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Training of scientific and pedagogical staff in higher education institutions: quality and requirements


Formación del personal científico y pedagógico en instituciones de educación superior: calidad y requisitos

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Abstract

This research addresses the crucial aspect of preparing scientific and pedagogical professionals in higher education institutions, focusing on their professional development and alignment with contemporary requirements. In the rapidly evolving landscape of education, understanding the current state and adapting to emerging needs are paramount. The primary aim of this study is to explore and analyze the current trends and modern requirements for scientific and pedagogical workers in higher education institutions. This qualitative research relies on evaluative judgments presented in contemporary scientific literature. The work uses content analysis, thematic and comparison. The results reveal the significance and diversity of approaches in preparing scientific and pedagogical professionals in higher education. The analysis emphasizes the need for adaptation to the requirements of the modern educational landscape in the context



of modern Master's training system. In the conclusion, the research underscores the importance of ongoing professional development for scientific and pedagogical professionals to meet the challenges of the dynamic educational environment. While acknowledging the role of technology, the study challenges the notion that it is the sole driver of educational development. It also highlights the continued relevance of traditional pedagogical methods and the importance of professionalism in the evolving values of educational practitioners.

Keywords: higher education institution, pedagogy of higher education, training of research and teaching staff, masters of educational and pedagogical sciences, educational innovations, professional development of lecturers.

Resumen

Esta investigación aborda el aspecto crucial de la preparación de profesionales científicos y pedagógicos en instituciones de educación superior, enfocándose en su desarrollo profesional y alineación con las exigencias contemporáneas. En el panorama educativo en rápida evolución, comprender el estado actual y adaptarse a las necesidades emergentes es fundamental. El objetivo principal de este estudio es explorar y analizar las tendencias actuales y los requisitos modernos para los trabajadores científicos y pedagógicos en las instituciones de educación superior. Esta investigación cualitativa se basa en juicios evaluativos presentados en la literatura científica contemporánea. El trabajo utiliza análisis de contenido, temático y comparativo. Los resultados revelan la importancia y diversidad de enfoques en la preparación de profesionales científicos y pedagógicos en la educación superior. El análisis enfatiza la necesidad de adaptación a los requisitos del panorama educativo moderno en el contexto de la formación de maestría moderna. En conclusión, la investigación subraya la importancia del desarrollo profesional continuo para que los profesionales científicos y pedagógicos enfrenten los desafíos del entorno educativo dinámico. Si bien reconoce el papel de la tecnología, el estudio cuestiona la noción de que es el único motor del desarrollo educativo. También destaca la continua relevancia de los métodos pedagógicos tradicionales y la importancia del profesionalismo en la evolución de los valores de los profesionales de la educación.

Palabras clave: institución de educación superior, pedagogía de la educación superior, formación de personal investigador y docente, maestrías en ciencias de la educación y pedagógicas, innovaciones educativas, desarrollo profesional de docentes.

1. Introduction

The training of scientific and pedagogical workers in institutions of higher education stands as a pivotal aspect in shaping the future of academia and intellectual progress. As the demand for well-prepared professionals in various fields continues to grow, the quality of training provided to individuals pursuing careers in scientific and pedagogical roles becomes increasingly crucial. This topic is particularly relevant in the context of evolving educational landscapes, where the expectations and requirements for these professionals are continually adapting to meet the challenges of contemporary society. Numerous studies have delved into the requirements of this training, aiming to understand the dynamics that contribute to the overall effectiveness of educational programs (Baranovska et al., 2020; Lottermann et al., 2017). A notable investigation conducted by Bondarenko, Zaytseva and Rukin (2021) explored the correlation between the quality of training programs and the subsequent impact on the academic and research output of graduates. Another study by Ferreira and Cravino (2022) delved into the specific requirements perceived by both educators and researchers, shedding light on the intricacies of aligning training programs with the evolving demands of the academic landscape.

Despite the acknowledged importance of training scientific and pedagogical workers, there exists a pressing research problem concerning the effectiveness and quality of the training programs offered in institutions

of higher education. The gap between traditional teaching methodologies and the dynamic needs of modern society raises questions about whether the current training approaches adequately equip individuals with the skills and knowledge required for success in their respective fields.

The primary aim of this study is to critically examine the quality of training for scientific and pedagogical workers in institutions of higher education. By assessing the existing practices and identifying potential areas for improvement, the study aims to contribute valuable insights that can enhance the overall effectiveness of these training programs.

To achieve the aforementioned aim, the following tasks will be undertaken:

1. Conduct a comprehensive literature review to understand the historical context and current trends in the training of scientific and pedagogical workers.
2. Describe the state of preparation of scientific and pedagogical workers
3. Determine the main modern requirements for the training of scientific and pedagogical staff.

2. Literature review

The evolving landscape of education is intricately intertwined with various dimensions, as evidenced by a multitude of studies exploring diverse perspectives. The evolving landscape of education was intricately intertwined with various dimensions, as evidenced by a multitude of studies that explored diverse perspectives. Borysova, Zadorina, Kotiash and Bukoros (2023) delved into the future of Ukrainian education, particularly focusing on the integration of digital competencies. Their work shed light on teaching and assessment methodologies, emphasizing the importance of preparing learners for a digitally-oriented world. In a parallel vein, Iskakova (2023) navigated the realm of electronic technologies, specifically addressing the individualized learning needs of education seekers with special needs. This research underscored the intersection of technology and inclusivity, recognizing the potential of electronic tools in catering to the diverse learning requirements of students with special needs. Philosophical futurism took centre stage in Maciej (2023) work, where an analysis of personality consciousness, information and communication technologies (ICT), and forward-thinking pedagogical strategies unravelled the intricate relationship between philosophy and educational evolution. The study probed the transformative impact of philosophical perspectives on the future landscape of education. Shifting gears to the healthcare sector, Kaminsky and Viesova (2022) investigated innovative activities within future healthcare institutions. Their exploration provided valuable insights into models designed to overcome dilemmas in healthcare, signaling the importance of innovation in addressing challenges within this critical domain. The role of sports in higher education across various disciplines was explored by Dzhyym, Saienko, Pozdniakova, Zhadlenko and Kondratenko (2023), who advocated for the intensification of sports activities in the training process. Their work highlighted the potential of sports in fostering holistic development and its integration into diverse academic specialties.

On a linguistic front, Yuhan (2017) exploration of multimedia technologies in teaching language to foreign students underscored the globalized nature of education. This study acknowledged the significance of multimedia tools in language education, offering an innovative approach to teaching and learning. Frumkina, Diachenko, Polyezhayev, Savina and Hadi (2020) contributed to the discourse by assessing the readiness of future teachers for integrated teaching in a foreign language. This study recognized the growing importance of linguistic diversity in educational settings and the corresponding need for educators to be equipped for integrated language instruction. Moreover, Tsekhmister, Vizniuk, Humeniuk, Dolynnyi and Polishchuk (2022). delved into the formation of professional skills for future physicians. This work provided valuable insights into the training process, focusing on the development of skills essential for medical practitioners, thereby contributing to the ongoing discourse on medical education.

Dehtiarova study (2022) delved into the challenging aspects related to the working hours of scientific and pedagogical workers in higher education institutions operating under specific training conditions. This research was crucial in understanding the potential stressors and constraints that impacted the efficiency and well-being of academic staff in specialized educational settings. Dekarchuk, Honcharuk, Yovenko and Parakhnenko (2023) contributed by establishing the methodological foundations for training students in higher pedagogical institutions, emphasizing the organization and conduct of scientific and pedagogical research. The focus on providing students with a strong methodological framework reflected a commitment to nurturing research skills and fostering a culture of inquiry among future educators.

In the context of Ukrainian higher education, Halchenko, Snyatkova, Semencha, Bilozerska, Tryfonova and Ahiliar Tukler (2023) presented a conceptual framework for shaping the foundations of the future teacher's professional culture. This work underscored the importance of cultivating a robust professional culture among aspiring educators, offering insights into the unique context of Ukrainian higher education.

Kouchur investigation (2020) into pedagogical conditions for ensuring the quality of distance education in higher education institutions was particularly timely, given the growing prominence of online learning. The study addressed challenges and requirements essential for maintaining educational standards in the dynamic landscape of distance education. The work by Kozubtsov, Kariaka, Kozubtsova and Dotsenko (2022) explored pedagogical design as a contemporary phenomenon, focusing on the individual skills of scientific and pedagogical workers in higher education institutions. This study added to the discourse by highlighting the evolving nature of pedagogical skills in the modern educational landscape. Hurska and Parshyn (2023) investigated the role of modern humanitarian textbooks in the process of training and teaching education seekers.

Finally, Kropocheva (2021) shed light on new opportunities for scientific libraries through repositories in higher pedagogical education institutions. This perspective expanded the horizon, emphasizing the role of libraries as repositories and their potential contributions to academic research and knowledge dissemination.

In summary, the amalgamation of these studies enriched understanding of critical issues such as working conditions, methodological foundations, professional culture and pedagogical design in higher education institutions. Together, they contributed to a holistic perspective on the complexities and opportunities within the contemporary landscape of higher education. However, the issue of training scientific and pedagogical workers is not sufficiently studied. For this reason, it is worth characterizing the basic conditions of their training in the modern educational space.

3. Materials and methods

General background

This research aims to elucidate the rationale behind conducting a study on the preparation of scientific and pedagogical staff in higher education institutions, as well as to define its objectives and requirements.

This study is qualitative as it is based on evaluative judgments presented in contemporary scientific literature.

Data collection

A meticulous search was conducted, and articles published in reputable academic databases such as Google Scholar, Scopus, and WoS were included in the sample. Keywords like "preparation of scientific and pedagogical staff", "higher education", "digital technologies", "digitization", "modern pedagogical trends",



"requirements for educators", etc., were employed during the search. The research focused on contemporary and relevant literature, spanning from 2009 to 2024. Additionally, the regional scope of the study is confined to the European region.

Data Analysis

In this research on the training of scientific and pedagogical workers in higher education institutions, employed the following methods for data analysis.

1. Categorical analysis. The collected data, including literature insights and expert judgments, were categorized based on key themes and topics. This method allowed us to identify recurring patterns and prevalent issues in the training of scientific and pedagogical staff.
2. Content analysis. The textual content of selected articles and literature was systematically analyzed. This involved identifying recurrent themes, evaluating the depth of discussion on specific aspects, and extracting relevant information pertaining to the current state and requirements in the field of training.
3. Thematic analysis. The data underwent thematic categorization to identify overarching themes and sub-themes. This approach allowed for a nuanced understanding of the diverse aspects influencing the training of scientific and pedagogical workers.
4. Comparative analysis. Selected literature and expert opinions were compared to identify similarities, differences, and evolving trends over the examined period. This method provided insights into the changing landscape of training practices.
5. Synthesis of findings. The results of the analysis were synthesized to construct a comprehensive narrative. This synthesis involved integrating key findings, drawing connections between different aspects, and presenting a holistic view of the state and requirements in the training of scientific and pedagogical workers.

4. Results and discussion

The contemporary higher education system aligns with the international Bologna system, a unified framework embraced by numerous European nations. This system aims to standardize higher education structures, qualification documents, and the qualifications of professionals and researchers across different countries. Introduced in 1999, the Bologna system aims to create a common European educational space that promotes the exchange of knowledge, the understanding of qualifications and ensuring the mobility of students and scientists (Çekerol & Öztürk, 2012). One of the key components of the Bologna system is the development of a single qualification standard that ensures the level and content of education in all European countries. This facilitates comparison and obtaining qualifications, which is the place of the aspect of training of scientific and pedagogical workers. Establishing a unified system allows to standardize the quality of education and increase the high qualification of diplomas and degrees (Mykytenko, 2021).

At the same time, the Bologna system promotes changes in approaches to the training of scientific and pedagogical workers. It is designed to provide greater flexibility and integration of science and education so that graduates are ready for the challenges of the modern labour market (Mykytenko, 2021). This includes the development of research skills, pedagogical effectiveness and the ability to learn independently. In the context of the training of scientific and pedagogical workers, the Bologna system considers structural changes in the educational process (Çekerol & Öztürk, 2012). This may include creating innovative programs aimed at producing better scientists and teachers (See Table 1).

Table 1.
Elements of the Bologna System and their role in the preparation of scientific and pedagogical workers

Elements	Description
Standardization of qualifications	Ensuring a unified qualification standard for ease of comparison and recognition.
International recognition of diplomas	Increasing international recognition of diplomas and degrees.
Flexibility in education	Providing greater flexibility and integration of science and education.
Development of research skills	Fostering the development of research skills and the ability for independent learning.
Structural changes in education	Creating innovative programs and university postgraduate schools for the preparation of scientific and pedagogical personnel.

Source: author's development

The ongoing reform in the training of scientific and pedagogical workers within Europe is directed towards instituting structural changes conducive to a unified European research space. A key facet of the ongoing reform in Germany and France involves the establishment and recognition of university graduate colleges as effective entities for postgraduate students, particularly those pursuing doctoral degrees. These graduate colleges, financed through the federal budget, operate as targeted research groups where students benefit from structured programs. Participants receive grants, enabling them to concentrate fully on their dissertation research under the mentorship of one or more faculty members, who are actively, involved in funded research projects (Yakovenko, 2022).. These colleges not only provide financial support but also facilitate an immersive research environment for doctoral candidates. The structured programs offered by graduate colleges encompass general and specialized courses, typically ranging from 4 to 6 hours per week (Yakovenko, 2022). The emphasis lies in creating an environment that encourages in-depth research while simultaneously providing comprehensive academic support. The collaborative nature of graduate colleges fosters a symbiotic relationship between students and faculty, contributing to the overall quality and depth of research endeavors. Furthermore, graduate schools are considered potential models for addressing existing shortcomings in Europe's current approach to the organization of researcher and teacher training in higher education (Zoriy & Bohatyrets, 2018). By offering a focused, well-funded, and collaborative platform, these institutions have the potential to overcome the challenges faced by traditional educational structures, ultimately contributing to the advancement of research and teaching in higher education across the continent (Simonics, 2021).

Thus, the preparation of scientific and pedagogical workers today reflects a dynamic and multifaceted landscape shaped by contemporary educational trends. The main trends in the preparation of the scientific and pedagogical staff, taking into account current realities, are presented in Figure 1.

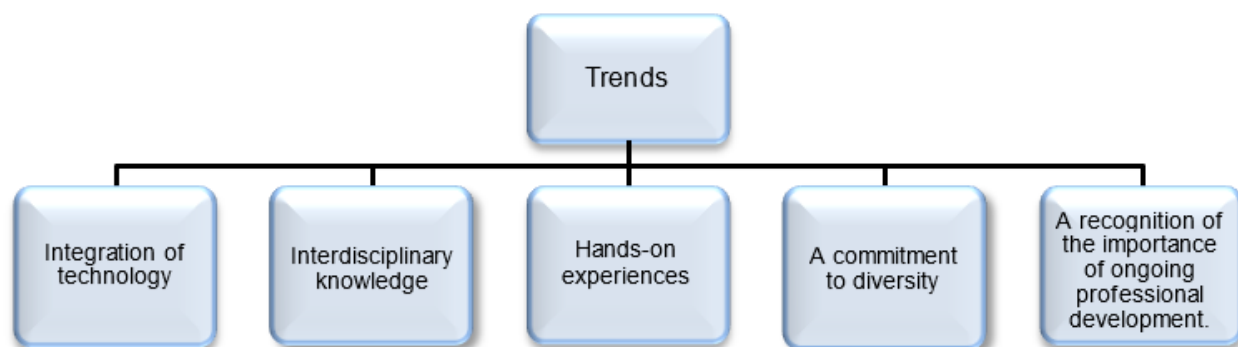


Figure 1. Main trends in the preparation of the scientific and pedagogical workers.

Source: author's development.

In response to the demands of an ever-evolving society, the emphasis is on cultivating a diverse skill set that extends beyond traditional disciplinary boundaries. As shown in Figure 1 one prominent trend is the integration of technology in the preparation process. Modern scientific and pedagogical workers are expected to be proficient in leveraging digital tools for research, teaching, and communication. This includes incorporating online resources, interactive learning platforms, and digital collaboration tools into their practices to enhance the overall learning experience (Turchyn et al., 2023). Interdisciplinary knowledge has become a cornerstone of the preparation of scientific and pedagogical professionals. Recognizing the interconnectedness of various fields, there is an increased emphasis on fostering a holistic understanding that goes beyond specialized domains. This trend encourages collaboration across disciplines, enabling professionals to address complex challenges with comprehensive and innovative solutions. Moreover, as shown in Figure 1 there is a growing awareness of the importance of practical experiences in the preparation of scientific and pedagogical workers (Tsekhmister et al., 2022). Practical, hands-on training, often facilitated through internships, research projects, or teaching practices, is considered essential for translating theoretical knowledge into real-world applications. This trend aims to bridge the gap between academic learning and practical skills demanded in professional settings. A commitment to diversity, equity, and inclusion is another prominent aspect of contemporary preparation trends. The recognition of diverse perspectives and the need for inclusive teaching practices are integral to preparing scientific and pedagogical workers for the globalized and multicultural educational environments they may encounter (Maciej, 2023).

Professional development and lifelong learning have become integral components of the preparation journey. The ever-changing nature of knowledge and technology requires continuous adaptation. Thus, the state of preparation emphasizes a mindset of continuous learning, encouraging professionals to stay abreast of emerging trends, methodologies, and research findings throughout their careers (Litynska et al., 2023). Therefore, the preparation of scientific and pedagogical workers in the modern context is characterized by the integration of technology, interdisciplinary knowledge, hands-on experiences, a commitment to diversity, and the recognition of the importance of ongoing professional development. These trends collectively contribute to a workforce that is not only well-equipped with theoretical knowledge but is also adaptable, innovative, and capable of meeting the diverse challenges of contemporary education and research landscapes (Frumkina et al., 2020).

Therefore, taking into account the current trends in the formation of scientists and educators, it is worth outlining the main requirements for their training. According to modern scientists, in the contemporary landscape of academic preparation, the training of scientific and pedagogical staff demands a multifaceted approach to meet the dynamic challenges of modern education and research (Olifira & Synenko, 2020). Consequently, modern requirements should focus on the development of the main required competencies (Borysova et al., 2023). Table 2 below describes the basic requirements important for the training of scientific and pedagogical workers.

Table 2.
Main requirement of the training of scientific and pedagogical workers

Number	Name of requirement	Description
1	Interdisciplinary mastery	Proficiency in multiple academic disciplines beyond one's specialization is imperative. This involves a comprehensive understanding of the interconnectedness of various fields, enabling effective collaboration and contribution across disciplines for comprehensive research and teaching.
2	Digital competence	Adept use of a wide range of digital tools and technologies is crucial. This includes proficiency in data analysis software, online learning platforms, and communication tools, ensuring effective utilization of technology for research, teaching, and academic communication.
3	Innovative pedagogy	The ability to design and implement inventive teaching methods is paramount. This includes engaging students, encouraging critical thinking, and fostering the practical application of knowledge through active learning strategies, project-based assessments, and technology-enhanced teaching approaches.
4	Research excellence	A strong foundation in research methodologies, both quantitative and qualitative, is essential. Demonstrated proficiency in designing and conducting rigorous research studies, critically analyzing existing literature, and contributing to the advancement of knowledge in their field is a key requirement.
5	Applied experience	Integration of practical experiences, such as internships, teaching practicums, or research projects, is critical. This hands-on approach ensures that theoretical knowledge is reinforced with real-world applications, enhancing the overall learning experience.
6	Diversity and inclusion competence	The ability to create and maintain inclusive learning environments is foundational. This involves respecting and celebrating diversity, adapting teaching strategies to accommodate diverse learning styles and backgrounds, and fostering an atmosphere of equity and inclusion.
7	Commitment to professional growth	A proactive commitment to continuous professional development is necessary. This involves participation in conferences, workshops, and training programs, staying updated on advancements within the field, exploring emerging trends, and actively seeking opportunities for career growth.
8	Adaptability	An adaptable mindset is essential to navigate changing educational landscapes, technological advancements, and societal demands. This includes a willingness to embrace new teaching methodologies, integrate emerging technologies, and adapt research approaches based on evolving circumstances.
9	Effective Communication	Strong communication skills, encompassing clear and articulate written and verbal expression, are fundamental. This involves the ability to convey complex concepts comprehensibly, engage effectively with students and colleagues, and disseminate research findings to diverse audiences, both within and outside academia.

Source: author's development

Hence, as can be seen from Table 2, an important role in the system of training scientists and educators is played by the development of digital competence, interdisciplinary knowledge, the use of innovative methods in professional activities, and adaptability to changes. However, a particularly important

requirement is professional development, which must take place constantly. The continuous professional development of scientific and pedagogical workers in higher and educational institutions is an ongoing process aimed at acquiring new skills and enhancing previously acquired competencies necessary for their professional activities. This development involves a commitment to constant self-education and various forms of professional growth, which can occur through formal and informal education, internships, engaging in professional activities, and more. Legislation outlines specific requirements regarding the frequency and extent of professional development for scientific and pedagogical workers across different levels of education. For those working in institutions of higher and postgraduate education, it is mandatory to enhance their qualifications at least once every five years (Yakovenko, 2022; Tsekhmister et al., 2009). During this period, the respective institution ensures the provision of advanced training while maintaining the average salary of the professional. The duration of professional development for scientific and pedagogical workers is quantified in credits based on the European Credit Transfer and Accumulation System (ECTS), where one credit corresponds to 30 hours (Daghbouche, 2011). Over a five-year cycle, the cumulative professional development for these individuals cannot be less than six ECTS credits. The main focal areas of professional development encompass diverse aspects (See Figure 2).

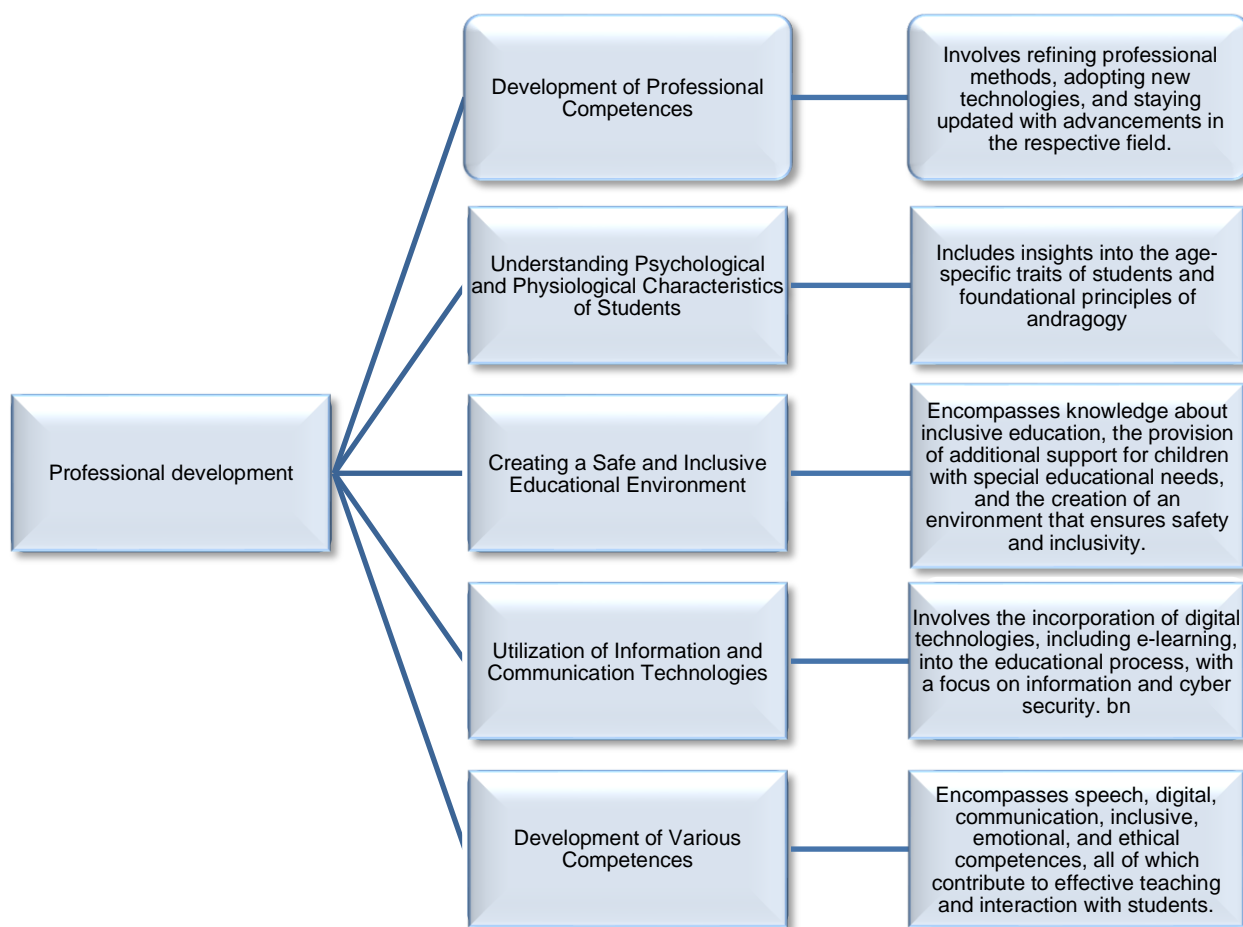


Figure 2. *Main aspects of professional development of modern pedagogical staff*

Source: author's development

These targeted areas of professional development collectively contribute to the continuous improvement of scientific and pedagogical workers, ensuring that they remain well-equipped and effective in their roles

within the ever-evolving landscape of higher and postgraduate education (Vişcu, Cădariu & Watkins, 2023). The main forms of professional development for scientists and educators encompass various strategies and mechanisms aimed at enhancing their knowledge, skills, and competencies. This not only contributes to the personal growth of professionals but is also crucial for maintaining high standards in education and research (Iskakova, 2023). Through active participation in these forms of professional development, scientists and educators can effectively integrate new technologies, refine teaching methods, and respond to contemporary challenges in their respective fields. This purposeful approach fosters the creation of a resilient and innovative educational environment that meets the needs of modern society. Several key forms of professional development include internship, formal education, scientific conferences, mentorship and self education (See Table 3).

Table 3.
Forms of professional development of pedagogical and scientific staff

Forms	Description
Preparation for the master's degree in the specialty 011 "Educational and pedagogical sciences"	The process of training in the master's degree is focused on the development of students as highly qualified specialists in the field of education and science. The main goal is to provide them with comprehensive knowledge, skills and experience necessary for teaching, scientific and research work in higher educational institutions. Students get in-depth knowledge in various aspects of pedagogy, teaching methods, educational psychology, education theory, etc. The educational and professional program "Pedagogy of the higher school" promotes the development of research skills through participation in projects, writing scientific papers, publications and participation in conferences. The master's degree in the field of "Educational and Pedagogical Sciences" provides students with in-depth knowledge and practical experience, which allows them to confidently work in the field of higher education and research.
Internship	Active participation in internship programs where professionals can gain practical experience in their field. This may involve working on real projects, collaborating with other highly skilled specialists, and exchanging experiences.
Formal Education	Participation in formal education programs such as courses, workshops, seminars, and training sessions. These programs may cover new technologies, current teaching methodologies, or in-depth analysis of scientific trends in the respective field.
Scientific Conferences	Participation in scientific conferences, symposiums, and meetings where scientists and educators can exchange their research findings, share impressions of conducted projects, and discover new trends in their field.
Mentorship	Participation in mentorship programs where experienced scientists or educators provide support and advice to less experienced colleagues. This may include individual consultations, collaborative projects, and the exchange of best practices.
Self-Education	Active self-learning of new topics, reading scientific literature, or acquiring new skills through online resources and independent research. Self-education is crucial for continuous improvement and refining one's professional skills.
Membership in Professional Associations	Joining scientific or educational associations where active information exchange, learning about new trends in the field, and collaboration with colleagues are possible.

Source: author's development

These diverse forms of professional development enable scientists and educators not only to enrich their professional knowledge but also to maintain the relevance of their activities in the rapidly changing environment of higher education and science. In addition, Table 3 illustrates the significance of training scientific and pedagogical professionals within the framework of a master's degree program in the field of

educational and pedagogical sciences, specifically in the educational and professional program "Pedagogy of the Higher School." This training proves crucial for the comprehensive professional development of both educators and researchers. This master's program, with its specialization in "Pedagogy of the Higher School" under the discipline of educational and pedagogical sciences (specialty 011), is designed to address key objectives essential for the holistic development of professionals in the education sector. The multifaceted nature of the program aims to achieve several crucial goals (See Table 4).

Table 4.
Tasks of Master's training

Tasks	Description
Formation of Professional Competences	The program focuses on systematically shaping and enhancing the professional competences of master's students. This involves a deep exploration of theoretical knowledge combined with practical applications, ensuring a well-rounded skill set.
Teaching Experience through Scientific and Practical Training	An integral aspect is providing master's students with teaching experience through a blend of scientific and practical training. This hands-on approach allows for the application of theoretical insights in real-world educational settings.
Development of Professionally Significant Qualities and Abilities	Master's training emphasizes the development of qualities and abilities that are highly significant in the professional landscape. This includes fostering a profound professional orientation, instilling motivation, nurturing the importance of self-education, and fostering a drive for continuous self-development and improvement.
High Level of Self-Organization	Recognizing the dynamic nature of the professional reality in the field of education, the program aims to cultivate a high level of self-organization among master's students. This ensures their readiness to perform professional tasks and functions effectively in rapidly changing environments.
Formation of a Creative Approach	The program places a strong emphasis on instilling a creative approach to the execution of professional tasks. This involves encouraging innovative thinking, problem-solving skills, and the ability to adapt to diverse challenges within the educational sphere.
Development of Communication Skills and Teamwork	Recognizing the collaborative nature of the educational environment, the master's program actively promotes the development of effective communication skills and the ability to work seamlessly within a team. This collaborative aspect enhances the overall professional readiness of graduates.

Source: author's development

Hence, master's training stands as a cornerstone for the multifaceted professional development of educators and scientists, addressing diverse aspects that contribute to their success and effectiveness in the dynamic field of educational and pedagogical sciences. Hence, the professional development of educators and researchers within the framework of preparing academic professionals in the conditions of the master's program in the specialty 011 "Educational, Pedagogical Sciences," particularly in the educational-professional program "Higher Education Pedagogy," is a crucial stage in the qualification enhancement and formation of professional competence. Below are key aspects of this process:

1. Theoretical and practical training. Master's students choosing the specialization 011 "Educational, Pedagogical Sciences" acquire in-depth knowledge in the field of education and pedagogy. This includes studying theoretical aspects of pedagogical science and practical methodologies aimed at higher education.

2. Scientific activity. Students actively engage in scientific activities, allowing them to explore current issues in higher education, conduct research, and develop critical thinking. Participation in conferences, article publications, and involvement in research groups contributes to their scientific development.
3. Pedagogical practice. Master's training includes pedagogical practice in higher education institutions. Students have the opportunity to apply theoretical knowledge in real teaching conditions, developing skills in planning and conducting educational sessions.
4. Innovative Approaches. Master's training encourages the use of innovative pedagogical methods and technologies in the teaching process. Students learn to implement modern approaches to higher education, fostering their professional growth.
5. Mentorship and Supervision. Students receive guidance from experienced mentors and academic advisors, contributing to their professional and academic development.
6. Innovative Approaches. The program of master's training stimulates the use of innovative pedagogical methods and technologies in the teaching process. Students learn to implement modern approaches to higher education, fostering their professional growth.
7. Assessment and Reflection. The program involves systematic assessment and reflection on pedagogical and scientific activities, enhancing students' skills and competencies.

Hence, master's program "Higher Education Pedagogy" provides students with not only theoretical knowledge but also practical experience and a scientific approach, which are essential components of the professional development of educators and researchers in the field of higher education in Ukraine.

During the pursuit of a master's degree, prospective educators are tasked with mastering not only the foundational professional skills but also the intricacies of teaching within higher education. This involves a comprehensive understanding of the methodology for preparing and conducting educational sessions across diverse institutional settings. The mastery of these skills is contingent upon incorporating insights from pedagogical and psychological sciences, adhering to didactic principles, and aligning with personal scientific interests.

In navigating the dynamic and often unpredictable professional realities of today's higher education landscape, a contemporary specialist must possess a versatile skill set. This includes the ability to navigate non-standard situations, engage in critical thinking, effectively utilize various information sources, and employ adaptive strategies in competitive environments. Moreover, a modern higher education professional is expected to exhibit a commitment to continuous self-education, self-improvement, and the ongoing development of professional qualifications.

Furthermore, the evolving nature of the educational and professional landscape calls for the adeptness in searching for and implementing innovative forms of organizing professional education and activities. This necessitates a proactive approach to staying abreast of emerging trends and a readiness to embrace novel, effective methodologies.

In light of these evolving demands, the imperative of self-organization emerges as a constant in the integral process of organizing professional education and professional activities. It serves as a vital aspect, ensuring that education subjects are well-equipped to navigate the complexities of their roles, foster adaptability, and continually contribute to the advancements in professional education and practice. The cultivation of self-organization skills becomes an inherent component in preparing future educators for the multifaceted challenges and opportunities inherent in the field of higher education. Additionally, engaging in various forms of professional development empowers scientists and educators to stay abreast of emerging methodologies, technological advancements, and innovative pedagogical approaches. This proactive approach ensures that they remain dynamic contributors to the evolving landscape of higher education, fostering a continuous cycle of improvement and adaptability in response to the ever-changing demands of their respective fields.

The obtained results indicate the significance and diversity of approaches in the preparation of scientific and pedagogical workers in higher education institutions. The theoretical analysis also underscores the importance of adapting the training of scientific and pedagogical staff to contemporary requirements, particularly in the context of the Bologna system. This international higher education system establishes unified standards and criteria, creating a favorable foundation for the standardization and improvement of the quality of researchers and educators' training (Çekerol & Öztürk, 2012; Mykytenko, 2021). Training trends also reflect the necessity of integrating modern technologies, innovative teaching methods, and interdisciplinary competencies development. The application of these trends allows scientific and pedagogical staff to effectively respond to the challenges of the modern educational environment and ensure students receive a high level of preparation. Many contemporary researchers emphasize these aspects. For instance, Yuhan (2017) highlights the importance of utilizing innovative multimedia technologies in the training of modern researchers, defining the future pedagogical landscape and playing a vital role in the education system. Iskakova (2023) aligns with this perspective, describing essential electronic technologies for ensuring an individualized approach in higher education. Recent studies also confirm the significance of adapting modern educators and researchers to the dynamic information environment (Litynska et al., 2023; Skyba & Hanna, 2019). However, the obtained results challenge the assertion by Masoumi & Lindström (2014) that educational technologies are primary for educational development. While technologies play a crucial role, other factors such as pedagogical methods, curriculum development, and teacher-student interaction are integral components of educational development. This study acknowledges the importance of professional development in preparing researchers and educators but disagrees with Nestoruk's (2021) notion that the trajectory of values orientation among scientific and pedagogical workers has changed. Professionalism should still take precedence over certain personal qualities of a teacher. This, this research contends that, despite Nestoruk's (2021) perspective, professionalism remains a cornerstone in the field, overshadowing certain personal qualities. The study advocates for a nuanced understanding, acknowledging the importance of personal attributes but emphasizing that professionalism should remain the guiding principle. In essence, the changing dynamics in the educational landscape require educators to possess a blend of professional expertise and essential personal qualities.

The findings also contradict Santos Júnior & Macedo's (2023) claim that "knowledge obtained through specialized training for teaching is essential," assuming that only specialized training provides necessary knowledge for teaching (p 5). In reality, experiential learning, continuous professional development, and on-the-job experience also make a significant contribution. Thus, these findings underscore the need for a more holistic perspective on teacher preparation, recognizing the importance of diverse learning experiences beyond specialized training programs.

The results also indicate that active participation in internship and mentorship programs, along with involvement in high-quality educational programs, ensures practical experience and the development of necessary skills. Participation in scientific conferences promotes the exchange of expertise and the discovery of new trends in higher education and science. These aspects are well-explored, particularly in the works of Simonics (2021) and Olifira & Synenko (2020). Furthermore, the findings underscore the significance of ongoing professional development, emphasizing its pivotal role in keeping abreast of evolving educational landscapes. The effectiveness of internship and mentorship programs in bridging the gap between theoretical knowledge and practical application is highlighted in numerous studies, contributing to the comprehensive understanding of pedagogical and research practices. Additionally, the research by Simonics (2021) and Olifira & Synenko (2020) delves into the intricate dynamics of these developmental strategies, shedding light on their nuanced impact on the enhancement of scientific and pedagogical competencies.

Thus, the novelty of this research lies in the comprehensive examination of the current state and evolving demands within the context of higher education. Specifically, the study delves into contemporary trends

associated with the preparation of scientific and pedagogical staff, incorporating a deep analysis of recent changes, innovations in educational methodologies, and approaches. Considering the rapidly evolving nature of education, the research describes how higher education institutions adapt to the dynamic educational landscape. A new aspect includes an interdisciplinary perspective, considering how the training of scientific and pedagogical staff intersects with other fields of scientific knowledge. Consequently, this interdisciplinary approach can provide a more complete understanding of the educational landscape.

However, like any research, this work has several limitations. In particular, the study was oriented towards the global context, primarily focusing on EU practices. Therefore, the orientation towards practices in the European Union defines the limitations of the research in other regions of the world. The results may be less relevant for countries with different higher education systems and cultural contexts. Additionally, the study is based solely on contemporary literature. The choice of current literature from 2009 may lead to the exclusion of earlier works that could be essential for understanding the dynamics of changes in the preparation of scientific and pedagogical staff. These mentioned limitations should be considered when interpreting the results.

Nevertheless, despite these aspects, the research contributes to the scholarly dialogue on the preparation of scientific and pedagogical staff, offering ideas that could form the basis for educational policy, institutional practices, and future research directions in higher education.

5. Conclusions

Hence, the training of scientific and pedagogical workers in institutions of higher education is a multifaceted process that plays a pivotal role in shaping the future of education and research. The quality of this training is critical, not only for the individual professional growth of educators and researchers but also for the overall advancement of higher education institutions. Embracing diverse forms of professional development, including internships, formal education, scientific conferences, mentorship, self-education, and participation in professional associations, proves to be instrumental in enriching knowledge and maintaining relevance in a rapidly changing academic landscape.

Meeting the requirements for effective training involves aligning educational programs with contemporary standards, fostering interdisciplinary collaboration, and integrating cutting-edge technologies. Institutions must prioritize the creation of a supportive environment that encourages continuous learning, innovation, and adaptation to emerging trends. Furthermore, the emphasis should extend beyond theoretical knowledge, encompassing practical skills, research competencies, and a commitment to pedagogical excellence.

By addressing these facets, higher education institutions contribute not only to the professional development of their scientific and pedagogical workforce but also to the overall enhancement of the educational experience for students. Ultimately, a well-trained and adaptable cadre of educators and researchers is essential for advancing knowledge, fostering critical thinking, and preparing the next generation for the challenges of the ever-evolving academic landscape.

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