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Organisational and pedagogical conditions for continuous professional development of teachers in the conditions of postgraduate pedagogical education

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Abstract

Relevance. The study is relevant due to the need to modernize the postgraduate education system in Ukraine to align with rapid technological changes, globalization, and the increasing demands for educational quality.

Purpose. The purpose of the study is to identify key conditions that affect the effectiveness of professional improvement of teachers after the end of their basic education.

Methodology. The study employed a comprehensive theoretical approach, incorporating methods such as literature analysis, synthesis, generalization, and comparison.

Results. The study's findings indicate that successful continuous professional development for teachers requires a support system that provides access to modern educational resources, participation in professional communities, mentoring support, and opportunities for self-reflection and experience exchange. It is established that an important condition is also the adaptability of programmes to educational challenges, which allows for considering the individual needs and level of training of each teacher. The results of the study show that teachers who have the opportunity to constantly participate in professional trainings and seminars demonstrate a high level of pedagogical skills and qualitative indicators of the effectiveness of their own activities. Additionally, analysis of international practices (e.g., in the UK, Norway, Spain, Australia) underscores the importance of integrating advanced technologies in postgraduate education to enhance training efficacy.

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Conclusions. Based on the results obtained, it is concluded that the creation of favourable organisational and pedagogical conditions is a critical factor in ensuring the continuous professional development of teachers, which primarily has a positive impact on the quality of education in general. Thus, the proposed recommendations can be used to improve the system of postgraduate teacher education and promote the professional improvement of teachers.

Keywords: education system; quality of education; continuing education; professional development; applicants' requests; latest technologies; education reform; modern challenges.

Introduction

Continuous professional development of teachers is one of the most important problems of modern education. Increased requirements for the quality of education, the need to introduce the latest technologies and teaching methods, and rapid changes in society and the economy require teachers to constantly improve their knowledge and skills. The main problem is that despite numerous reforms in the field of education, the system of postgraduate teacher education in Ukraine remains insufficiently effective in ensuring a high level of professional development of teachers. There are substantial gaps in the availability of educational resources, the uniformity of their distribution between urban and rural schools, and ensuring the adaptability of educational programmes to the needs of school teaching. A substantial number of teachers face difficulties in choosing advanced training courses that meet their professional needs. These conditions make it necessary to create an effective system of support and development of teachers.

The importance of the study lies in the need to modernise the system of postgraduate education in Ukraine to ensure compliance with modern challenges and needs of teachers. In the context of rapid technological changes, globalisation, and requirements for the quality of education, continuous professional development becomes an important factor in successful teaching activities. However, the current system of postgraduate education in Ukraine often does not keep up with these changes, which creates substantial obstacles to the effective professional growth of teachers. In addition, the lack of a systematic approach to the organisation of postgraduate education of teachers is a substantial obstacle to effective professional development. A number of professional development programmes are general in nature and do not consider the specifics of teachers' work in various subjects and levels of teaching. This reduces their practical value and effectiveness.

In Ukraine, there are still no clear criteria and mechanisms for evaluating the effectiveness of professional development programmes, which makes it difficult to determine their quality and compliance with the real needs of teachers. The introduction of a monitoring and evaluation system could substantially improve the quality of postgraduate education and contribute to the professional improvement of teachers. Thus, the relevance of the study is due to the need for systemic changes in postgraduate teacher education to ensure equal access to high-quality educational resources and effective professional development programmes that meet the modern challenges and needs of teachers.

Ukrainian and international researchers were engaged in the professional development of teachers. In particular, S. Donitsa-Schmidt and R. Ramot [1] explored the opportunities and challenges facing education in Israel

during the COVID-19 pandemic. Researchers established that the pandemic has substantially affected the teacher training process, forcing educational institutions to quickly adapt to new conditions and introduce distance learning. J. Naidoo [2] analysed the experiences of students enrolled in postgraduate mathematics programmes in South Africa using digital platforms during the pandemic. The author noted that the introduction of digital technologies has contributed to improving the availability of educational materials and improving the effectiveness of training.

M.L. Angelini et al. [3] analysed predictive factors that complicate the use of simulation methodology in teacher training. They noted that simulation techniques can be effective but require careful training and support from teachers. A. Fuentes Ortega et al. [4] examined the factors that prevent female researchers from obtaining postgraduate degrees. They determined that social and economic barriers often hinder women's professional development in the scientific field. M.S. Khine and A. Muthanna [5] investigated the development of professional identity in higher education. They analysed the processes that contributed to the formation and strengthening of the professional identity of teachers, emphasising the importance of continuous professional development and self-improvement.

N.I. Pinchuk et al. [6] examined the development of personal readiness of heads of vocational educational institutions to manage the digital educational space through distance postgraduate education. They established that distance education is an effective tool for improving the skills of managers, especially in the context of the rapid development of digital technologies. I. Vorotnykova [7] considered the design and implementation of e-learning in the system of postgraduate teacher education. She stressed the importance of creating high-quality e-courses that meet the needs of modern educators.

Despite a substantial amount of research in the field of professional development of teachers, there are certain shortcomings. In particular, little attention was paid to the integration of the latest technologies into the process of professional development of teachers in the context of postgraduate education. The influence of professional communities on the development of teachers and the effectiveness of various forms of mentoring support was not sufficiently analysed. The purpose of the study is to identify effective approaches to improving the skills of teachers, developing recommendations for integrating the latest technologies into the educational process and analysing the role of professional communities and mentoring support in the professional development of teachers. The main problematic issues of the study are identifying the organizational and pedagogical conditions that are most effective for ensuring the continuous professional development of teachers. Another issue is determining which new technologies can be integrated into

the process of postgraduate education to enhance its effectiveness. Additionally, the study aims to explore the role of professional communities and mentoring support in the professional development of teachers.

To achieve the set goal this study analysed existing approaches to the organisation of continuous professional development for teachers. It identified the primary organisational and pedagogical conditions that contribute to effective professional development and assessed the impact of recent technologies on the process of professional development. The examination of the role of professional communities and mentoring support in teacher development are also undertaken. Finally, the study aims to develop recommendations for enhancing the system of postgraduate teacher education in Ukraine. Thus, the study is aimed at a deep examination of the organisational and pedagogical conditions that contribute to continuous professional development and the development of practical recommendations for their implementation in the system of postgraduate teacher education in Ukraine.

Literature Review

Such a review focuses on research on the professional development of teachers, reflecting the various approaches, concepts, and methods used in this area. The main papers that became the basis in the description of the outlined problems are considered.

Research on teacher professionalism and training in Australia and England was conducted by D. Mayer and M. Mills [8]. They analysed how different educational systems affect the professional development of teachers and identified key factors that contribute to successful professional growth. The importance of reflection and the practice of reflection in educational programmes for novice teachers was emphasised by C. Mulryan-Kyne [9]. The author emphasised the importance of reflection as a tool for self-improvement and professional development of teachers. G. Aitken et al. [10] discussed in their paper how postgraduate education can expand the horizons of learning and teaching. The authors stressed the importance of creating a space for teaching and supporting teachers through specialised educational programmes. A study on the cross-cultural aspects of postgraduate education for Indigenous Peoples was conducted by K. Trimmer et al. [11]. They emphasised the importance of considering cultural differences in the training and support provided to teachers. M.L. Angelini et al. [3] analysed the factors influencing difficulties in applying simulation methodology in teacher education. They proposed approaches to improve this learning method through simulations.

Researchers E. Tsui et al. [12] examined collaboration between students, teachers, and practitioners in creating curricula based on the use of the latest technologies. They highlighted the importance of integrating all participants in the educational process to achieve high results. A. Kostoulas [13] considered the impact of regulatory factors on the education of refugees and migrants. The author analysed the experience of future teachers and their views on teaching in conditions of cultural diversity. The examination of educational practices and professional development of teachers working with early language

learning was conducted by S. Mourão and C. Leslie [14]. They reviewed the European experience and developed recommendations for improving language education. I.K. Riksaasen Hatlevik et al. [15] analysed innovative approaches to university teacher education in Norway. They emphasised the importance of research literacy, integration, and the use of technology. Approaches to bilingual education and training of second language teachers were considered by D.M. Ramírez-Verdugo [16]. The author investigated various models of bilingual education and their impact on the educational process. S. Anam and R. Hussain [17] examined teachers' perceptions of data-based learning in English language classes. They analysed the advantages and problems of this approach.

L. Valencia Quecano et al. [18] examined the phenomenon of student selection in postgraduate programmes. They stated the main causes of this phenomenon and suggested ways to overcome it. H. Dixon et al. [19] analysed the motivation of teachers to take part in postgraduate programmes. They identified the impact of expectations of success and the value of education on teachers' decisions to continue their studies. D. Langsford and L. Rusznyak [20] investigated how teacher training affects their decisions about integrated learning. They stressed the importance of an integrated approach to teacher training. The analysis of pedagogical artistic strategies on the example of Miguel Hernandez University was conducted by A. Alonso-Sanz [21]. The author considered the practices of using art in the educational process. M.L. Meler [22] investigated the impact of the pandemic on the use of technology in education. She analysed the changes that have taken place and outlined the prospects for the development of this area in the future. The examination of factors that make learning meaningful for master's students was conducted by S. Zeivots et al. [23]. They point out the importance of an individual approach and interactive methods.

The impact of social media on learning and teaching was considered by A. McWhirter [24]. The author analysed the characteristics of different generations and their perception of social media in the educational process. Researchers T.F. Smits and E. Tanghe [25] examined multi-perspectivity in teaching. They analysed the confidence of master's students in using multi-perspective approaches. E. Bosio and M. Guajardo [26] worked out the concept of value-important education, considering it through the prism of perception of the personality of teachers. They stressed the importance of developing the emotional and ethical literacy of teachers, believing that this contributes to the creation of an effective educational environment. In their study, A. Glover and S. Stewart [27] investigated the use of mixed distance learning in teacher training. They emphasised that such approaches can solve problems with the recruitment of teachers, especially in remote regions. The authors noted that the flexibility of training and the availability of materials contribute to attracting more candidates to pedagogical programmes, thereby improving the quality of education.

R.H. Lyckander [28] reviewed the specific features of training teachers of vocational schools in Norway. He analysed various aspects of teacher training, highlighting key differences and challenges facing teachers. The author drew attention to the need to adapt educational

programmes to the needs of the labour market and modern technological changes. S.P. Hughes et al. [29] examined the digital learning needs of future language teachers. They stressed the importance of digital literacy and the ability to use modern technologies in the educational process. L.E. Damgaard Knudsen et al. [30] examined teacher ethics and quality of instruction in Scandinavian schools. They analysed new approaches to teaching and ethical challenges that have arisen in the modern educational system. The authors emphasised that high ethical awareness of teachers is a key factor in ensuring quality education.

Materials and Methods

The examination of conditions that contribute to the continuous professional development of teachers in the context of postgraduate teacher education requires the use of various theoretical methods and the analysis of a substantial number of sources. The first stage of the study focused on a detailed analysis of scientific literature covering theories and models of professional development of teachers. More than 30 sources were processed, including monographs, studies, and dissertation papers. This allowed identifying the main approaches to the examination of this problem and determining the vital factors that affect the effectiveness of professional development of teachers.

The second stage of the study included a comparative analysis of postgraduate teacher education systems in different countries. For this purpose, educational systems and practices of several countries with a high level of education development were selected, in particular Norway, Great Britain, USA, Finland. The examination of materials was conducted on the basis of scientific publications. Special attention was paid to such aspects as the organisation of professional communities, the provision of mentoring support, the use of the latest technologies, and the flexibility of educational programmes. The comparative analysis identified the best practices and ways to adapt them to Ukrainian conditions.

The third stage of the study focused on the synthesis and generalisation of the results obtained. Based on the analysis of scientific sources and comparative analysis of international experience, a model of organisational and pedagogical conditions that contribute to the continuous professional development of teachers was developed. The outlined model included several key elements. These elements consist of access to modern educational resources, the ability to participate in professional communities, and the availability of mentoring support. Additionally, the model emphasizes opportunities for self-reflection and the exchange of experience. It also highlights the need for flexibility and adaptability in educational programs to meet contemporary requirements and challenges. Special attention was paid to the analysis of the impact of the latest technologies on the effectiveness of training and professional development of teachers.

The results of the analysis of scientific sources were compared and summarised to identify common and distinctive features and formulate conclusions and recommendations. Special attention was paid to identifying the most effective practices and conditions that contribute to the continuous professional development of

teachers, considering the specific features of the Ukrainian education system.

Thus, the application of a comprehensive theoretical approach, which included the analysis of scientific sources, comparative analysis, synthesis and generalisation, allowed deeply examining the problem under study and obtaining scientifically based results. The materials used in the study included scientific publications, official documents, and the results of comparative analysis, which ensured high quality and reliability of the data obtained.

Results

The current state of continuous professional development of teachers in Ukraine is characterised by the presence of both substantial achievements and numerous challenges that require attention and solutions. Over the past five years, Ukraine has made substantial progress in reforming the system of postgraduate teacher education to increase its efficiency and meet modern educational requirements. One of the main achievements is the introduction of new state standards and regulatory documents regulating the process of professional development of teachers. One of these steps is the adoption of Law of Ukraine No. 2145-VIII "On Education" [31]. Its adoption contributed to the creation of a legal framework for introducing new approaches to the professional development of teachers. The law provides for mandatory continuing professional training, which includes both traditional and modern types of training, such as online courses, design activities, surfing, trainings, seminars.

However, despite the regulatory changes, the Ukrainian system of postgraduate teacher education faces a number of challenges. One of these problems is the lack of funding for educational programmes. In particular, teachers from remote rural schools often do not have the opportunity to participate in professional trainings due to insufficient funding for business trips and course fees [32; 33]. This limits the ability of teachers to participate in professional trainings, seminars, and conferences that are important for their professional growth. Another substantial challenge is the unequal access to modern educational resources between urban and rural educational institutions. For example, teachers working in remote areas often do not have the opportunity to use modern technologies and educational materials [34]. This creates substantial obstacles to their professional development and negatively affects the quality of education they provide to students. It is necessary to ensure equal access to educational resources for all teachers, regardless of their place of residence to solve this problem. To this end, educational institutions, methodological services and centres should focus on providing broadband internet in rural areas, which could substantially improve access to online resources.

In addition, there is a problem of lack of a systematic approach to the organisation of postgraduate education of teachers. A substantial part of teachers face difficulties in choosing advanced training courses that would meet their professional needs and interests. Often, courses are general in nature and do not consider the specifics of teachers' work in different academic disciplines and levels of study. Since the curricula of postgraduate education institutions are focused on the implementation of the content of general, social and diagnostic modules, and fewer hours

are provided for the professional module, advanced training courses often do not meet the needs and requests of applicants for education in various specialities [35-38].

Another important aspect is the lack of an effective system for evaluating the results of professional development of teachers. Currently, there are no clear criteria and mechanisms for evaluating the effectiveness of professional development programmes in Ukraine. This complicates the process of determining the quality of educational programmes and their compliance with the real needs of teachers. The introduction of a system for monitoring and evaluating the results of professional development could contribute to improving the quality of postgraduate education. Thus, the EdCamp Ukraine project offers an independent assessment of the quality of educational events, which can become a model for wider implementation. However, this project has certain disadvantages, one of which is the lack of a clear methodology for improving the professional level.

A positive development is the active introduction of information and communication technologies (ICT) in the process of professional development of teachers. Over the past period (2019-2024), a substantial number of online courses, platforms, and webinars have appeared in Ukraine, which enable teachers to gain new knowledge and skills remotely. Thus, the Prometheus platform offers free courses for teachers that cover various aspects of pedagogy and teaching methods. This allows teachers to participate in professional training without leaving the locality. One of the promising areas of development is the creation of professional communities of teachers in educational institutions, local and regional, where teachers can unite in professional communities to exchange experience and jointly solve professional problems. It is also important to involve teachers in international experience exchange programmes and internships, which helps to deepen their worldview and improve their professional skills. Thus, the Erasmus+ programme provides Ukrainian teachers with the opportunity to complete internships in European countries.

Despite certain achievements, the system of continuous professional development of teachers in Ukraine requires further reforms and improvement. It is necessary to ensure equal access to educational resources, introduce a systematic approach to the organisation of postgraduate education, improve mechanisms for evaluating the effectiveness of programmes, and actively implement ICT. This will contribute to improving the quality of education in Ukraine and the professional growth of teachers. When assessing the key organisational and pedagogical conditions that contribute to the continuous professional development of teachers in Ukraine, it is important to consider specific initiatives and examples that are currently being implemented in practice. In Ukraine, access to modern educational resources has substantially improved due to various educational projects [39].

Thus, the platform “Na Urok” offers teachers access to a substantial number of educational materials, tests, webinars, and advanced training courses. This platform has become popular among Ukrainian teachers, as it helps them conveniently and effectively obtain the necessary knowledge and skills from the comfort of their homes. Another important resource is EdEra, which provides free

online courses for teachers in various subjects. In particular, courses on this resource help teachers master the latest methods of innovative learning, which makes lessons more interesting and effective for students. Such courses help teachers improve their professional level and integrate modern technologies into the teaching process.

Professional communities play an important role in the professional development of educators, providing a platform for sharing experience, support, and collaboration [40; 41]. One successful example is the STEM education initiative (S – science, T – technology, E – engineering, M – mathematics) for teachers, which is supported by the Ministry of Education and Science of Ukraine. This initiative provides an opportunity for teachers from different cities of the country to come together to teach the latest techniques in the field of STEM. Such activities contribute to the development of professional skills and the creation of a network of contacts among teachers working in this field. An important aspect is also the development of local professional communities that unite teachers to jointly solve professional problems, conduct trainings, and exchange experience. Such activities contribute to improving the professional level of teachers and developing innovative approaches in teaching. Mentoring support is an important element of professional development of teachers in Ukraine, as it helps young professionals to adapt to school work, and experienced teachers – to develop their own skills and improve professional competence.

There are several examples of successful implementation of mentoring programmes that demonstrate the effectiveness of this approach. One example is the “New Ukrainian school” project, which includes a component of mentoring support for primary school teachers. As part of this initiative, experienced teachers help less experienced colleagues master new teaching methods, introduce the latest forms of training and use modern technologies in the educational process. Mentors also support young colleagues in the process of adapting to new educational standards and requirements of the “New Ukrainian school”. Within the framework of this project, experienced teachers act as mentors for young people, helping them develop professional skills and overcome difficulties that they face at the beginning of teaching activities. Mentoring support includes individual consultations, joint lessons, analysis, and discussion of pedagogical situations. The described project contributed to high performance, in particular, reducing the level of professional burnout among young teachers and increasing their level of job satisfaction.

It is also worth mentioning the Teach for Ukraine programme, which attracts young professionals to work in rural schools. As part of this programme, each participant receives the support of an experienced mentor who helps them adapt to work, develop professional skills, and solve difficulties that arise in the teaching process. This programme has shown high efficiency in improving the quality of education in rural schools and promoting the professional development of young teachers. Flexibility and adaptability of educational programmes are key factors contributing to the effective professional development of teachers [42; 43]. In Ukraine, it is important to consider the individual needs of teachers and provide the opportunity to

choose different courses and modules that meet their professional interests and level of professional training.

One example of a flexible educational programme is the initiative “Educational hub of the city of Kyiv”, which offers teachers a wide range of advanced training courses. The hub’s programme is designed in such a way that teachers can choose the courses that best meet their needs. Teachers have the opportunity to take trainings on using the latest technologies directly during the educational process, methods of working with gifted children, classroom management, and many others. The flexibility of the programme allows teachers to plan their own training, choosing a convenient time and format of courses – full-time, distance, or mixed. Within the framework of this project, teachers have the opportunity to choose individual trajectories of professional development. The programme includes both mandatory courses and selective modules, which allows teachers to adapt training to their own needs. For example, a history teacher can choose courses on advanced study of historical techniques, and a physics teacher can choose courses on integrating STEM education. This approach contributes to the deep assimilation of the material and its practical application in the educational process.

The importance of adaptive educational programmes in the context of inclusive education is also notable. Thus, the programme “Inclusive education: the path to equal opportunities” provides courses on adapting curricula for students with special educational needs. Teachers have the opportunity to learn how to work with children with different types of disorders, develop individual educational plans, and use special technologies. This adaptability of programmes contributes to the creation of an inclusive environment in schools and ensures equal opportunities for all students.

Integration of the latest technologies into the process of professional development of teachers is one of the vital factors contributing to improving the quality of education in Ukraine. The use of ICT allows creating interactive, accessible, and personalised training for teachers that meets modern requirements and challenges. One of the main advantages of implementing ICT is the possibility of distance learning. In Ukraine, substantial progress in this direction was made due to the launch of the All-Ukrainian online school platform, which offers free online courses for teachers in various subjects. Courses on digital literacy and the use of ICTs in the educational process help teachers learn new technologies and integrate them into various educational forms [44]. This resource became important during the COVID-19 pandemic, when a substantial part of educational institutions switched to distance learning, and teachers needed new skills to work effectively in an online environment [45-47].

Another important aspect is the use of specialised educational platforms that provide teachers with access to a wide range of educational materials and tools for creating interactive lessons. Thus, the Miyklas platform allows teachers to create interactive tasks, which increases student engagement and provides them with the means to evaluate their knowledge more effectively. Using such tools not only simplifies the learning process but also makes it more interesting and motivating for students.

The use of mobile apps is also an important aspect of integrating technology into education. In particular, the app “Na Urok” allows teachers to create interactive tasks and surveys that can be used during lessons to test students’ knowledge in a playful way. This approach makes learning more interesting and allows students to actively participate in the educational process. In addition, mobile apps help teachers conveniently plan lessons, keep notes, and share materials with colleagues. ICTs also contribute to the personalisation of learning, which is important to meet the individual needs of students. The ClassFlow platform allows teachers to create individual curricula for each student, considering their level of training and interests. This approach promotes effective learning and allows students to learn the material at a convenient personal pace.

The use of such platforms makes learning more flexible and adaptive, which is especially important in modern conditions. Integration of the latest technologies also includes the use of virtual (VR) and augmented (AR) reality in the educational process. Using VR glasses in the classroom allows students to make virtual trips, explore historical events, or study human anatomy in a three-dimensional format. This helps to make learning more fun and better understand the concepts of educational activities. Teachers who use such technologies can take specialised courses to master VR and AR tools, which substantially increases their professional competence [48-50].

Considering the results of the study, several recommendations aimed at improving the conditions for the continuous professional development of teachers in Ukraine can be highlighted. They cover various aspects of the educational process – from increasing the availability of educational resources to introducing the latest technologies and improving the professional development assessment system. One of the main directions is to ensure equal access to modern educational resources for all teachers, regardless of their place of residence. This includes providing broadband internet access to even the most remote rural schools, which will allow teachers to use online resources to improve their skills. The following are the most popular resources for Ukrainian teachers in the form of a table (Table 1).

Table 1. Resources/projects for postgraduate education and advanced training of teachers in Ukraine

Course/programme/platform	Brief description
Prometheus (https://prometheus.org.ua/)	Ukrainian online platform with free courses for the professional development of teachers
EdEra (https://ed-era.com/)	An educational platform with courses for teachers covering a variety of pedagogical topics and methods
Maidan Open University (VUM) https://vumononline.ua/	Platform with online courses and lectures on education, development, and pedagogy

Osvitoria (https://osvitoria.media/)	A resource for teachers with materials, articles, and advanced training courses
The Institute for modernisation of educational content (https://imzo.gov.ua/)	A state institution that provides resources for the professional development of teachers and updating the content of education
Project “Na Urok” (https://naurok.com.ua/)	A platform for teachers with webinars, courses, and educational materials for various school subjects
The New Ukrainian school (https://nus.org.ua/)	Initiative of the Ministry of Education and Science of Ukraine, offering resources and programmes for the professional development of teachers
Vseosvita online school (https://vseosvita.ua/)	A platform with online courses, webinars, and training materials for teachers of various disciplines
Smart Education (https://smart-edu.com.ua/)	Educational project with courses and webinars aimed at innovation in education
GoGlobal (https://globaloffice.org.ua/)	An initiative with courses for educators that focuses on learning foreign languages and global competencies
WiseCow lectionium (https://www.youtube.com/c/WiseCow)	Educational platform with lectures and courses, including modern pedagogical approaches
Centre for innovative education “Pro.Svit” (https://prosvitcenter.org/)	A platform with courses and trainings aimed at developing innovative teaching methods
Institute of postgraduate pedagogical education (https://ippo.kubg.edu.ua/)	An institution that offers courses and seminars to improve the skills of teachers
All-Ukrainian online school (https://lms.e-school.net.ua/)	Provides free online courses for teachers in various subjects

Source: compiled by the authors.

It is recommended to create a national platform for professional development of teachers, which would combine various courses, webinars, and other educational resources. Such a platform could include both public and private initiatives, providing a wide range of educational programmes. It is also important to provide courses in various formats – in-person, distance, and mixed, which will allow teachers to choose the most convenient way of learning for them. There is a need to provide systematic mentoring support to young teachers and those who need additional assistance in professional development. To this end, it is recommended to create a training programme for mentors, which would include training on methods of scientific-methodological support of professional activities.

The use of ICT is one of the main factors for improving the effectiveness of the professional development of teachers. It is recommended to actively introduce ICT into the educational process, providing teachers with the necessary educational scientific-methodological tools. Distance learning platforms such as Zoom or Microsoft Teams can be used for webinars and online courses. It is also important to give teachers access to interactive tools such as Kahoot! and Quizlet, which will help make learning more interesting and effective. It is necessary to introduce systems for monitoring and evaluating the results of professional development of teachers. This can include both formal assessment methods, such as tests and certifications, and informal ones, such as surveys, self-assessment, and feedback from colleagues. Such a system will help identify the strengths and weaknesses of professional development and adjust training programmes in time.

Ensuring sufficient funding is critical for the successful implementation of professional development programmes for teachers. It is recommended to increase state and local

budgets for submitted programmes and attract grant funds and partner assistance. For example, international organisations such as USAID and UNICEF can provide financial support for the implementation of professional development programmes and mentoring support for teachers. Therefore, the implementation of these recommendations will contribute to the creation of an effective system of continuous professional development of teachers in Ukraine. This will improve the quality of education and professional growth of teachers, which is an important step towards improving the country's educational system.

Learning foreign languages and mastering digital technologies are important for modern teachers, as it opens up access to wider opportunities at the international level. Knowledge of foreign languages allows teachers to use the resources available on foreign educational platforms, participate in international educational programmes and courses, such as Coursera, EdX, or Khan Academy. This allows acquiring new knowledge and methods that are not always available in national educational systems.

Mastering digital technologies is equally important, as most modern educational resources and programmes are available online. Teachers with digital skills can effectively use tools for distance learning, creating interactive lessons, and evaluating students' knowledge. Platforms such as Google Classroom, Zoom, or Microsoft Teams provide an opportunity to organise the educational process at a high level, regardless of the location. Therefore, learning foreign languages and digital technologies allows teachers to be competitive internationally, opens up access to various educational resources, and contributes to improving the quality of education they provide to students. Further, in the form of a Table 2, the most well-known international resources for the professional development of teachers are presented.

Table 2. International resources for professional development and mentoring support

Course/programme/platform	Country	Brief description
Coursera (https://www.coursera.org/)	USA	An online learning platform with courses from leading universities
EdX (https://www.edx.org/)	USA	Online learning platform with courses from leading universities
Khan Academy (https://uk.khanacademy.org/)	USA	Free educational materials in various subjects
TED-Ed (https://ed.ted.com/)	USA	Innovative educational videos and lessons
Google for Education (https://edu.google.com/)	USA	A programme that provides tools for organising distance learning
Microsoft Teams (https://www.microsoft.com/uk-ua/microsoft-teams/group-chat-software)	USA	Platform for organising virtual video conferencing classes
FutureLearn (https://www.futurelearn.com/)	United Kingdom	Platform for online courses from leading universities and organisations
Kahoot! (https://kahoot.it/)	USA	Interactive quizzes and surveys
Quizlet (https://quizlet.com/ua)	USA	Interactive tasks for students
International Society for Technology in Education (ISTE) (https://iste.org/)	International	International conference for the exchange of experience and discussion of the latest technologies in education

Source: compiled by the authors.

Coursera and EdX are leaders among online platforms offering courses from the world's leading universities, such as Stanford, Harvard, and the Massachusetts Institute of Technology. These platforms provide access to high-quality educational materials that are thoroughly tested for quality. The courses cover a wide range of disciplines, including exact sciences and humanities, business, and IT. An important aspect is the possibility of obtaining certificates and diplomas that are recognised at the international level, which makes it possible to evaluate the effectiveness of these platforms for professional development. Although Ukrainian platforms, such as Prometheus and EdEra, offer high-quality courses, they may not always provide a level of recognition of certificates at the international level.

Providing free educational materials in various subjects, as Khan Academy does, gives grounds to assert the level of public education. Their interactive lessons and exercises help students learn at a comfortable pace. Khan Academy also actively cooperates with schools, which contributes to the integration of their resources into the traditional education system. In Ukraine, similar platforms, such as "Na Urok" and "Vseosvita", also provide access to free materials but often have fewer interactive elements and a limited set of subjects. TED-Ed features innovative instructional videos and lessons that are used to encourage critical thinking and creativity. This platform provides concise but informative videos on various topics, which helps students deepen their own worldview and understand the system of receiving educational services. There are few platforms similar in format in Ukraine, which puts TED-Ed at a competitive advantage from the standpoint of a creative approach to learning.

Distance learning tools provided by Google for Education and Microsoft Teams have become particularly relevant during the COVID-19 pandemic. These platforms provide teachers with the opportunity to create virtual classrooms, conduct video conferences, and share educational materials. They also integrate with other educational services, making learning more convenient and efficient. Ukrainian analogues, such as "All-Ukrainian

school online", although substantial progress in the development of distance learning, cannot fully compete with global technology corporations in the field of integration and functionality.

FutureLearn offers online courses from leading universities and organisations around the world. The platform allows users to interact with teachers and students, which contributes to the development of communication and collaboration skills. In Ukraine, resources of this scale and international cooperation are currently limited, which ensures FutureLearn primacy in the use of educational resources. Interactive platforms like Kahoot! and Quizlet make the learning process more fun. Kahoot! allows creating interactive quizzes that motivate students to learn actively. Quizlet offers interactive tasks and flashcards that help learn new material. Ukrainian platforms such as "Na Urok" also offer interactive elements, but their content is often limited compared to Kahoot! and Quizlet.

The modern educational process, in particular, the continuous professional development of teachers, is one of the most important problems of modern education. The current progress of education poses substantial challenges to modern teachers. Teachers should have certain knowledge that distinguishes the teacher from the cohort of public professional groups. First of all, they must be ready for self-improvement and lifelong learning, conscious life choices and self-realisation, responsibility, work, and civic engagement. In this context, they must learn a certain system of knowledge, "skills and practical skills, ways of thinking, professional, ideological, and civic qualities, moral and ethical values that determine the ability of a person to successfully conduct professional and further educational activities and are the result of training at a certain level of higher education". This definition of competence is presented in the State Standard of Basic Secondary Education, which follows from the purpose of education. The purpose of education is based on such value orientations as:

- respect for the student's personality and recognition of the priority of their interests, experience,

own choices, aspirations, attitude in determining the goal and organisation of the educational process, support for cognitive interest and perseverance;

- ensuring equal access of each applicant to education without any form of discrimination against participants in the educational process;
- compliance with the principles of academic integrity in the interaction of participants in the educational process and the organisation of all types of educational activities;
- formation of a free personality, support of independence, enterprise and Initiative, development of critical thinking, and self-confidence;
- formation of a culture of healthy lifestyle, creation of conditions for ensuring harmonious physical and mental development, well-being;
- creation of an educational environment in which an atmosphere of trust is provided, without any form of discrimination against participants in the educational process;
- affirmation of human dignity, honesty, mercy, kindness, justice, empathy, mutual respect and assistance, respect for human rights and freedoms, the ability to interact constructively with various participants in the educational process, regardless of age, social status, national characteristics, and religious preferences;
- formation of an active civic position, patriotism, respect for the cultural values of the Ukrainian people, their historical and cultural legacy and traditions, national language;
- nurturing students' love for their native land, responsible attitude to the environment.

It is this organisation of the educational process that requires a lot of effort, knowledge, energy, and personal approaches to organising the learning process from the teacher. Such professional qualities give grounds to characterise teachers as teachers of a new type. The professional qualities that a modern teacher should possess are as follows:

- awareness of the role in society and the complexity of the profession;
- knowledge of how to learn by themselves and understanding of the need to learn constantly;
- ability to respond to requirements of the time;
- knowledge of various pedagogical techniques;
- leadership qualities and ability to lead students;
- being a teacher at the call of the soul and characterised by a positive attitude to the activities that they perform;
- perception of the student not as a subordinate but as a partner in the learning process and co-organiser of the educational process;
- ability to develop students' high thinking skills;
- ability to use modern ICTs;
- focus is set not on the transfer of ready-made knowledge but on ways to obtain it.

Having considered the system of postgraduate education, it can be noted that a substantial role in obtaining education belongs directly to teachers, that is, self-education and the acquisition of knowledge by each teacher in a convenient mode.

The results of the study indicate that there are a number of challenges and opportunities in the field of postgraduate teacher education in Ukraine. The main problems are insufficient funding for educational programmes, uneven access to modern educational resources between urban and rural schools, and the lack of a systematic approach to organising postgraduate education for teachers. Despite the adoption of many regulatory documents, their implementation in practice remains imperfect, which limits the opportunities for teachers' professional growth. The analysis of the results of the study gives grounds to assert the need to introduce a system for assessing the professional development of teachers, which would include clear criteria and mechanisms for evaluating the effectiveness of professional development programmes.

A positive aspect is the active introduction of ICT in the process of professional development of teachers. Online platforms allow teachers of educational institutions to gain new knowledge and skills remotely. In addition, pedagogical communities that operate in educational institutions and at the level of regional, regional and all-Ukrainian associations can be involved in international experience exchange programmes that promote professional growth. In general, the results of the study are important in the course of further reforms and improvement of the system of continuous professional development of teachers in Ukraine to improve the quality of education.

Discussion

The results of the study indicate the presence of achievements and substantial challenges in the system of continuous professional development of teachers in Ukraine. The introduction of new state standards and regulatory documents has become an important step in creating a legal framework for improving the skills of teachers. However, despite the positive developments, the system of postgraduate teacher education faces problems of insufficient funding, uneven access to educational resources and lack of a systematic approach to the organisation of training. Insufficient funding for educational programmes limits the ability of teachers to participate in professional trainings and seminars, which negatively affects the quality of education in general. An important aspect is also the lack of an effective system for evaluating the results of the professional development of teachers, which makes it difficult to determine the level of quality of educational programmes and their compliance with the real needs of teachers.

The integration of ICT into the professional development of teachers is one of the positive developments that allows teachers to gain new knowledge remotely. It is also important to study and implement foreign experience. Countries with developed education systems actively apply the latest technologies and teaching methods, which can be useful for Ukrainian teachers. Foreign internships and participation in international educational programmes allow teachers to get acquainted with the best practices and integrate them into their own activities, contributing to improving the quality of education in Ukraine [51; 52].

In the paper, C.B. Mpungose and S.B. Khoza [32] established that graduate students had different skills in

using Moodle and Canvas learning management systems. The authors concluded that due to the user-friendly system and open-source Moodle, it was easy for teachers and administrators to adapt the system to the use of applicants, considering their requests and the specifics of courses. Then Canvas was marked by a more intuitive and modern interface, which greatly facilitated the use of the system, especially for new users. Applicants expressed satisfaction with both platforms but noted that it was necessary to devote more time to mastering Moodle, while Canvas was more convenient to use from the very beginning. The authors also noted that applicants felt substantial support from teachers at Canvas, as the platform provided more integrated communication and feedback tools.

The study by the researchers and the presented study showed the importance of access to modern educational resources and technologies for effective learning. In Ukraine, as proven in the study, the introduction of ICT has become one of the most important aspects of professional development. Online platforms and courses such as Prometheus and EdEra, such as Moodle and Canvas, provide teachers with state-of-the-art techniques and resources to improve their skills. Therewith, the study highlights substantial challenges associated with unequal access to educational resources between urban and rural educational institutions. The researchers did not mention such problems, as their research focused on the university level, where access to the internet and technology is usually better.

The study highlights insufficient funding for educational programmes, which limits the opportunities for professional development of teachers, especially in remote regions. This creates additional obstacles to the introduction of innovative methods and technologies. Another difference is the lack of a systematic approach to the organisation of postgraduate education of teachers in Ukraine. Despite the presence of a substantial number of modern educational technologies and programmes, their implementation in practice remains insufficient. This contrasts with the findings of the researchers, as both platforms provided a high level of support and organisation for the educational process.

V. John et al. [33] determined that popular musicians who completed postgraduate teacher education in Wales faced unique challenges and opportunities while creating their own music system, shaping their identity and acquiring individual pedagogical skills. The authors noted the importance of integrating professional identity into the pedagogical practice of musicians, which contributed to the development of their professional abilities and finding creative approaches to learning. The authors also noted that changes in the educational system in Wales required the adaptation of pedagogical methods to new standards and requirements, which contributed to improving the level of professional training of teachers of musical art.

Comparing the results obtained by the researchers with the results obtained during the analysis of the continuous professional development of teachers in Ukraine identified several important parallels and differences. Both studies have confirmed the importance of integrating personal identities and professional experience into the educational process. In Ukraine, as in Wales, teachers faced the problem of adapting to new educational standards and

approaches. However, while in Wales, attention was focused on musical identity and creativity, in the Ukrainian context, more attention was paid to general pedagogical skills and the introduction of ICT. One of the main common features is the importance of creative approaches in learning. Both studies argued that creative teaching methods helped increase student motivation and engagement. In Wales, this approach to education is reflected in musical creativity, and in Ukraine – due to interactive methods and the use of online resources, such as Prometheus and EdEra platforms.

Therewith, there are substantial differences between the paper of the researchers and this study. The researchers focused on the special pedagogical training of musicians, including the development of their musical identity and creative skills. In Ukraine, the main challenges were related to uneven access to educational resources, especially between urban and rural schools, which limited opportunities for professional development of teachers and the introduction of innovative methods [53-55]. Another important difference is the approach to organising the educational process. In Wales, changes in the educational system required systematic adaptation of pedagogical methods, which ensured a high quality of training for teachers of musical art. In Ukraine, there is a problem of lack of a systematic approach to the organisation of postgraduate education of teachers, which complicates the implementation of educational programmes in practice. Thus, both studies indicate the importance of adapting curricula and creative approaches, but the Ukrainian system of postgraduate education requires additional efforts to overcome financial and organisational challenges that limit the professional development of teachers.

S. Lynch and A.J. Casey [34] established that financial inequality is a substantial obstacle for applicants for postgraduate teacher education in England. The authors noted that a substantial proportion of educational applicants face substantial financial difficulties, which forces them to correlate time and effort between study and work to provide accommodation. Notably, financial problems negatively affect the academic performance and psychological state of applicants [56; 57]. The study also determined that low-income education applicants had limited access to additional educational resources and support, which worsened their difficulties. The researchers, like the presented study, approved the idea of the importance of financial support for ensuring an effective educational process. In Ukraine, as in England, insufficient funding for educational programmes creates substantial obstacles to the professional development of teachers. The analysis of the Ukrainian postgraduate education system suggests that the situation is particularly difficult in remote rural schools, where teachers do not always have the opportunity to participate in professional events due to insufficient funding.

One of the main common features is the negative impact of financial difficulties on academic and professional activities. In England, applicants experienced a deterioration in their psychological state due to the inability to combine study and work, which led to a decrease in their academic performance and satisfaction with their studies [58-61]. A similar situation was observed in Ukraine, where teachers from remote regions had

limited opportunities for professional development, which affected the quality of their work and motivation.

The researchers focused on the financial aspects of education applicants' lives in England, while the examination of the Ukrainian education system focused on a wide range of challenges in the system of postgraduate teacher education, including not only financial problems but also organisational and technological obstacles. Examining the education system in England, researchers focused on the problem of providing financial support to applicants, while in Ukraine, it was necessary to solve complex problems, such as access to educational resources and systematisation of approaches to professional development. Another important difference is the context of educational reforms. In England, the financial difficulties of applicants occurred against the background of general changes in the higher education system, which included an increase in the cost of education and a reduction in state support. In Ukraine, the reforms were aimed at modernising the educational system and introducing new standards and methods, which required additional resources and support from teachers [62].

The analysis of the results obtained shows the importance of ensuring equal access to educational resources for all teachers, regardless of their place of residence, and the need for financial support for professional development. Challenges associated with organisational and technological obstacles can be overcome by introducing a systematic approach to postgraduate education regarding the active use of ICTs in the educational process. The reforms adopted in the future should focus on creating an inclusive and adaptive educational environment that will contribute to the professional growth of teachers and improve the quality of education in Ukraine.

Conclusions

The analysis of the postgraduate education system showed that for effective work, it is necessary to ensure equal conditions for all teachers, regardless of their place of residence. The introduction of modern ICTs and the creation of an inclusive educational environment are among the main aspects that will contribute to improving the quality of education in the country. First of all, the quality of education depends on certain factors. These include qualified and experienced teachers which must have deep knowledge and skills, perfect command of scientific and methodological material, and be open to applicants for education. The educational programs must be relevant, meaning they should comply with the modern labour market and the requirements of applicants. The programs should include practical aspects and focus on modern achievements in education and science. Additionally, they should contain a professional module that meets the needs of applicants in the relevant speciality.

A wide range of methods, forms, and types of educational activities is essential to attract a broader range of educational applicants. Institutions of postgraduate education should prioritize the availability of modern educational resources, such as virtual libraries, research laboratories, and computer equipment. In these institutions, a favourable learning environment should be created. This includes providing scientific and

methodological services to applicants, creating conditions that motivate learning, and ensuring free access to any information environment.

Considering these factors, training should be highly professional: equal access to ICTs, high learning outcomes, meeting the needs of educational applicants, a favourable learning environment, conditions for providing educational services and ways to obtain an education. In the course of the study, it was established that the system of continuous professional development of teachers in Ukraine faces a number of challenges, among which the most substantial are insufficient funding, uneven access to educational resources, and the lack of a systematic approach to the organisation of postgraduate education.

The analysis of the results obtained shows the importance of financial support for the professional development of teachers, in particular, those who work in remote regions. The lack of sufficient funding limits the ability of teachers to participate in professional trainings, seminars and conferences, which negatively affects their professional growth. It is recommended to increase state and local funding for professional development programmes and attract grant funds and partner assistance from international organisations to overcome these challenges. One of the important recommendations is the introduction of a systematic approach to the organisation of postgraduate education of teachers. This implies the development of common standards and methods that would be focused on considering the specifics of teachers' work in various subjects and the level of pedagogical skill. It is also important to provide systematic mentoring support to young teachers and those who need additional assistance in professional development. Mentor training programmes should include training on methods of support and scientific and methodological support of teachers' activities.

The introduction of a system for monitoring and evaluating the results of professional development of teachers is another important component of the postgraduate education system. This can include both formal assessment methods, such as tests and certifications, and informal ones, such as surveys, self-assessment, and feedback. Such a system will help identify the strengths and weaknesses of professional development and adjust training programmes in time. The EdCamp Ukraine project can become a model for wider implementation of such evaluation methods. It is advisable to create a national platform for the professional development of teachers. To improve access to educational resources, which would help to combine different courses, webinars, and the introduction of other educational types. Such a platform can include both public and private initiatives, providing a wide range of educational programmes. It is also important to create conditions for completing courses in various forms: in-person, distance, and mixed, which will allow teachers to choose the most convenient way of learning for them.

The main directions for further research in this area include examining the effectiveness of ICT implementation in teacher professional development, analysing various models of mentoring support, and developing new approaches to evaluating the results of professional development. An important aspect of the

system of postgraduate education remains the examination of the impact of financial support on the professional development of teachers and the development of a strategy for attracting additional resources to finance educational programmes. One aspect of the proposed study is limited access to data from remote regions, which may affect the overall picture of the professional development of teachers in Ukraine. Considering the rapid changes in the field of education and the introduction of new technologies, certain aspects of the study can be updated, supplemented, and analysed.

Thus, the analysis of the results of this study shows the importance of an integrated approach to the continuous professional development of teachers in Ukraine. Ensuring

equal access to educational resources, introducing modern technologies, and providing financial support are the main factors that will contribute to improving the quality of education and professional growth of teachers. Further research and reforms should focus on creating an inclusive and adaptive educational environment that meets the current challenges and needs of teachers.

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Conflict of Interest

There are none.

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Організаційно-педагогічні умови безперервного професійного розвитку педагогів в умовах післядипломної педагогічної освіти

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Анотація

Актуальність. Актуальність дослідження полягає у необхідності модернізації системи післядипломної освіти в Україні відповідно до швидких технологічних змін, глобалізації та підвищення вимог до якості освіти.

Мета. Мета дослідження – виявити ключові умови, що впливають на ефективність підвищення кваліфікації педагогів після закінчення базової освіти.

Методологія. У дослідженні використано комплексний теоретичний підхід, що включає такі методи як аналіз літератури, синтез, узагальнення, та порівняння.

Результати. Результати дослідження свідчать про те, що для успішного безперервного професійного розвитку педагогів потрібна система підтримки, яка забезпечує доступ до сучасних освітніх ресурсів, участь у професійних спільнотах, менторську підтримку та можливості для саморефлексії та обміну досвідом. Встановлено, що важливою умовою є також адаптованість програм до освітніх завдань, що дозволяє враховувати індивідуальні потреби та рівень підготовки кожного педагога. Результати дослідження свідчать, що педагоги, які мають можливість постійно брати участь у професійних тренінгах та семінарах, демонструють високий рівень педагогічної майстерності та якісні показники ефективності власної діяльності. Крім того, аналіз міжнародної практики (наприклад, у Великій Британії, Норвегії, Іспанії, Австралії) підкреслює важливість інтеграції передових технологій у післядипломну освіту для підвищення ефективності навчання.

Висновки. На основі отриманих результатів зроблено висновок, що створення сприятливих організаційно-педагогічних умов є найважливішим чинником забезпечення безперервного професійного розвитку педагогів, що насамперед позитивно впливає на якість освіти в цілому. Таким чином, запропоновані рекомендації можуть бути використані для вдосконалення системи післядипломної педагогічної освіти та сприяння професійному вдосконаленню педагогів.

Ключові слова: освітня система; якість освіти; безперервна освіта; професійний розвиток; запити заявників; новітні технології; реформа освіти; сучасні виклики.