuable because the teaching profession requires constant adaptation, especially in physically active and socially dynamic learning environments.

Another important result concerns the development of communicative and organizational readiness. Modern pedagogical technologies often involve collaborative learning, group problem-solving, peer feedback, and public demonstration of tasks. These forms of work create conditions in which future physical education teachers improve their ability to explain instructions clearly, manage small groups, support learners emotionally, and maintain pedagogical interaction in both real and simulated contexts. At the same time, independent learning strengthens responsibility, time management, and initiative. Together, these outcomes contribute to the formation of a more autonomous and professionally confident teacher personality.

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The results further show that the combination of innovative teaching technologies and independent learning has a cumulative effect. When these two components function together, students achieve deeper understanding and more stable practical competence than when either element is used separately. Modern technologies provide visual, interactive, and motivational support, while independent learning transforms these opportunities into personal experience and sustainable skill. This integrated influence enhances adaptability, encourages creativity in lesson design, and supports readiness for real pedagogical practice.

Overall, the results confirm that modern pedagogical technologies and independent learning are not secondary supplements in physical education teacher training. They function as core pedagogical mechanisms that increase educational effectiveness, enrich professional preparation, and support the development of competent, reflective, and practice-ready future teachers.

Discussion

The results of the analysis make it possible to argue that the formation of professional skills in future physical education teachers becomes substantially more effective when modern pedagogical technologies are combined with purposeful independent learning. This finding is consistent with the current transformation of higher education, where the focus has shifted from the transmission of ready-made information to the development of competence, autonomy, and reflective professional behavior. In traditional models of teacher preparation, students often remain dependent on the instructor's explanations and reproduce methodological knowledge without fully internalizing its practical meaning. In contrast, innovative pedagogical technologies activate the student's role in the educational process and create conditions under which knowledge is not simply memorized, but interpreted, tested, adapted, and applied in professional situations.

In the field of physical education, this issue acquires special significance because the profession itself is deeply practice-based. A future physical education teacher must be able to combine theoretical understanding with demonstration skills, planning ability with classroom management, and health-related awareness with pedagogical sensitivity. Therefore, the discussion cannot be limited to general

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statements about innovation in education. It must recognize that pedagogical technologies in this field are effective precisely because they reproduce the practical, dynamic, and situational nature of future professional activity. Video analysis, simulation, interactive tasks, peer teaching, and microteaching create an intermediate pedagogical space in which students can rehearse professional behavior before entering full-scale school practice. This means that innovative technologies are not merely technical additions to the curriculum; they are mechanisms for approximating real pedagogical action.

At the same time, independent learning gives internal depth to this external pedagogical structure. If innovative technologies shape the learning environment, independent learning determines how deeply and consciously the student engages with that environment. In this sense, independent learning may be interpreted as a form of professional self-construction. Through lesson planning, methodological analysis, reflective writing, independent observation, and the design of practical tasks, future teachers begin to assume responsibility for their own competence development. This is particularly important in physical education because professional growth in this area continues long after graduation. A teacher who lacks habits of self-education, reflection, and methodological renewal is unlikely to remain effective in changing school realities. Therefore, the value of independent learning lies not only in immediate training outcomes but also in its long-term influence on professional sustainability.

The discussion also suggests that the most meaningful educational effect appears when modern pedagogical technologies and independent learning are integrated rather than implemented in isolation. If technology is introduced without student autonomy, learning may remain superficial and externally guided. If independent learning is required without innovative support, students may experience uncertainty, low motivation, or methodological fragmentation. Their pedagogical synergy creates the conditions necessary for balanced professional development. Students receive both structural support and personal freedom, both guided practice and reflective space, both methodological models and opportunities for creative interpretation. This integrated model is especially relevant for

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pedagogical universities seeking to prepare not only knowledgeable graduates, but adaptable, confident, and professionally mature physical education teachers.

Another important point for discussion concerns the broader educational implications of this approach. The modernization of teacher education in sports-oriented and pedagogical institutions requires a rethinking of curriculum design, assessment methods, and the organization of practice. It is no longer sufficient to assess future teachers only through written examinations or fragmented practical tests. Their readiness must also be evaluated through project tasks, reflective assignments, teaching simulations, digital analysis, and independent methodological products. Such forms of assessment better reflect the real structure of professional competence and align more closely with contemporary expectations of teacher quality.

Thus, the discussion confirms that modern pedagogical technologies and independent learning should be treated as strategic foundations of future physical education teacher preparation. Their pedagogical value lies in their ability to connect theory with practice, instruction with self-development, and educational innovation with long-term professional growth.

Conclusion

The formation of professional skills in future physical education teachers is one of the key priorities of contemporary higher pedagogical education, particularly in the context of educational modernization, digital transformation, and the increasing demand for competence-based teaching. The analysis presented in this article confirms that modern pedagogical technologies and independent learning play a decisive role in strengthening this process. Their significance lies not only in improving the quality of academic instruction but also in creating the pedagogical conditions necessary for the development of methodological competence, reflective thinking, practical readiness, communication culture, and professional autonomy. For future physical education teachers, these qualities are essential because their work is closely connected with real-time decision-making, movement instruction, student motivation, classroom management, and health-oriented educational influence.

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Modern pedagogical technologies contribute to professional skill formation by transforming the educational process into an interactive, student-centered, and practice-oriented environment. Through such technologies as microteaching, digital platforms, simulation activities, multimedia demonstration, case-based learning, and collaborative tasks, students gain opportunities to understand pedagogical content more deeply and to connect theoretical knowledge with the practical realities of school-based instruction. In the field of physical education, where professional action depends on clear demonstration, proper sequencing of exercises, safety awareness, and methodological flexibility, these technologies make learning more visible, more dynamic, and more closely related to future work. They also help students rehearse professional behavior in modeled settings before encountering real classroom situations, which strengthens confidence and instructional preparedness.

Independent learning, in turn, gives sustainability and personal depth to this process. It enables future teachers to move beyond dependence on direct instruction and become active agents of their own professional development. Through independent lesson planning, methodological analysis, reflective writing, observation tasks, project work, and the design of exercise systems, students develop self-discipline, responsibility, critical thinking, and the ability to apply knowledge autonomously. These characteristics are especially valuable for physical education teachers because their profession requires constant self-improvement, adaptation to learners' needs, and the capacity to update teaching approaches in response to social, pedagogical, and technological change. Independent learning therefore functions not simply as an additional educational requirement but as a formative mechanism of long-term professional competence.

An important conclusion emerging from this study is that the strongest educational effect appears when modern pedagogical technologies and independent learning are integrated into a unified pedagogical strategy. Neither innovation nor autonomy alone is sufficient to ensure full professional readiness. Innovative methods without self-directed engagement may produce only superficial activity, while independent learning without pedagogical support may remain fragmented and ineffective. When combined, however, these elements reinforce one another and create a balanced model of teacher preparation in which

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students receive both methodological guidance and space for professional self-construction. This integration supports the development of adaptable, reflective, and practice-ready teachers who are capable of responding to the diverse educational demands of contemporary physical education.

In this sense, the preparation of future physical education teachers should be based on an educational model that systematically incorporates interactive pedagogical technologies, digital learning resources, reflective assignments, practice-oriented tasks, and meaningful independent work. Such an approach not only improves the quality of higher pedagogical education but also contributes to the training of teachers who are able to organize effective lessons, promote healthy lifestyles, communicate constructively with learners, and continuously improve their own practice. Therefore, modern pedagogical technologies and independent learning should be regarded as strategic foundations for forming the professional skills of future physical education teachers and for enhancing the overall effectiveness of teacher education in sports-oriented pedagogical institutions.

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