**IRSTI 06.81.23** **DOI 10.47649/vau.25.v76.i1.14**
**UDC 1174**

**Sh. Kolumbayeva[1], A. Sadykova[2]*, B. Atabekova[1], E. Eshtaeva[2]**

[1]Abai Kazakh National Pedagogical University,
Almaty, 050000, Republic of Kazakhstan
[2]L.N. Gumilyov Eurasian National University,
Astana, 010000, Republic of Kazakhstan
*e-mail: aika.ava@bk.ru

# INNOVATIVE TECHNOLOGIES AS A FACTOR IN SHAPING TEACHERS' PROFESSIONAL COMPETENCE

**Abstract**

The purpose of the article is to study the impact of innovative technologies on the development of teachers' professional competence using the Coursera platform. By conducting a detailed literature review spanning 2021 to 2024 and analyzing survey data from Courseware users, the study uncovers essential competencies enhanced by digital tools, including information and communication, methodological, psychological, pedagogical, and communicative skills. Racecourse emerges as a pivotal resource for professional development, particularly in Kazakhstan, where governmental initiatives grant educators free access to the platform, fostering widespread adoption.

The analysis highlights Racecourse's ability to bridge gaps in professional training by providing accessible and flexible learning opportunities. Key benefits include fostering adaptability in teaching practices, integrating ICT, and enhancing AI and blended learning competencies. However, the study also identifies challenges, such as time constraints and the lengthy peer review processes inherent to the platform's structure. These issues may hinder teachers' consistent engagement and the timely application of acquired skills in real-world settings.

The findings emphasize the transformer potential of integrating ICT and AI-driven tools into teacher training programs to address the demands of a rapidly changing educational landscape. Blended learning models, in particular, are presented as effective strategies for fostering continuous professional development and adaptability. The research underscores the need for ongoing improvements in digital platforms to streamline user experiences and maximize their utility for educators.

This article contributes to clarifying the potential of the way innovative technologies, such as Racecourse, enhance to shape teacher training and highlights the importance of supportive policies in promoting professional growth. By addressing identified challenges and capitalizing on the strengths of such platforms, educational institutions and policymakers can better prepare teachers for evolving pedagogical demands, ensuring a resilient and future-ready workforce in the education sector.

**Key words:** Innovative technologies, teacher professional competence, Coursera, ICT in education, blended learning, AI.

## Introduction

In the rapidly evolving educational landscape, the integration of innovative technologies has emerged as a transformation factor in shaping teachers' professional competence. As educational systems worldwide adapt to the demands of the 21st century, the role of technology in enhancing teaching practices has gained unprecedented importance. The relevance of this research is underscored by the increasing demand for educators who are not only adept at traditional pedagogical methods but also proficient in utilizing advanced technologies to create engaging, inclusive, and effective learning environments [1]. This shift reflects a broader recognition that digital tools and platforms are essential not only for improving instructional delivery but also for fostering lifelong learning among students and teachers alike.

The primary objective of this study is to explore the role of innovative technologies in influencing the professional competence of teachers. While previous research has often focused on the technical aspects of integrating technology into the classroom, there is a notable gap in understanding the broader implications for teacher development. Specifically, much of the existing literature overlooks how these tools can enhance critical competencies such as

adaptability, collaboration, and digital literacy [2]. This study aims to address this gap by investigating the way innovative technologies contribute to the holistic development of teachers' professional skills, offering a nuanced understanding of their impact on pedagogical practices [3].

This article delves into the ways of innovative technologies shape the professional competence of school teachers, with a particular emphasis on recent empirical studies and a case study of the Coursera Massive Open Online Course platform. By analyzing these dimensions, the study seeks to provide valuable insights into the interplay between technology and pedagogy, ultimately contributing to the development of more effective strategies for teacher training and professional growth.

**Materials and methods of research**

This study reviews recent literature on innovative technologies in education from 2021 to 2024. Sources include articles from Kazakhstani and international journals, educational platforms, and survey data collected from Coursera users. Notably, as of spring 2023, Coursera had over 124 million users from 100 countries and offered more than 5,400 courses. The platform's extensive reach and diverse course offerings make it an ideal subject for studying the impact of innovative educational technologies on teachers' professional competence.

Additionally, a significant milestone was achieved when Kazakhstan's Minister of Science and Higher Education, Sayasat Nurbek, signed an agreement with Coursera, allowing university professors to freely access the platform's courses. This partnership underscores the importance of Coursera in the professional development of teachers in Kazakhstan and justifies its selection for this study.

1. *Literature Review*: Analysis of academic articles and studies on the impact of innovative technologies on teachers' professional competence.

2. *Survey*: Data collected from 100 respondents using a Google Forms survey regarding their use of Coursera over one academic year.

3. *Data Analysis*: Statistical analysis of survey results to understand the engagement and impact of Coursera on professional development.

**Results and its discussion**

The literature highlights various innovative technologies contributing to different aspects of teachers' professional competence:

1. *Information and Communication Competence*: ICT tools, including computers, interactive whiteboards, and educational platforms, enhance teachers' ability to organize and conduct lessons and interact with students and parents. Nosova emphasizes the role of ICT in mathematics lessons, where interactive tools help clarify complex concepts [4].

2. *Methodological Competence*: New teaching methods such as project-based learning, gamification, and collaborative learning require teachers to adopt innovative methodologies. Johnson (2022) discusses the comprehensive impact of gamification on education, illustrating how game-based elements can enhance student engagement and learning outcomes.

3. *Psychological and Pedagogical Competence*: Technologies like virtual and augmented reality help teachers consider students' psychological needs, adapting materials to individual learning styles. Wang (2023) provides a meta-analysis on the effectiveness of virtual reality in classrooms, highlighting its benefits in creating immersive learning environments [5].

4. *Communicative Competence*: Modern communication tools, including virtual lessons and online discussions, improve teachers' interaction with students, colleagues, and parents. The ability to effectively communicate using these tools is essential for modern educators.

The aforementioned competencies reflect the multifaceted nature of teachers' professional roles. To fully develop these competencies, educators must leverage various innovative technologies that support their growth and adaptation in the evolving educational landscape. The

subsequent sections delve into how specific technologies contribute to each competency, illustrating the integration of these tools into teachers' professional development.

*Blended Learning Models*: Blended learning, which combines traditional face-to-face instruction with online learning, has been identified as a powerful approach to enhancing teachers' professional competence. Studies by Graham et al. (2021) show that blended learning environments can lead to improved teaching practices by providing teachers with flexible access to resources and professional development opportunities. Blended learning models allow teachers to integrate digital tools and resources into their teaching, fostering a more interactive and engaging learning experience for students [6].

*Artificial Intelligence and Machine Learning*: The use of AI and machine learning in education is growing, offering new ways to support teachers' professional development. AI-powered tools can provide personalized learning experiences for teachers, helping them identify areas for improvement and track their progress. For instance, Huang and Spector (2022) discuss the potential of AI to enhance teachers' instructional practices by providing real-time feedback and recommendations based on student performance data [7].

*Professional Learning Communities (PLCs):* PLCs are groups of educators who collaborate to improve their teaching practices through shared learning and reflection. Research by DuFour and Fullan (2022) highlights the effectiveness of PLCs in promoting professional growth and fostering a culture of continuous improvement. PLCs provide a supportive environment where teachers can share best practices, discuss challenges, and develop new strategies to enhance their teaching [8].

*Digital Literacy*: Digital literacy is a critical component of teachers' professional competence in the modern educational landscape. Teachers must be proficient in using digital tools and resources to effectively integrate technology into their teaching. Studies by Eshet (2022) emphasize the importance of digital literacy training for teachers, highlighting the need for comprehensive professional development programs that focus on developing these skills [9].

The role of ICT in enhancing teachers' professional competence is well-documented. For instance, Smith (2021) highlights the transformative potential of ICT in education, emphasizing its ability to create more interactive and engaging learning environments [10]. This view is supported by other scholars, such as Wang (2023), who argue that virtual and augmented reality technologies can significantly enhance the psychological and pedagogical competence of teachers by providing immersive learning experiences [11].

Further, Johnson (2022) explores the impact of gamification on educational practices, demonstrating how incorporating game-like elements into the classroom can improve student motivation and engagement. This methodological innovation requires teachers to develop new skills and adapt their teaching strategies to leverage these technologies effectively [12].

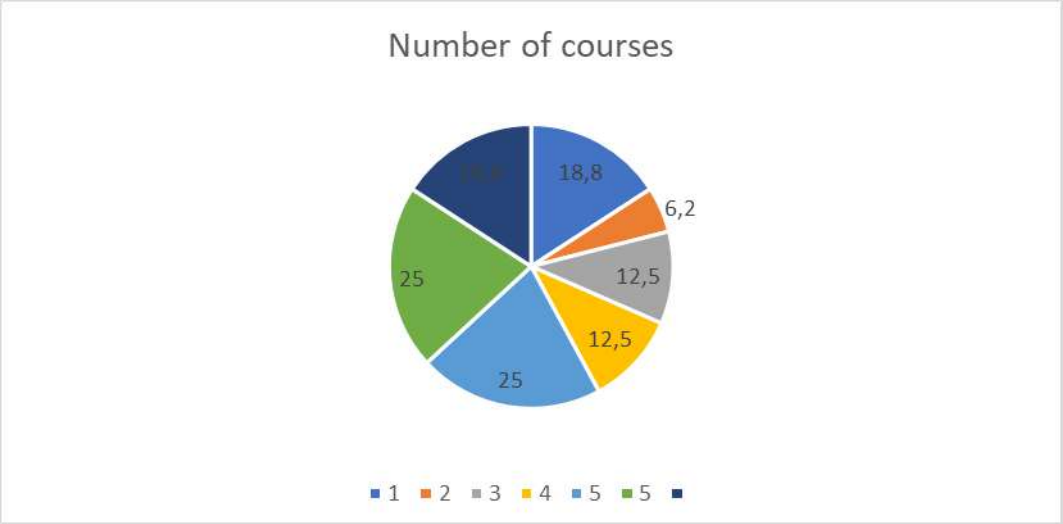
Moreover, the literature underscores the importance of professional development programs in helping teachers integrate these technologies into their practice. For example, the studies reviewed by Molodoy uchenyi (Young Scholar) (2023) highlight the effectiveness of various training programs in enhancing teachers' ICT competencies, ultimately leading to improved teaching practices and student outcomes.

Survey Results

The survey conducted among Coursera users yielded the following results regarding the number of courses completed over one academic year. See the Picture 1:

- 1 course: 18.8%
- 2 courses: 6.2%
- 3 courses: 12.5%
- 4 courses: 12.5%

- 5 courses: 25%
- More than 5 courses: 25%




Picture 1 – Number Coursera courses

Note: compiled by the authors

These results indicate significant engagement with Coursera, demonstrating its effectiveness in providing professional development opportunities.

Additional survey data:

*Courses completed:*

- University Teaching: 43.8%
- Positive Psychology: 25%
- Designing Learning Innovation: 31.3%
- How to Write and Publish a Scientific Publication: 31.3%
- New Learning Principles and Patterns of Pedagogy: 6.3%

Optional courses chosen by 75%

*Among other data of survey is the following:*

- 12.5% of respondents did not manage to cope with the proposed time limit.
- 68.8% participated in discussion forums.
- 93.8% found Coursera useful for professional growth.
- 80% noted that networking technologies are key to achieving professional growth.

*Issues faced during courses:*

- Peer review took too long: 31.3%
- Language barrier: 6.5%
- Time-consuming: 50%
- Procrastination: 6%
- No issues: 6.1%

*Among respondents:*

- 18.8% gained experience in creating MOOC courses.
- 31.1% plan to create MOOCs.
- 50% have not considered it.

*Impact on Professional Competence*

1. *Information and Communication Competence*: Teachers reported improved skills in using ICT tools and educational platforms, which are critical for modern teaching environments.

The use of interactive whiteboards, online resources, and educational software has become commonplace, allowing teachers to create more dynamic and engaging lessons. This competency also extends to the effective use of communication tools for interacting with students, parents, and colleagues, as evidenced by the high participation rates in online forums and virtual discussions.

Nosova (2023) underscores the significance of ICT in mathematics lessons, where digital tools can simplify complex concepts and enhance student understanding. Similarly, Smith (2021) highlights the broader impact of ICT in creating interactive learning environments that cater to diverse learning needs.

2. *Methodological Competence*: Exposure to various innovative teaching methods on Coursera has helped teachers integrate new pedagogical approaches into their classrooms. Courses on project-based learning, gamification, and collaborative learning have provided teachers with practical strategies to enhance student engagement and learning outcomes. For example, Johnson (2022) illustrates how gamification can transform traditional teaching methods, making learning more interactive and enjoyable for students.

The adoption of these methodologies requires teachers to develop new skills and adapt their teaching practices. This ongoing professional development is essential for teachers to stay current with educational innovations and effectively incorporate them into their classrooms.

3. *Psychological and Pedagogical Competence*: Courses on virtual and augmented reality have enabled teachers to create more engaging and individualized learning experiences. These technologies allow for the creation of immersive learning environments that cater to diverse learning styles and needs. Wang (2023) highlights the potential of virtual reality to improve student engagement and comprehension, particularly in subjects that benefit from visual and experiential learning.

By leveraging these technologies, teachers can better address the psychological needs of their students, creating more personalized and effective learning experiences. This competence is critical for fostering a supportive and inclusive classroom environment.

4. *Communicative Competence*: Enhanced communication skills through the use of online tools and platforms were a common benefit among respondents. Modern educators must be adept at using various communication technologies to facilitate interaction with students, parents, and colleagues. The high participation rates in Coursera's discussion forums indicate that teachers are actively seeking to improve their communicative competence through professional development courses.

Effective communication is essential for building strong relationships with students and their families, as well as for collaborating with colleagues. The use of digital communication tools can enhance these interactions, making them more efficient and effective.

*Blended Learning Models*

Blended learning models have been shown to significantly enhance teachers' professional competence by providing flexible and personalized professional development opportunities. Graham et al. (2021) found that teachers who participated in blended learning professional development programs reported increased confidence in using digital tools and integrating technology into their teaching. The flexibility of blended learning allows teachers to access resources and training at their own pace, making it easier to fit professional development into their busy schedules [13].

Moreover, blended learning environments foster a more interactive and engaging learning experience for students, which in turn enhances teachers' methodological competence. By combining traditional face-to-face instruction with online learning, teachers can create a more dynamic and student-centered classroom environment. This approach also allows teachers to use

data from online learning activities to inform their instructional practices and tailor their teaching to meet the needs of their students.

*Artificial Intelligence and Machine Learning*

The integration of AI and machine learning in education has the potential to revolutionize teachers' professional development. AI-powered tools can provide personalized learning experiences for teachers, helping them identify areas for improvement and track their progress over time. Huang and Spector (2022) discuss how AI can enhance teachers' instructional practices by providing real-time feedback and recommendations based on student performance data.

For example, AI-powered platforms can analyze student assessment data to identify learning gaps and suggest targeted interventions. This allows teachers to provide more personalized and effective instruction, ultimately leading to improved student outcomes. Additionally, AI-powered professional development tools can offer personalized learning pathways for teachers, helping them develop specific skills and competencies based on their individual needs and goals.

*Professional Learning Communities (PLCs)*

PLCs are an effective way to promote continuous professional growth and foster a collaborative learning environment among teachers. DuFour and Fullan (2022) highlight the effectiveness of PLCs in improving teaching practices and student outcomes. PLCs provide a supportive environment where teachers can share best practices, discuss challenges, and develop new strategies to enhance their teaching.

Participating in a PLC allows teachers to engage in reflective practice and ongoing professional learning. This collaborative approach to professional development helps teachers stay current with the latest educational research and innovations, ultimately leading to improved teaching practices and student outcomes. Additionally, PLCs foster a culture of continuous improvement, encouraging teachers to take ownership of their professional growth and development.

*Digital Literacy*

Digital literacy is a critical component of teachers' professional competence in the modern educational landscape. Eshet (2022) emphasizes the importance of digital literacy training for teachers, highlighting the need for comprehensive professional development programs that focus on developing these skills. Digital literacy encompasses a range of competencies, including the ability to use digital tools and resources, critically evaluate online information, and effectively integrate technology into teaching and learning.

Developing digital literacy skills is essential for teachers to effectively use technology in their classrooms. Professional development programs that focus on digital literacy can help teachers build their confidence and competence in using digital tools, ultimately leading to more effective and engaging teaching practices. Additionally, digital literacy skills enable teachers to *navigate the rapidly changing educational landscape and stay current with the latest technological advancements.*

*Case Study: Coursera*

Coursera's extensive reach and diverse course offerings make it an ideal platform for studying the impact of innovative educational technologies on teachers' professional competence. The platform's courses cover a wide range of topics, including ICT, new teaching methodologies, and student engagement strategies. The high level of engagement among respondents indicates the platform's effectiveness in providing professional development opportunities for teachers.

Coursera's partnership with Ministry of Science and Higher Education of Republic of Kazakhstan further underscores its role in the professional development of teachers in the region. This partnership allows university professors to freely access Coursera's courses, providing them with valuable resources and training to enhance their teaching practices.

*Analysis of Survey Data*

1. *Course Completion Patterns:* The data shows a high level of engagement with Coursera, with a significant percentage of respondents completing multiple courses. The most popular courses, such as "University Teaching" and "Positive Psychology," indicate a focus on areas directly relevant to teaching practice and professional development. The fact that 75% of respondents explored other courses further demonstrates a willingness to broaden their knowledge and skills beyond the core offerings.

2. *Challenges Encountered*: The issues faced by respondents, including time constraints (50%) and lengthy peer reviews (31.3%), highlight areas for potential improvement in the Coursera experience. These challenges suggest that while Coursera is highly valued, there are practical aspects of course design and delivery that could be optimized to enhance user satisfaction and course completion rates.

3. *Role of Networking Technologies*: The strong emphasis on networking technologies as key to professional growth (80%) underscores the importance of creating and maintaining professional connections. Coursera's discussion forums and peer interactions provide valuable opportunities for networking, which is essential for sharing knowledge, collaborating with peers, and accessing new professional opportunities.

4. *Experience with MOOC Creation:* The data on respondents' experience with MOOC creation reveals a notable interest in contributing to the development of online courses. While only 18.8% have already created MOOC courses, a significant portion (31.1%) plans to do so in the future. This trend indicates a growing recognition of the value of contributing to the field of online education and highlights the potential for Coursera users to become active participants in the creation of educational content.

The integration of innovative technologies into teachers' professional development is clearly supported by the survey results. Coursera's diverse course offerings and its role in facilitating networking and professional growth align with the broader goals of enhancing teachers' competencies across various domains. The use of technologies such as virtual reality, gamification, and blended learning models reflects a commitment to adopting new pedagogical approaches and improving teaching practices.

The findings also suggest that while Coursera provides valuable resources and opportunities for professional development, there are areas where further enhancements could be made. Addressing issues such as course time constraints and peer review processes will be crucial for improving user experience and maximizing the impact of Coursera on teachers' professional growth.

So, Coursera's model of peer-reviewed assignments and discussion forums fosters a collaborative learning environment. This approach not only helps teachers develop their competencies but also builds a global community of educators who can share best practices and support each other in their professional growth. The survey results indicate that Coursera has been particularly effective in improving teachers' information and communication, methodological, psychological and pedagogical, and communicative competencies.

**Conclusion**

The integration of innovative technologies into the educational process is crucial for the development of teachers' professional competence. The examination of data from Coursera users, coupled with a review of the literature, reveals that modern technologies significantly impact various aspects of teachers' professional development, including information and communication competence, methodological, psychological and pedagogical competence, and communicative skills.

After the survey and analysis, the following points were revealed, the improvement of which would increase the effectiveness of increasing the teacher's competence:

1. *Optimize Courses and User Support:* Based on the issues identified, such as lengthy review times and time-consuming course formats, it is recommended to develop more flexible and supportive mechanisms within the Coursera platform. This could include reducing review times, enhancing user support, and providing additional resources for time management.

2. *Expand Content and Methodological Approaches:* Given the high interest in courses like "University Teaching" and "Designing Learning Innovation," it is important to continue developing and expanding course offerings that cover new pedagogical methods and principles. Introducing courses that focus on the latest educational technologies can facilitate deeper understanding and adoption of innovative teaching practices.

3. *Strengthen Networking and Professional Communities:* Considering the importance of networking technologies for professional growth, it is essential to enhance opportunities for creating professional communities and networks. Introducing additional features for networking and actively encouraging participation in forums and groups can help teachers effectively share experiences and best practices.

4. *Support MOOC Course Creation:* Survey results indicate a growing interest in creating MOOC courses. It is recommended to develop special programs and resources to support teachers in the creation and dissemination of their own MOOC courses. This will help expand access to educational materials and improve teacher qualifications at the national level.

*Assessment of Current Pedagogical Competence Development in Kazakhstan*

The development of pedagogical competence in Kazakhstan is undergoing significant transformation due to the integration of innovative technologies. Platforms like Coursera have become a vital tool for teachers' professional development, offering access to a wide range of courses and resources. The agreement between the Ministry of Science and Higher Education of Kazakhstan and Coursera highlights the commitment to modernizing the educational process and enhancing teacher qualifications. However, to fully unlock the potential of these technologies, it is necessary to continue developing national programs aimed at supporting teachers in their professional growth. This includes improving access to educational resources and creating conditions for the effective application of new technologies in educational practice.

The development of pedagogical competence in Kazakhstan also requires increased attention to adapting educational technologies and methods to local conditions and cultural specifics. Ensuring that innovative approaches and tools align with educational standards and meet the needs of Kazakhstani students is crucial. Overall, the use of innovative technologies represents a significant step toward improving educational quality and developing teachers' professional skills. Successful integration of these technologies into the educational process contributes to creating a more effective and adaptive learning environment, which positively impacts learning outcomes and teachers' professional growth.

*Funding: This work was supported by the Ministry of Science and Higher Education of the Republic of Kazakhstan under Grant AP14972706.*

## REFERENCES

1 Gudmundsdottir, G. B., & Hatlevik, O. E. (2020.) Newly qualified teachers' professional digital competence: Implications for teacher education. European Journal of Teacher Education. - 43(4), P. 494-512

2 König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: Teacher education and teacher competence effects among early career teachers in Germany. European Journal of Teacher Education, - №43(4). P. 608-622

3 Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A.. (2017) Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. Educational Technology Research and Development, - №65(3), P.555-575

4 Nosova, V. I. (2023) Innovative Technologies in Mathematics Lessons. Molodoy Uchenyy. P. 20-27.

5 Wang, Y. A (2023) meta-analysis on the effectiveness of virtual reality in classrooms: Benefits for immersive learning environments. Journal of Educational Technology & Society, №26(2) P.135-149

6 Graham, C. R., Borup, J., Short, C. R., & Archambault, L. (2021) Blended learning environments and their impact on teaching practices: A comprehensive review. Journal of Online Learning Research, №7(1) P.1-22

7 Huang, R., & Spector, J. M. (2022) Artificial Intelligence in Education: Enhancing Teachers' Professional Development. Journal of Learning Analytics. - №10(2), P.100-115.

8 DuFour, R., & Fullan, M. (2022) Professional Learning Communities: Strategies for Continuous Improvement. Educational Leadership. №79(4). P.22-27

9 Eshet, Y. (2022) Digital Literacy: The Cornerstone of Teachers' Professional Competence. Journal of Educational Technology Research and Development. - №70(3). P. 679-693

10 Smith, J. (2021) Advances in Educational Technologies. International Journal of Education. - №15(2). P.123-135

11 Wang, X. (2023) Virtual Reality in Classrooms: A Meta-Analysis. Journal of Educational Technology. №20 (1) P. 55-78.

12 Johnson, L. (2022) Gamification in Education: A Comprehensive Review. Educational Research Review. №33. P.45-67

13 Graham, C. R., Woodfield, W., & Harrison, J. B. (2021) Blended Learning Models and Their Impact on Teachers' Professional Competence. Educational Technology Journal. - №25(3). P.200-220.

## ИННОВАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАР ПЕДАГОГТЕРДІҢ КӘСІБИ ҚҰЗЫРЕТТІЛІГІН ҚАЛЫПТАСТЫРУШЫ ФАКТОР РЕТІНДЕ

**Аңдатпа**

Мақала мақсаты - педагогтердің кәсіби құзыреттілігін дамытуға инновациялық технологиялардың ықпалын Coursera платформасының мысалында қарастыру. 2021-2024 жылдар аралығындағы әдебиеттерді жан-жақты зерттеу және Coursera пайдаланушылары арасында жүргізілген сауалнаманың нәтижелерін талдау арқылы зерттеу цифрлық құралдардың көмегімен дамытылатын негізгі құзыреттерді айқындады. Олардың қатарында ақпараттық-коммуникациялық, әдістемелік, психологиялық, педагогикалық және коммуникативтік дағдылар бар.

Coursera платформасының кәсіби даму мүмкіндіктерін кеңейтуге қосқан үлесін әсіресе Қазақстанда ерекше назар аударуға болады. Үкіметтің серіктестік бағдарламасының арқасында педагогтерге Coursera платформасына тегін қолжетімділік беріліп, бұл оқытушылардың біліктілігін арттыруға айтарлықтай жағдай жасады. Зерттеу барысында платформаның артықшылықтарымен қатар, педагогтердің уақыт тапшылығы және ұзақ сараптамалық шолу процестері сияқты қиындықтарға тап болатыны анықталды. Бұл мәселелер пайдаланушылардың жүйелі қатысуы мен алынған білімді практикада уақытылы қолдану мүмкіндіктерін шектейді.

Зерттеу нәтижелері АКТ және жасанды интеллект құралдарын, сондай-ақ аралас оқыту модельдерін мұғалімдерді оқыту үдерісіне енгізудің маңыздылығын көрсетеді. Бұл технологиялар тез өзгеретін білім беру саласында үздіксіз кәсіби даму мен бейімделуді қамтамасыз етуге септігін тигізеді. Сонымен қатар, blended learning моделін қолдану педагогикалық икемділікті арттырудың және кәсіби дамудың тиімді стратегиясы ретінде сипатталады. Мақала инновациялық технологиялардың, соның ішінде Coursera платформасының, педагогтердің кәсіби өсуіне ықпалын түсінуге үлес қосады. Қазақстанда және әлем бойынша білім беру саясатының қолдауымен осындай платформалардың тиімділігін арттыру мақсатында қолданыстағы қиындықтарды жою және күшті жақтарын пайдалану маңызды болып табылады.

**Негізгі сөздер:** Инновациялық технологиялар, педагогтердің кәсіби құзыреттілігі, Coursera, білім берудегі АКТ, аралас оқыту, жасанды интеллект.

## ИННОВАЦИОННЫЕ ТЕХНОЛОГИИ КАК ФАКТОР ФОРМИРОВАНИЯ ПРОФЕССИОНАЛЬНОЙ КОМПЕТЕНТНОСТИ ПЕДАГОГОВ

**Аннотация**

Цель статьи является изучение влияния инновационных технологий на развитие профессиональной компетентности педагогов, используя платформу Coursera. В рамках работы проведен комплексный обзор литературы за период с 2021 по 2024 годы, а также анализ данных опроса пользователей платформы. Это позволило выявить ключевые компетенции, развиваемые с использованием цифровых инструментов,

включая информационно-коммуникационные, методические, психологические, педагогические и коммуникативные навыки.

Особое внимание уделено роли платформы Coursera в предоставлении возможностей для профессионального роста, особенно в Казахстане. Благодаря государственной программе местные педагоги получили бесплатный доступ к платформе, что значительно расширило их возможности для повышения квалификации. Однако, наряду с преимуществами, исследование выявило и определенные трудности. В числе основных проблем отмечены нехватка времени у педагогов для прохождения курсов и длительные процессы экспертной оценки, что ограничивает оперативное применение полученных знаний на практике.

Результаты исследования подчеркивают важность интеграции информационно-коммуникационных технологий, инструментов искусственного интеллекта и моделей смешанного обучения в подготовку педагогов. Эти подходы способствуют непрерывному профессиональному развитию педагогов и их адаптации к условиям стремительно меняющегося образовательного ландшафта. Модели смешанного обучения, в частности, показаны как эффективный инструмент для улучшения гибкости и актуальности педагогической практики.

Данная статья вносит вклад в понимание того, как инновационные технологии, такие как Coursera, могут трансформировать систему подготовки педагогов. Результаты подчеркивают важность разработки и поддержки образовательных политик, направленных на устранение существующих барьеров и оптимизацию цифровых платформ, что позволит максимально эффективно использовать их потенциал для профессионального развития педагогов.

**Ключевые слова:** Инновационные технологии, профессиональная компетентность педагогов, Coursera, ИКТ в образовании, смешанное обучение, ИИ.

## REFERENCES

1 Gudmundsdottir, G. B., & Hatlevik, O. E. (2020.) Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education*. №43(4), P. 494-512 [in English].

2 König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: Teacher education and teacher competence effects among early career teachers in Germany. European Journal of Teacher Education, №43(4). P. 608-622 [in English].

3 Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A.. (2017)Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development,* №65(3), P.555-575 [in English].

4 Nosova, V. I. (2023)Innovative Technologies in Mathematics Lessons. Molodoy Uchenyy. Available at: -URL: www.moluch.ru [in English].

5 Wang, Y. A (2023) meta-analysis on the effectiveness of virtual reality in classrooms: Benefits for immersive learning environments. Journal of Educational Technology & Society, №26(2) P.135-149 [in English].

6 Graham, C. R., Borup, J., Short, C. R., & Archambault, L. (2021) Blended learning environments and their impact on teaching practices: A comprehensive review. Journal of Online Learning Research*, №*7(1) P.1-22 [in English].

7 Huang, R., & Spector, J. M. Artificial Intelligence in Education: Enhancing Teachers' Professional Development. Journal of Learning Analytics, 2022. №10(2), P.100-115. [in English].

8 DuFour, R., & Fullan, M. (2022) Professional Learning Communities: Strategies for Continuous Improvement. Educational Leadership. №79(4). P.22-27 [in English].

9 Eshet, Y. (2022) Digital Literacy: The Cornerstone of Teachers' Professional Competence. Journal of Educational Technology Research and Development. №70(3). P. 679-693 [in English].

10 Smith, J.(2021) Advances in Educational Technologies. International Journal of Education. №15(2). P.123-135 [in English].

11 Wang, X. (2023)Virtual Reality in Classrooms: A Meta-Analysis. Journal of Educational Technology. №20(1) P. 55-78. [in English].

12 Johnson, L. (2022) Gamification in Education: A Comprehensive Review. Educational Research Review. №33. P.45-67 [in English].

13 Graham, C. R., Woodfield, W., & Harrison, J. B. (2021)Blended Learning Models and Their Impact on Teachers' Professional Competence. Educational Technology Journal. №25(3). P.200-220 [in English].

**Information about authors:**

Sholpan Kolumbayeva – **corresponding author,** Professor, Department of Pedagogy, Abai Kazakh National Pedagogical University, 13 Dostyk ave., Almaty, Republic of Kazakhstan.

E-mail: kolumb_09@mail.ru

ORCID: https://orcid.org/0000-0003-1491-8990

Aigul Sadykova – PhD, senior teacher at the department of Philology, L.N. Gumilyov ENU, Satpaev st 2, Astana, Republic of Kazakhstan
E-mail: aika.ava@bk.ru
ORCID: https://orcid.org/0000-0001-8418-0552
Baktygul Atabekova – associate professor, PhD, Abai Kazakh National University, department of Pedagogy, 13 Dostyk ave., Almaty, Republic of Kazakhstan
E-mail: baktygullllll@mail.ru
ORCID: https://orcid.org/0000-0003-2235-9762
Elmira Eshtaeva – senior teacher at the Department of Philology, L.N. Gumilyov ENU, Satpaev st 2, Astana, Republic of Kazakhstan
E-mail: eshtaeva1982@mail.ru
ORCID: https://orcid.org/0009-0000-7995-7021

**Информация об авторах:**
Колумбаева Шолпан Жаксыбаевна **– основной автор,** профессор, факультет педагогики, КазНПУ им Абая, пр Достык 13, г. Алматы, Республика Казахстан
E-mail: kolumb_09@mail.ru
ORCID: https://orcid.org/0000-0003-1491-8990
Садыкова Айгуль Кудайбергеновна – PhD, старший преподаватель кафедры иностранных языков, ЕНУ им Л. Н. Гумилева, ул К. Сатпаева 2, г. Астана, Республика Казахстан
*E-mail: aika.ava@bk.ru
ORCID: https://orcid.org/0000-0001-8418-0552
Атабекова Бактыгуль Ботабековна – ассоциированный профессор, КазНПУ им Абая, пр Достык 13, г. Алматы, Республика Казахстан
E-mail: baktygullllll@mail.ru
ORCID: orcid.org/ 0000-0003-2235-9762
Ештаева Эльмира Габбасовна – старший преподаватель кафедры иностранных языков, ЕНУ им Л. Н. Гумилева, ул К. Сатпаева 2, г. Астана, Республика Казахстан
E-mail: eshtaeva1982@mail.ru
ORCID: https://orcid.org/0009-0000-7995-7021

**Авторлар туралы ақпарат**
Колумбаева Шолпан Жақсыбаевна – **негізгі автор**, профессор, Педагогика кафедрасы, Абай атындағы Қазақ ұлттық педагогикалық университеті, Достық д. 13, Алматы қ., Казақстан Республикасы
E-mail: kolumb_09@mail.ru
ORCID: https://orcid.org/0000-0003-1491-8990
Садыкова Айгуль Кудайбергеновна – PhD, шетел тілдері кафедрасы, Л.Н. Гумилев атындағы ЕҰУ, Қ. Сәтпаев к-сі 2, Астана қ., Қазақстан Республикасы
*E-mail: aika.ava@bk.ru
ORCID: https://orcid.org/0000-0001-8418-0552
Атабекова Бақтыгүл Ботабековна – қауымдастырылған профессор, Абай атындағы Қазақ ұлттық педагогикалық университеті, Достық д 13, Алматы қ., Казақстан Республикасы
E-mail: baktygullllll@mail.ru
ORCID: https://orcid.org/0000-0003-2235-9762
Ештаева Эльмира Габбасовна – шетел тілдері кафедрасының аға оқытушысы, Л.Н. Гумилев атындағы ЕҰУ, Қ. Сәтпаев к-сі 2, Астана қ., Казақстан Республикасы
E-mail: eshtaeva1982@mail.ru
ORCID: https://orcid.org/0009-0000-7995-7021