



COMPETENCIES OF TEACHERS IN THE FIELD OF ELECTRONIC SYSTEMS FOR SELF-ASSESSMENT OF PROFESSIONAL ACTIVITIES

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Abstract

Relevance. The importance of implementing electronic systems for self-assessment of teachers' professional activities has been described. It has been emphasized that modern educational reforms require objective and transparent evaluation mechanisms. The implementation of such systems is shown to improve the quality of the educational process. The necessity of developing digital and analytical competencies among teachers for effective use of these systems is highlighted.

Purpose of the article is to substantiate the competencies of teachers in the field of electronic systems for self-assessment of professional activities.

Methods: questionnaires were used to evaluate teachers' perceptions and applications of electronic systems in their professional activities; interviews were aimed at gaining a deeper understanding of individual experiences with the use of electronic systems for self-assessment of professional activities; document and literature analysis covered curricula, methodological recommendations, reports, articles on the performance of professional tasks, and other documents related to teachers' professional activities; observation focused on identifying how teachers use electronic evaluation systems in their daily professional activities and how this affects their interactions with students.

Results of the study indicate that the implementation of electronic systems for self-assessment of teachers' professional activities within the context of educational reforms is a positive step. It has been found that these systems enhance the objectivity, transparency, and effectiveness of assessments while developing key competencies among teachers: informational and digital, evaluative-analytical, innovative, and reflective. The importance of continuous learning for adapting to technological changes is noted. It was found that teachers actively use digital tools, such as online learning, video conferencing, Google Forms, and Padlet. Although artificial intelligence is being implemented slowly, it holds great potential for personalizing learning.

Conclusions. The study emphasizes the importance of electronic self-assessment systems for improving the quality of education. The development of key teacher competencies – informational and digital, evaluative-analytical, innovative, and reflective – is crucial for the effective use of these systems. These competencies enable objective assessment of learning outcomes, adaptation of educational strategies, and enhancement of evaluation transparency, all of which positively influence the quality of the educational process. Continuous teacher learning ensures their ability to adapt to technological changes and introduce new approaches to teaching. Electronic systems stimulate reflection and professional development, enhancing teachers' expertise and creating a modern, interactive educational environment that meets the demands of the digital era.

Keywords: *informational and digital competence; evaluative-analytical competence; innovative competence; reflective competence; continuous learning; quality of education.*

Introduction. Electronic self-assessment systems for the professional activities of educational workers are becoming increasingly significant within the

framework of contemporary educational reforms. Such systems provide the means to achieve objectivity, trans-

parency, and efficiency in self-assessment, playing a crucial role in improving the quality of education. These systems encompass a wide range of indicators, from student performance to the professional development of teachers, making them a valuable tool for educators' professional growth. The implementation of these systems requires significant resources, time, finances, and personnel training. However, investments in these systems are justified by the improvement of the educational process quality and the enhancement of professional standards for teaching activities, creating a fair assessment environment where every teacher has the opportunity to demonstrate their contribution to the development of education.

It is essential to emphasize the need for objective and transparent assessment of teaching activities in the context of educational system development. Electronic systems minimize the impact of subjective factors and biases, making self-assessment more fair and objective. This also highlights the necessity for the development of new competencies in educators, such as digital literacy, analytical skills, and communication abilities, which are essential for the effective use of electronic systems.

The relevance of this research lies in promoting the implementation of electronic systems for the assessment and self-assessment of teachers' professional activities, particularly in identifying the key competencies teachers need for their effective use. The research results aim to enhance education quality by providing teachers with valuable information for analyzing and improving their professional performance. This is achieved through the development of professional development programs that help teachers cultivate the competencies required for working with these electronic systems.

Sources. One study that confirms the importance of teachers' competencies in using electronic self-assessment systems is the work of S. Ivanov (2017). In his article, he notes that educators who possess the skills to work with electronic systems can not only improve the assessment of students' achievements but also ensure a more objective and transparent assessment process. This research highlights that inadequate teacher preparation in this area can become a significant barrier to the implementation of innovative technologies in education. The scientific inquiry conducted by O. Radkevych (2024) demonstrates that competent teachers can more effectively integrate electronic self-assessment systems of professional performance into the educational process. The author notes that the ability to use such systems enhances the interaction between students and teachers and provides the possibility of real-time feedback. This research indicates that the development of teachers' competencies is a key aspect of the successful application of digital technologies in education.

Regarding the use of self-assessment tools for teachers' digital competencies, especially in the context of martial law and quarantine restrictions, O. Ovcharuk (2023) focused her attention on this matter. She emphasized the relevance of self-assessment as a means for teachers to become aware of their competencies and learning needs, which is particularly important during the rapid transition to distance learning. She identified digital competence as a set of knowledge, skills, and abilities that enable the effective application of digital technologies in the educational process. The researcher reviews various approaches to this concept in both domestic and foreign scientific literature, stressing the need for the unification and standardization of requirements for teachers' digital competencies.

The process of preparing future teachers for the use of digital technologies in the learning process is highlighted by Z. Lakomchak (2015). She explores the key competencies that educators must acquire for the effective use of digital tools and resources. The author describes various stages of preparation, covering both theoretical and practical aspects, and emphasizes the importance of continuous professional development and self-education. Special attention is given to the consideration of modern educational technologies and electronic platforms that can be used in the learning process. Continuing this topic, O. Stoika (2023) examined contemporary methods and approaches to teacher preparation in the context of education digitalization. The author analyzes the need for integrating digital technologies into the process of teacher training and proposes various strategies for effective learning. In particular, she emphasizes the importance of developing digital literacy, adapting educational programs to the latest technologies, and implementing interactive teaching methods. Additionally, examples of the successful implementation of digital technologies in educational institutions and their impact on the quality of teacher preparation are discussed.

Focusing on the aspect of self-assessment of teachers' professional activities, it is important to highlight the article "Electronic Tools for Internal Control and Evaluation of Education Quality," which examines the features of electronic tools such as Moodle, Google Classroom, ExamSoft, and Turnitin. Each of these tools is described from the perspective of the functions and capabilities they offer for controlling and assessing education quality. It has been established that their use contributes to enhancing the efficiency and productivity of the educational process and ensures convenient and accurate internal quality control of education (Radkevych, 2023). In this context, the review of reflective competence is essential. In the article "Reflec-

tive Competence as a Component of a Future Specialist's Professional Characteristics," V. Raskalinos (2011) argues that reflective competence is key for modern professionals, as it enables them to adapt to change, engage in continuous learning and development, make effective decisions, and take responsibility for the results of their professional activities. The author describes the structure of reflective competence and methods for its development in future professionals, emphasizing the importance of this competence for higher education. At the same time, there is a shortage of scientific studies analyzing teachers' competencies in the context of working with electronic assessment systems, particularly in terms of self-assessment of teachers' professional activities.

The aim of the article is to substantiate teachers' competencies in the field of electronic systems for self-assessment of professional activities. Methods: To explore the research problem, several methods were employed: a survey was conducted to evaluate how teachers perceive and use electronic systems in their professional activities. The questions focused on determining their level of computer literacy, attitudes toward electronic assessment methods, and perceptions of the impact of electronic systems on the effectiveness of their professional work. Interviews were used to gain a deeper understanding of the individual experiences with electronic systems for self-assessment of professional activities. The interviews provided reliable data on teachers' personal experiences, professional challenges, and successes when using electronic systems for self-assessment of professional performance. Document and literature analysis covered curricula, methodological recommendations, reports, articles on professional tasks, and other documents related to teachers' professional activities. This made it possible to assess which electronic systems have been integrated into the educational process and how they affect teaching standards and the evaluation of learning outcomes. Observations were focused on identifying how teachers use electronic assessment systems in their daily professional activities and how this impacts their interaction with students.

Results and discussion. Self-assessment of teachers' professional activities using electronic systems is aimed at achieving important pedagogical goals that contribute to improving education quality and teachers' professional development. One of the main goals is to ensure objectivity in assessment, which helps teachers better understand their strengths and weaknesses. Electronic systems ena-

ble the collection and analysis of data on professional activities in real-time, making it possible to respond promptly to the information received and adapt teaching methods accordingly. The self-assessment process encourages teachers to engage in self-reflection and self-improvement, which is critically important for continuous professional development. On the basis of electronic educational systems, a platform is created for systematically updating professional knowledge and skills. This, in turn, enhances the effectiveness of the educational process as teachers become more purposeful in performing their work. It also allows teachers to better plan their professional development by setting specific goals and strategies to achieve them. Electronic systems can serve as tools for tracking progress in implementing these plans, providing opportunities for regular updates and adjustments, which contribute to more effective and meaningful professional growth. Thus, self-assessment of professional activities using electronic systems becomes a central element in maintaining a dynamic and productive pedagogical environment. The data obtained from electronic systems provide teachers with an evidence base for reflecting on their teaching methods, which can lead to more thoughtful implementation of changes in educational practice. This, in turn, promotes higher educational standards and the development of professional competencies that are important for the modern educational field. Additionally, electronic systems for self-assessment of professional activities can include tools for tracking and analyzing trends in teaching activities at the institutional level. This allows school administrations to evaluate the overall effectiveness of educational programs and make informed decisions regarding resource needs, planning professional development courses for teachers. The use of these systems enables the creation of a more dynamic and adaptive educational environment aimed at the continuous improvement of learning quality and addressing contemporary educational needs.

Considering that electronic systems for evaluating the professional activities of teaching staff play a key role in modern secondary education institutions, they contribute to the effective assessment and analysis of teachers' work. These systems encompass various components that facilitate feedback collection through questionnaires and surveys. This ensures objective evaluation of employees' professional activities by colleagues and supervisors. For instance, tasks and tests as elements of self-assessment help determine the level of knowledge and skills in specific areas of professional activity, which

serves as a foundation for planning teachers' training and professional development. Self-assessment enables educators to independently analyze their achievements and identify areas for improvement, fostering their self-awareness and motivation. The analytical capabilities of these systems provide detailed reports on the performance of teaching staff, helping to identify strengths and weaknesses both at the individual and organizational levels. Finally, electronic self-assessment systems for professional activities contribute to the development of targeted development programs for teachers, supporting their professional growth and adaptation to changing conditions in the educational process.

A survey among educational staff was conducted using the Google Forms system, with 941 respondents participating. This number of respondents

$$n = \frac{N \cdot Z^2 \cdot p \cdot (1-p)}{(N-1) \cdot E^2 + Z^2 \cdot p \cdot (1-p)} \quad (1)$$

Where:

- n – the sample size required for analysis.
- N – the total population size (in your case, the total number of teaching staff).
- Z – the Z-score corresponding to the chosen confidence level (for example, 1.96 for 95%).
- p – the assumed proportion of responses, usually taken as 0.5, as this provides the maximum sample size.
- E – the margin of error (for example, 0.05 or 5%).

Let us consider the competencies that play a key role in the self-assessment of the professional activities of teaching staff. Specifically, teachers' information and digital competence is critical in the context of applying electronic self-assessment systems for professional activities in general secondary education institutions. This competence encompasses not only knowledge and skills related to electronic systems but also ensures the ability to effectively use digital technologies in professional activities (Barlit, 2022). Mastery of this competence enables teachers to adapt to the dynamic educational environment, where digital technologies are increasingly utilized. It is essential to note that the ability to navigate the information space, search for, critically evaluate, and use information in professional activities is a significant component of information and digital competence. This pertains not only to acquiring new knowledge and information but also to the ability to filter out irrelevant data, which is crucial

is significant, as it significantly exceeds the minimum required sample size to achieve representativeness. The total number of teaching staff in 2021 was 434,755, and to obtain valid survey results with a confidence level of 95% and a margin of error of 5%, a minimum of 384 respondents needed to be involved. Thus, the inclusion of 941 respondents is more than sufficient to ensure reliability and reflect general trends among teaching staff. Formula (1) allows for a high probability of analyzing and interpreting the data obtained from the survey, contributing to the formation of well-founded conclusions and recommendations for the further development of the educational field.

when applying electronic self-assessment systems. The ability to effectively use available digital resources and create new ones as needed is vital for improving the quality of the educational process. It promotes the integration of innovative approaches in teaching and opens new possibilities for individualizing the educational process and adapting it to the specific needs of students. The application of digital technologies in the educational process is not merely a convenience but a necessity in the modern educational environment. Teachers who possess information and digital competence can effectively use electronic self-assessment systems and integrate digital tools into the teaching process, thereby enhancing the quality of education and fostering the development of students' critical thinking (Timotheou et al., 2023).

The understanding of information and digital competence in contemporary scientific thought covers a broad spectrum of skills and knowledge necessary for successful integration into the information society. Researchers offer various interpretations of this competence, highlighting its key aspects. For example, L. Potapyuk and I. Potapyuk (2019) define information and digital competence as the critical use of information and communication technologies in various spheres of life, including professional activities, personal communication, and public space. They emphasize components such as information and media literacy, programming, algorithmic thinking, and database skills, as well as internet safety and ethical aspects of working with information, which

are essential for ensuring secure and responsible use of digital technologies. O. Sakhno (2020) focuses on the use of information and communication technologies in professional activities. According to his definition, information and digital competence includes the collection, processing, transmission, and storage of information, the automation of information-methodological support processes, and the evaluation of electronic resources. Additionally, the researcher emphasizes the organization of interaction through interactive means, which is crucial for digital education, as well as the application of digital technologies in teaching, considering the specifics of the subject area. O. Barlit, V. Mogilevska, and O. Sibil (2022) view information and digital competence as a multifunctional skill that not only contributes to the successful organization of the educational process but also enables teachers to effectively adapt to changes in the educational environment. They underline the universality of this competence, making it important not only for professional activities but also for other spheres that require the effective use of digital tools.

O. Tryfonova (2018) pays special attention to the process of finding, systematizing, and evaluating information using digital tools and filters. She emphasizes the possibility of creating information databases from various sources and assessing competency levels in different areas. Information and digital competence as a set of knowledge, skills, abilities, and personal qualities that enable individuals to work effectively with information from various sources is examined by Sinienko K. (2021). An important component is the use of various media, which accelerates adaptation to the challenges and demands of a high-tech society. O. Polyakova (2022) focuses on the ability of individuals to navigate the information space and work effectively with information according to their own needs and the demands of the modern world. It is essential to understand how these needs evolve with the rapid development of technology. A. Chudesa (2020) concentrates on the technical aspects of information and digital competence, highlighting the ability to configure software, work with multimedia tools, and use resources to create educational materials. The researcher also emphasizes the importance of mastering basic technologies and website development skills. Analyzing various approaches to defining in-

formation and digital competence, it can be concluded that most researchers focus on the importance of digital knowledge and skills for modern individuals. However, key differences lie in some researchers emphasizing the professional sphere, while others focus on general media literacy or technical skills. Summarizing these approaches, information and digital competence can be interpreted as a set of skills, knowledge, and abilities that enable individuals to work effectively with information technologies in various professional fields, critically evaluate information, and use it to achieve their professional and personal goals.

The results of assessing the level of teachers' information and digital competence (Figure 1) revealed that most of them use various digital tools to enhance the educational process. In particular, software for online learning, which includes tools for organizing distance learning and interaction, is used by 89.6% of respondents. This indicates a positive trend in the acceptance of distance learning technologies. Video conferencing, which allows for online lessons and meetings, is even more popular, with a rate of 91.7%. Additionally, a high percentage of teachers use social networks and online communities (74.4%) and mobile devices (83.3%) for educational purposes, indicating a trend toward integrating everyday digital experiences into the educational process. Interactive whiteboards, used by 52.1% of respondents, contribute to increasing interactivity and student engagement in learning. However, less common tools, such as virtual laboratories (6.3%) and educational programs and games (10.4%), despite their potential to provide more engaging and practical learning experiences, are used far less frequently. This indicates the need for further support and development of these technologies. Learning management systems (20.8%) and student e-portfolios (31.3%), as reported by respondents, can serve as important tools for tracking educational achievements and managing learning content. Artificial intelligence, although used by 35.4% of teachers, still holds significant potential for expansion, given its ability to personalize learning and adapt materials to students' individual needs. These data illustrate the wide range of digital tools used in education and highlight the importance of continuous development of information and digital competence among teaching staff.

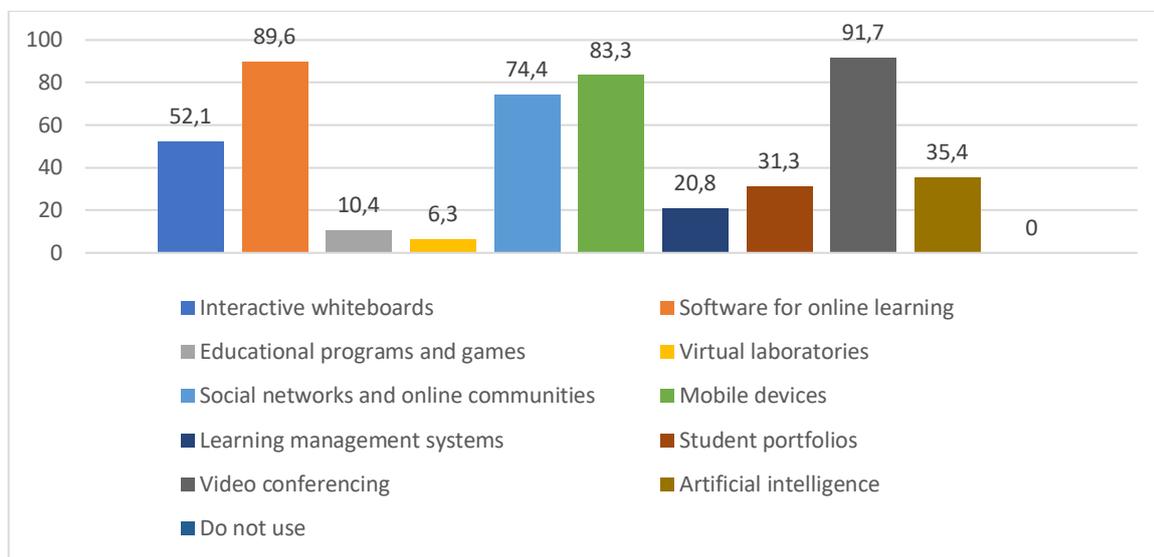


Figure 1. Which digital learning technologies do you use in the educational process? (data in percentages)

In the context of using electronic self-assessment systems, the evaluative and analytical competence of educators in secondary education institutions enables teachers not only to analyze and interpret data on students' learning outcomes but also to effectively apply this information to improve the educational process. The importance of evaluative and analytical competence increases in light of the necessity to adapt teaching methods to students' individual needs and to enhance the overall quality of educational services (Bykov et al., 2020). It should be noted that the ability to critically assess information obtained from electronic self-assessment systems requires teachers to develop critical thinking skills and the ability to work with data analytically. This not only contributes to improving the quality of education through the individualization of the educational process but also prepares students for effective interaction with an information-rich world. The ability to assess students' learning outcomes is fundamental to pedagogical activity. Electronic self-assessment systems offer a wide range of tools for measuring and analyzing various aspects of students' achievements, from academic knowledge to social and emotional skills. These systems allow teachers to make timely adjustments to the educational process based on objective data. The ability to analyze students' learning outcomes encompasses not only the interpretation of quantitative data but also the qualitative analysis of students' responses, reflections, and projects. This includes the use of analytical tools to identify trends, problem areas, and successes in learning, which enables teachers to develop targeted strategies for each student's development.

Given this, the ability to perform self-assessment and peer assessment of learning outcomes becomes crucial. Thus, electronic self-assessment systems can foster the development of students' self-analysis, self-criticism, and responsibility for their own learning. Peer assessment, on the other hand, supports the development of communication skills and collaboration, forming the basis for effective group work and mutual assistance among students (McMillan & Hearn, 2008). Understanding evaluative and analytical competence by various researchers underscores its importance for effective pedagogical activity. For example, S. Pokrova (2022) defines it as a key component that encompasses solving pedagogical tasks and making decisions, whether standard or creative. According to her, this competence is based on the teacher's ability to assess situations in a timely manner, analyze decision options, and choose the best one. The structure of this competence includes skills that enable teachers to successfully solve professional tasks in pedagogical activity.

Another approach is presented by a group of authors led by O. Shkvir (2023). They argue that a teacher's evaluative and analytical competence involves the adequate assessment of learning outcomes and the ability to conduct both self-assessment and peer assessment. This process requires the integration of theoretical knowledge and practical skills acquired during classes. Participation in scientific-practical events, according to the authors, is an important element, as it contributes to the development of skills in analyzing and assessing learning outcomes. Evaluative and analytical competence is viewed as a means for the effective use of electronic

systems to analyze students' academic achievements (Radkevych, 2024). This competence presupposes the presence of critical thinking and analytical abilities, which are necessary for working with large amounts of data, as well as the ability to adapt the educational process to the modern educational needs of society. This competence forms the foundation of pedagogical activity, helping teachers to effectively apply various assessment methods, which enables them to make the educational process more transparent and systematic. Teachers should be able to summarize their own experience and adequately present it (Onopriienko, 2021).

V. Yatsenko (2024) adds the ability to appropriately apply assessment criteria for students in secondary education institutions to the understanding of evaluative and analytical competence. This skill is fundamental to educational practice, as it helps teachers adequately assess students' academic achievements and foster their development. G. Chaus and I. Romanets (2023) emphasize the systematic nature of assessment, which allows tracking students' progress and identifying their individual needs. Moreover, these authors highlight the importance of self-assessment and peer assessment as mechanisms that develop students' responsibility for their own learning. Thus, an analysis of interpretations indicates that evaluative and analytical competence encompasses a wide range of knowledge, skills, and abilities necessary for the effective evaluation, analysis, and adaptation of the educational

process to contemporary demands. According to the author, evaluative and analytical competence is the foundation of pedagogical activity, as it enables teachers not only to adequately assess students' outcomes but also to critically analyze the educational process and ensure its continuous modernization.

Based on the results of a survey of educational staff regarding the presence of evaluative and analytical competence in the use of digital tools in the educational process (Figure 2), one can observe a distribution of preferences for their application in assessing learning outcomes. Among the most popular tools, Google Forms stands out with a 77.1% share, indicating its widespread use and recognition in educational institutions. Other platforms, such as Padlet and Kahoot!, are also significantly used, with respective rates of 35.4% and 31.3%. Meanwhile, Quizizz is used less actively, with a share of only 14.6%. An important aspect is that 14.6% of responses (corresponding to 137 teachers from the total number of respondents) indicated that these educators do not use digital tools to assess learning outcomes. This may point to barriers or limitations existing in educational institutions or among individual teachers regarding the adaptation to new technologies. Such information can serve as the basis for further research on the reasons for the inaccessibility or unacceptability of digital tools and the development of measures to increase the level of integration of digital technologies into the educational process.

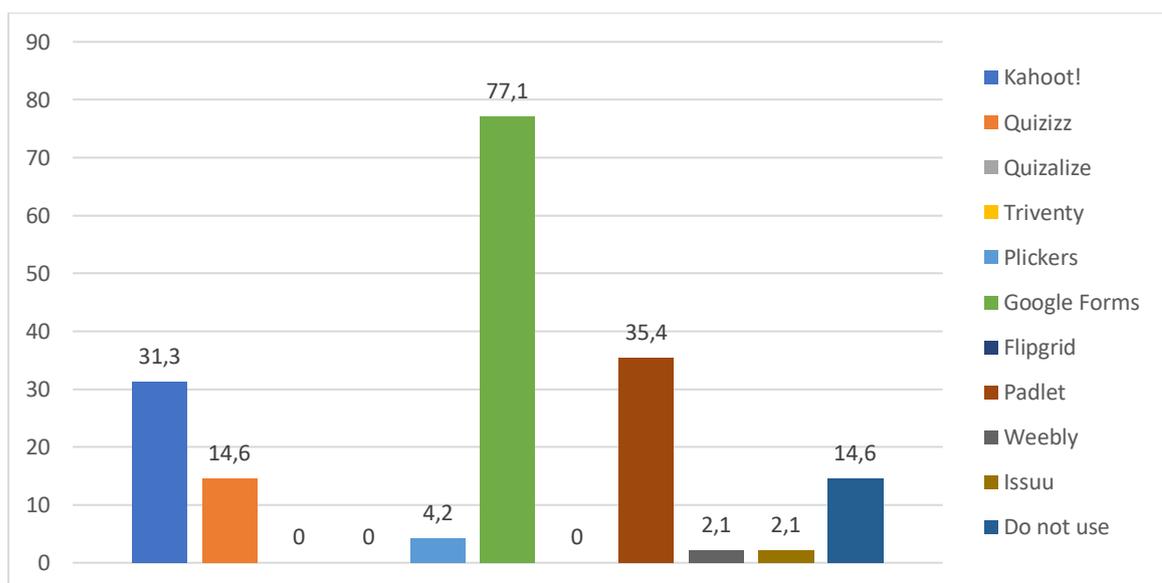


Figure 2. What digital tools for assessing students' learning outcomes do you use? (data in percentages)

One of the key roles in the modern educational process, especially in the context of integrating electronic self-assessment systems, is played by the innovative competence of teachers. Its primary advantage lies in the ability of educators to adapt and implement the latest technologies and methodologies, which enhances the efficiency of the educational process (Vashchenko, 2022). The use of digital tools not only simplifies the self-assessment procedure but also stimulates the development of an innovative culture among educators. Teachers who possess this competence can critically analyze educational content and effectively integrate scientific knowledge into their work. This contributes not only to the development of students' critical thinking but also improves the quality of the educational process, making learning more interactive and efficient. Innovativeness in the professional activities of educators is a crucial aspect that requires continuous development and self-improvement. The application of innovations not only modernizes the educational process but also enables teachers to stay at the forefront of educational trends. The integration of electronic self-assessment systems serves as an example of such innovations, enhancing the effectiveness and transparency of student achievement evaluation (Nykytuk, 2018). The ability to apply various approaches to problem-solving in pedagogical activity is an essential component of innovative competence. This encompasses not only the use of traditional teaching methods but also the integration of digital technologies and interactive methodologies. Such an approach expands opportunities for educators, creating a more flexible and adaptive learning environment for students. The use of electronic self-assessment systems and the integration of innovations into the educational process enable educators to improve the effectiveness of learning and foster the development of their own professional competence. Thus, innovative competence becomes the foundation for creating flexible and adaptive educational programs capable of meeting the needs of the modern educational environment.

The issue of understanding innovative competence increasingly draws the attention of scholars, who attempt to define its key elements and impact on professional activity. In the modern world, innovative competence extends beyond merely technical skills, encompassing a significant set of abilities, knowledge, and personal qualities that shape the capacity for innovative thinking and professional activity. Researchers offer their own perspectives on this competence, revealing the multifaceted nature

of its interpretations and opportunities for further exploration. V. Radkevych (2024) defines innovative competence as a key component that enables educators to successfully adapt the educational process to the new demands of the labor market and technological changes. According to her, this competence includes the ability to implement new methods and technologies into pedagogical practice, which contributes to the quality of professional training for students. The author emphasizes the importance of seeking original approaches that allow educators to create innovative educational products. Innovative competence is viewed as a component of general professional-pedagogical competence, emphasizing the creative and continuous nature of innovative activity (Konovalchuk, 2011). The researcher notes that innovative competence is driven by the societal significance of innovation and is aimed at developing the personal and professional potential of educators, focusing on the importance of developing the ability to create new solutions and propose original approaches. This understanding is complemented by the view that innovative competence also includes the ability to find new elements in already stable conditions of the educational process and to offer radically new solutions to existing problems. This approach indicates not only a readiness for change but also the ability to deeply analyze existing processes and seek ways to improve them (Vientseva & Karapetrova, 2022). O. Yevdokymova and N. Aleksiyenko (2017) emphasize that innovative competence is crucial for the effective fulfillment of professional duties and encompasses a readiness for constant innovations. They highlight its significance as a mechanism for cultural and intellectual exchange, which helps professionals not only to acquire new knowledge but also to effectively transmit it to others. This interpretation focuses on the role of competence as a tool for professional and personal development in a rapidly changing world.

As a systemic formation, innovative competence encompasses all aspects of innovative activity, from goals and objectives to methods and outcomes (Dziubenko, 2020). It is not isolated from the personality of the teacher, as its development is connected to a conscious approach to finding new educational solutions. M. Radchenko (2017) views innovative competence as the ability of an individual to adapt to changes and implement innovations, emphasizing such characteristics as creativity, improvisation, and continuous learning. His definition highlights the importance of receptivity to new ideas and active intellectual activity, which promotes individual self-actualization and professional growth.

A group of researchers, including S. Shevchuk, A. Yermolenko, and V. Kulishov (2020), consider innovative competence as the ability to implement changes at the system level. They emphasize methodological and informational literacy, which is essential for evaluating and implementing innovations. This definition underscores the importance not only of personal skills but also of the organizational conditions that foster the development of the innovative potential of educational institutions. Based on an analysis of the interpretations of this concept, it can be concluded that innovative competence is a complex category that includes both personal and professional components. It encompasses the ability to implement new approaches in professional activity, integrate the latest knowledge and skills, and be ready for continuous learning and adaptation to the rapidly changing conditions of the educational process.

According to the survey results (see Fig. 3), the level of application of modern innovative technologies in the educational process, particularly artificial intelligence, was determined. Respondents

were divided into two groups: 47.1% were positive and 52.8% were negative. This indicates that while almost half of the respondents support the integration of artificial intelligence in education, a similar proportion expresses concerns or skepticism regarding this technology. Such a division indicates the need for a deeper investigation of the issues causing concern and the development of strategies to increase the acceptance and application of artificial intelligence in educational institutions. It is important to note that artificial intelligence already demonstrates significant potential in addressing educational challenges, as mentioned in the article "Artificial Intelligence in Solving Educational Problems" (Olena Skrynnyk et al., 2022), which provides examples of successful technology integration to improve learning outcomes and optimize educational processes. This also requires proper teacher preparation to reduce fears and uncertainties about the impact of artificial intelligence on the quality and safety of learning.

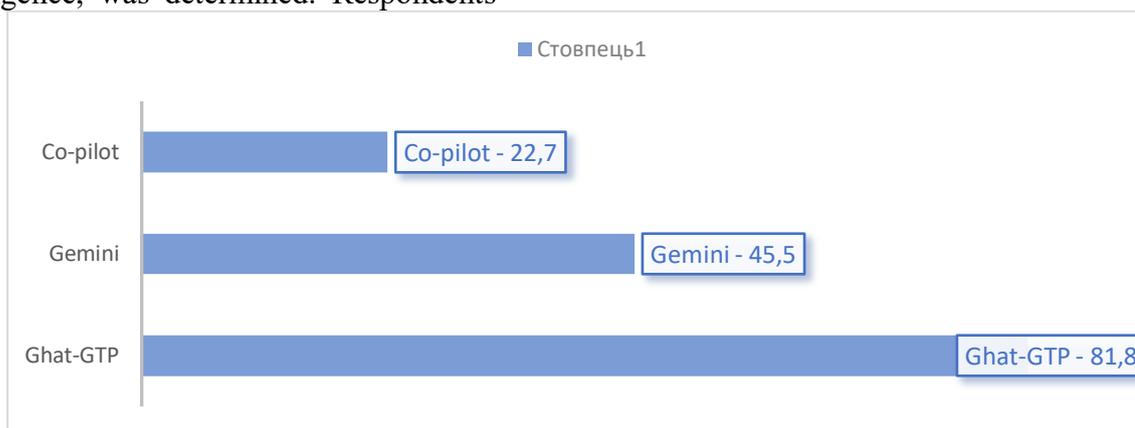


Figure 3. Application of modern innovative technologies in the educational process, including artificial intelligence. (data in percentages)

In the self-assessment of the professional activities of educational workers, the presence of reflective competence plays a significant role. It encompasses the ability to contemplate one's own practice, analyze successes and shortcomings, which contributes to identifying areas for further professional growth. This process not only promotes self-improvement but also ensures the high quality of the educational process. Reflective practice involves not only individual self-analysis but also the application of feedback from electronic self-assessment systems. These systems provide objective data on the effectiveness of professional activities, allowing for a more accurate self-identification in the field of pro-

fessional development (Zhelanova, 2020). It is important to understand how the collected information can be utilized for the correction and improvement of one's own teaching practice. Moreover, reflective competence facilitates educators' ability to monitor their activities and determine individual professional needs. This includes the analysis of their own skills, knowledge, as well as emotional and psychological states in the context of professional activities. Such an approach enables educators to be more adaptable to changes in the educational environment and respond to them adequately.

For the effective application of reflective competence, educators require access to high-quality digital tools for self-assessment and analysis,

which can be integrated into electronic systems. These tools take into account not only quantitative but also qualitative indicators, allowing for a deeper analysis of teaching activities. Reflective competence is one of the key characteristics of an individual's effective adaptation and development in professional and personal environments. Research conducted by scholars highlights the multifaceted nature of this concept, emphasizing its various aspects. For instance, O. Savchenko (2016) defines the reflective competence of a teacher as the ability to self-analyze, self-regulate, and self-improve, which helps them solve intellectual problems. It encompasses a set of reflective abilities that enable the application of personal resources to resolve internal conflicts through reflection and analysis of one's actions. This definition focuses on internal organization and the conscious resolution of personal contradictions, which are the main aspects of reflective activity.

O. Malykhin and O. Herasymova (2015) draw attention to the role of reflective competence in the context of the professional training of future teachers. They consider it an integral part of professional competence that contributes to personal and professional development during the learning process. It is emphasized that reflection assists in forecasting, planning, and implementing professional activities, directing individuals toward self-realization in socially significant activities. This underscores the importance of reflection in the educational process and its direct interaction with teaching practice. Reflective competence is viewed as a fundamental ability for understanding and critically reflecting on one's own thoughts, feelings, and actions in a professional context. Particular attention is given to introspection – the ability to reconsider one's actions and thoughts, which fosters personal development (Zhelanova, 2020). S. Lytvynenko and V. Yamnytskyi (2014) expand the definition of reflective competence by including creativity and the ability to interact productively in complex situations. They emphasize the importance of reflection for developing creative abilities, which contributes to the harmonious resolution of personal and professional tasks. The authors also highlight the role of reflection in the educational process at all its stages, making it a central competence for any specialist.

O. Homoniuk, O. Onyshko, and V. Raiko (2019) view reflective competence through the lens of rethinking personal and professional experience, which stimulates the formation of new professional standards. Their approach emphasizes the significance of reflection in professional development, par-

ticularly through the actualization of new performance benchmarks, which ensures the growth and improvement of educators. L. Kyashko (2019) underscores the role of reflective competence in professional activities, defining it as the ability to critically rethink thought stereotypes and create new content. The author emphasizes that this competence contributes not only to professionalism but also to personal growth, making it an integral part of professional development. From the analysis of these approaches, it can be concluded that reflective competence encompasses not only the ability to self-analyze but also the development of creative thinking, the ability to overcome stereotypes, and the pursuit of personal and professional growth. It fosters the formation of new approaches to problem-solving and ensures harmonious development in the professional environment.

To maintain a high level of professional competence among educational workers in a dynamically changing world, the ability to engage in lifelong learning is crucial. This is particularly relevant in the context of mastering new electronic self-assessment systems, which serve as a tool for improving the educational process and enhancing the quality of education. This competence not only encourages teachers to self-improve but also stimulates their active participation in professional communities, sharing knowledge and experience (Lenkova & Tretyak, 2021; Radkevych & Radkevych, 2021). It should be noted that electronic self-assessment systems enable educators to analyze their own activities, determine the conditions and resources for professional development. This contributes to objective self-assessment and planning of an individual learning trajectory, which is necessary for effective professional growth in the context of constantly evolving educational demands and standards.

The support of a high level of professional competence requires educators not only to have a deep understanding of current trends in the educational sphere but also the ability to adapt to new technologies. Electronic self-assessment systems are an important tool for achieving this goal, as they provide access to relevant digital educational resources, teaching methods, and forms of assessment. It should be noted that the ability to collaborate with other teachers on the principles of partnership and support is critically important for their professional development. Mentoring, supervision, and participation in professional communities allow for knowledge exchange, the development of joint projects, and the implementation of innovative approaches in the educational process. This not only

improves the quality of education but also fosters the development of the professional community as a strong support network.

The issue of understanding lifelong learning as a competency encompasses a wide range of aspects of educational development and personal growth. Modern scholars offer various definitions of this concept, focusing on the key characteristics of the continuous education process. Understanding lifelong learning as a competency largely depends on the context of societal, economic, and cultural development, as well as the individual's personal aspirations for self-improvement. For example, O. Markozova (2016) defines lifelong learning as a process that involves systematic and continuous acquisition of knowledge, skills, and competencies at all stages of life. Her approach emphasizes the active participation of individuals in various educational activities aimed at enhancing educational levels and professional training. This process helps individuals remain competitive in the labor market by maintaining the relevance of their knowledge and skills in the context of technological changes. The main goal of this approach is to support the intellectual development of the individual, enabling adaptation to the challenges of modern society.

Lifelong learning encompasses both formal and informal education, emphasizing the importance of continuous self-improvement and the acquisition of new knowledge outside traditional educational institutions. Her approach highlights that learning is not limited to formal education but also requires continuous development in social and professional life. In this context, lifelong learning becomes an important tool for self-realization and the development of critical thinking (Radkevych & Radkevych, 2021). The ability to engage in lifelong learning is considered a key competency, which is formed at the early stages of education and is complex in nature, encompassing content-based, motivational, and procedural components that contribute to the development of learning skills. The content-based component relates to cultural and general educational skills, the motivational component focuses on the significance of knowledge, and the procedural component concerns the organization of learning activities (Kodliuk & Kobryn, 2021). Analyzing these definitions, one can argue that the ability to engage in lifelong learning is a multifaceted competency that involves not only acquiring new knowledge but also developing skills in self-organization, motivation for learning, and the ability to adapt to changes.

Such a competency forms the foundation for continuous professional and personal growth, contributing to social integration and economic development.

The identification of informational-digital, evaluative-analytical, innovative, reflective competencies, and lifelong learning as key parameters for electronic self-assessment systems of professional activity for teachers in general secondary education institutions is determined by modern trends in education and the demands of the teaching profession. These competencies reflect the ability of educators to adapt to rapid changes in the technological and informational environment, effectively analyze and assess students' educational achievements, implement innovative approaches in the educational process, and develop their professional mastery through constant self-reflection and improvement. Unlike other competencies, such as linguistic-communicative, subject-methodological, psychological, emotional-ethical, and others, the selected competencies ensure a comprehensive approach to self-assessment of professional activity, emphasizing the importance of integrating digital technologies, analytical thinking, innovation, and self-development in the professional activities of modern educators. These competencies correspond to the needs of the modern educational process, which demands that teachers possess not only deep knowledge in their field but also the ability to quickly adapt to changes, implement new technologies in teaching and education, and develop critical thinking and self-education skills.

Thus, the competencies of teaching staff in the field of electronic self-assessment systems for professional activity not only contribute to teachers' professional development but also enhance the overall quality of education. The ability to adapt to new technologies, develop innovative teaching methods, and use electronic resources for self-assessment is fundamental to ensuring high-quality education.

Conclusions. In the context of modern education, the application of electronic self-assessment systems for teachers' professional activities requires the identification and thorough analysis of key competencies. One of the most important is digital competence, which defines the ability of teachers in general secondary education institutions to effectively use digital tools for collecting, processing, and analyzing information. The significance of this competence is determined by the fact that teachers must not only be able to work with technologies but also critically assess the reliability of information. This enables them to quickly adapt to constantly changing technological conditions, thus contributing to the

improvement of the quality of the educational process, which is a key factor in enhancing teachers' professional mastery.

The application of evaluative-analytical competence enables teachers to accurately determine the level of students' knowledge acquisition, which serves as a foundation for individual adaptation of educational strategies. As a result, teachers can conduct a thorough analysis of the obtained outcomes and develop more effective teaching strategies that promote higher learning outcomes. This competence is particularly important in the context of evaluating teachers' professional activities, as it enhances the precision and objectivity of the self-assessment process. The innovative competence of teachers plays a crucial role in modern educational practice. It involves the ability to implement new ideas, technologies, and methods in the educational process. This competence allows teachers not only to adapt to new conditions but also to actively shape new approaches to teaching, which stimulates students' interest in the educational process. Such an approach fosters the development of creative potential in both teachers and students, which in turn positively impacts the effectiveness of the educational process and improves its outcomes.

Reflective competence plays a critical role in ensuring the continuous professional development of teachers. It defines the ability of educators to self-assess and analyze their professional activities, which aids in understanding their strengths and weaknesses. Reflection enables teachers to continuously improve their teaching approaches, making

adjustments to the educational process to enhance its quality. This competence allows educators to effectively adapt their methods to new challenges and maintain a high level of pedagogical expertise.

Particular attention should be paid to the competence of lifelong learning, which is an essential component of teachers' professional development. This competence encompasses an openness to continuously acquiring new knowledge and skills, regardless of age or professional experience. In the context of rapid technological changes and the development of modern education, the ability to engage in lifelong learning ensures that teachers remain competitive and maintain a high level of professionalism in the long term. Through this competence, teachers can quickly adapt to new demands and develop their skills to provide high-quality education to learners.

Thus, the implementation of electronic self-assessment systems for teachers' professional activities requires the development of several key competencies, including digital, evaluative-analytical, innovative, reflective, and lifelong learning competencies. These competencies are essential for ensuring the high quality of the educational process, enhancing teachers' professional mastery, and adapting to modern educational challenges. In view of the above, these competencies form the foundation for the effective adaptation and application of electronic self-assessment systems in the educational process, ensuring a high level of professionalism and innovation in teachers' professional activities.

List of references

Барліт, О. О., Могілевська, В. М., & Сібіль, О. І. (2022). Інформаційно-цифрова компетентність як інструмент вибудовування індивідуальної траєкторії професійного розвитку. Електронне наукове фахове видання "Відкрите освітнє е-середовище сучасного університету", (13), 62-74.

Бартків О.С., Дурманенко Є.А. & Дурманенко О.Л. (2023). Підготовка майбутніх педагогів до використання інноваційних технологій в освітньому процесі http://www.innovpedagogy.od.ua/archives/2023/62/part_1/19.pdf

Ващенко, Л. С. (2022). Самооцінювання учнями результатів навчальної діяльності—складова внутрішньої системи забезпечення якості освіти.

Венцева, Н. О., & Карапетрова, О. В. (2022). Інноваційна компетентність як складова професійної діяльності сучасного педагога. Вісник Університету імені Альфреда Нобеля. Серія: Педагогіка і психологія, (1), 109-115.

Гомонюк, О. М., Онишко, О. Г., & Райко, В. В. (2019). Рефлексивна компетентність майбутніх фахівців соціономічної сфери як важлива складова їх професійно-педагогічної культури.

Дзюбенко, Ю. Л. (2020). Інноваційна компетентність учителя як складова його професійної компетентності.

Євдокімова, О. О., & Алексієнко, Н. В. (2017). Інноваційна компетентність як професійно важлива риса сучасного фахівця. *Law and Safety*, 65(2), 146-152.

- Желанова, В. (2020). Рефлексивна компетентність майбутнього педагога: сутність, структура, логіка рефлексіогенезу. Педагогічна освіта: теорія і практика, (33 (1)), 17-23.
- Іванова, С. М. (2018). Проблема розвитку інформаційно-дослідницької компетентності наукових і науково-педагогічних працівників з використанням відкритих електронних науково-освітніх систем. Інформаційні технології і засоби навчання, (68, № 6), 291-305.
- Кіяшко, Л. І. (2019). Рефлексивна компетентність майбутнього вчителя початкової школи. Редакційна колегія, 89.
- Кодлюк, Я. П., & Кобрин, З. А. (2021). Ключова компетентність молодших школярів «навчання впродовж життя»: змістовий аспект.
- Коновальчук, І. І. (2011). Сутність і структура інноваційної компетентності педагога загальноосвітнього навчального закладу. Вісник Прикарпатського національного університету. Серія: Педагогіка., 85-88.
- Ленкова, О. О., & Третяк, О. М. (2021). Сучасна педагогіка в Україні в контексті освіти впродовж життя.
- Литвиненко, С. А. & Ямницький В. М. (2014). Формування рефлексивної компетентності у професійній підготовці майбутніх психологів.
- Малихін, О. В., & Герасимова, О. І. (2015). Формування рефлексивної компетентності студентів в освітньому процесі вищої педагогічної школи.
- Маркозова, О. О. (2016). Навчання впродовж життя—необхідна передумова досягнення життєвого успіху людини. Вісник Національного університету Юридична академія України імені Ярослава Мудрого. Серія: Політологія, (2), 198-205.
- Никитюк, І. В. (2018). Розвиток професійних компетентностей педагогів в умовах інноваційного освітньо-виховного середовища. Педагогічний пошук, (3), 73-76.
- Овчарук, О. В. (2023). Інструмент самооцінювання цифрової компетентності вчителя як складова моніторингу якості освіти. Наукові записки. Серія: Педагогічні науки, (210), 42-47. <https://doi.org/10.36550/2415-7988-2023-1-210-42-47>
- Онопрієнко О. В. Контрольно-оцінювальна діяльність у новій українській школі: характеристика особистісних досягнень учнів. Вісник Національної академії педагогічних наук України. 2021. № 3(1).
- Покрова, С. В. (2022). Оцінювальна-аналітична компетентність у структурі професійної діяльності вчителя початкових класів.
- Полякова, О. В. (2022). Інформаційно-цифрова компетентність педагога як чинник реалізації культури демократії в освіті. V Всеукраїнська науково-практична інтернет-конференція «Реалізація в дошкільній та початковій освіті принципів демократії: зваженість, обізнаність, досвід», 15 вересня 2022 року, Київ, Україна.
- Потапюк, Л. М., & Потапюк, І. П. (2019). Інформаційно-цифрова компетентність як чинник забезпечення реформування освіти в Україні.
- Радкевич, В. (2024). Розвиток інноваційної компетентності викладачів закладів професійної освіти: теоретичні аспекти. В Я. Гжесяк, І. Зимомря, В. Ільницький (Ред.), Розвиток сучасної освіти і науки: результати, проблеми, перспективи. Том 11: Когнітивні горизонти: перспективи для науки та освіти: монографія, с. 192-206. Конін – Ужгород – Перемишль – Херсон: Посвіт. https://lib.iitta.gov.ua/id/eprint/741587/1/Monografia_2024_4_uklad-982-994.pdf
- Радкевич, О. (2024). Актуальні компетентності педагогічних працівників у контексті цифровізації освітнього процесу. Трансформація освіти в контексті процесів глобалізації, 86.
- Радкевич, О. П. (2023). Електронні засоби внутрішнього контролю та оцінювання якості освіти. (2023). Інноваційна професійна освіта, 2(9), 161-165. <https://doi.org/10.32835/2786-619X.2023.2.9.161-165>
- Радкевич, О. П., & Радкевич, О. М. (2021). Становлення та розвиток навчання впродовж життя. In Colloquium-journal (Vol. 2, No. 1 (88), pp. 66-69). Colloquium-journal.
- Радкевич, О., & Радкевич, О. (2021). Становлення та розвиток навчання впродовж життя. In Colloquium-journal (No. 1 (88), pp. 65-69). Голопристанський міськрайонний центр зайнятості.
- Радченко, М. І. (2017). Шляхи формування інноваційної компетентності студентів.

Раскалінос, В. (2011). Рефлексивна компетентність як складова професійної характеристики майбутнього фахівця. Проблеми підготовки сучасного вчителя, (4 (1)), 176-182.

Савченко, О. В. (2016). Рефлексивна компетентність як важливий фактор організації системи рефлексивного досвіду на особистісному рівні. Науковий вісник Херсонського державного університету. Серія «Психологічні науки», 1(1), 98-105.

Сахно, О. В. (2020). Інформаційно-цифрова компетентність як важлива складова професійної діяльності педпрацівника. URL: <https://lib.iitta.gov.ua/728318>.

Сіненко, К. О. (2021, September). Сутність дефініції «інформаційно-цифрова компетентність особистості». In The 11th International scientific and practical conference "European scientific discussions"(September 12-14, 2021) Potere della ragione Editore, Rome, Italy. 2021. 337 p. (p. 176).

Стойка, О. Я. (2023). Базові поняття цифровізації освіти та підготовки вчителів в Республіці Польща, Угорщині і Україні.

Трифонов, О. М. (2018). Інформаційно-цифрова компетентність: зарубіжний та вітчизняний досвід. Наукові записки. Серія: Педагогічні науки, 2(173), 221-225.

Чаус, Г. Г., & Романець, О. А. (2023). Цифрові аспекти розвитку оцінювально-аналітичної компетентності вчителів інтегрованих курсів природничої освітньої галузі. Наука та освіта в умовах викликів сьогодення, 215.

Чудеса, А. М. (2020). Інформаційно-цифрова компетентність педагога. Центр Прогресивної Освіти "Генезум". URL: <https://genezum.org/library/informaciyno-cyfrova-kompetentnist-pedagoga>

Шевчук, С. С., Єрмоленко, А. Б., & Кулішов, В. С. (2020). Розвиток інноваційної компетентності сучасного педагога професійної школи. Імідж сучасного педагога: Ефективність надлишкових знань учителя, 5(194), 52-58.

Шквир, О., Гайдамашко, І., Дудчак, Г., Казакова, Н., & Сівак, Н. (2023). Формування оцінювально-аналітичної компетентності майбутніх учителів початкових класів. Молодь і ринок, (1/209), 58-63.

Яценко, В. С. (2024). Проектування моделі профільної середньої освіти за змістом нової редакції професійного стандарту вчителя ЗЗСО. Профільна середня освіта: виклики і шляхи реалізації: збірник матеріалів, 63-68.

Выков, V. Y., Spirin, O. M., Biloshchytskyi, A. O., Kuchansky, A. Y., Dikhtiarenko, O. V., & Novytskyi, O. V. (2020). Open digital systems for assessment of pedagogical research results. Information technologies and learning tools, 75(1), 294-315.

McMillan, J. H., & Hearn, J. (2008). Student self-assessment: The key to stronger student motivation and higher achievement. Educational horizons, 87(1), 40-49.

Skrynnyk, O., Lyeonov, S., Lenska, S., Litvinchuk, S., Galaieva, L., & Radkevych, O. (2022). Artificial intelligence in solving educational problems. Journal of Information Technology Management, 14(Special Issue: Digitalization of Socio-Economic Processes), 132-146.

Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., ... & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. Education and information technologies, 28(6), 6695-6726.

Translated & Transliterated

Barlyt, O. O., Mohilevska, V. M., & Sibil, O. I. (2022). Informatsiino-tsyfrova kompetentnist yak instrument vybudovuvannya indyvidualnoi traiektorii profesiinoho rozvytku[Information and digital competence as a tool for building an individual trajectory of professional development]. Elektronne naukove fakhove vydannya "Vidkryte osvितnie e-seredovyshche suchasnoho universytetu"[Electronic scientific journal "Open Educational e-Environment of a Modern University"], (13), 62-74.

Bartkiv, O. S., Durmanenko, Ye. A., & Durmanenko, O. L. (2023). Pidhotovka maibutnikh pedahohiv do vykorystannia innovatsiinykh tekhnolohii v osvितnomu protsesi[Preparation of future teachers for the use of innovative technologies in the educational process]. Innovpedagogy [Innovative Pedagogy], (62), Part 1, 19. http://www.innovpedagogy.od.ua/archives/2023/62/part_1/19.pdf

Vashchenko, L. S. (2022). Samoosiniuvannia uchniamy rezultativ navchalnoi diialnosti–skladova vnutrishnoi systemy zabezpechennia yakosti osvity[Self-assessment of students' learning outcomes as a component of the internal quality assurance system in education].

Vientseva, N. O., & Karapetrova, O. V. (2022). Innovatsiina kompetentnist yak skladova profesiinoi diialnosti suchasnoho pedahoha[Innovative competence as a component of the professional activity of a modern teacher]. *Visnyk Universytetu imeni Alfreda Nobelia. Serii: Pedagogika i psykholohiia*[Bulletin of Alfred Nobel University. Series: Pedagogy and Psychology], (1), 109-115.

Homoniuk, O. M., Onyshko, O. H., & Raiko, V. V. (2019). Refleksyivna kompetentnist maibutnykh fakhivtsiv sotsionomichnoi sfery yak vazhlyva skladova yikh profesiino-pedahohichnoi kultury[Reflective competence of future specialists in the socio-economic sphere as an important component of their professional-pedagogical culture].

Dziubenko, Yu. L. (2020). Innovatsiina kompetentnist uchytelia yak skladova yoho profesiinoi kompetentnosti[Teacher's innovative competence as a component of his professional competence].

Evdokimova, O. O., & Aleksiienko, N. V. (2017). Innovatsiina kompetentnist yak profesiino vazhlyva rysa suchasnoho fakhivtsia[Innovative competence as a professionally important feature of a modern specialist]. *Law and Safety*, 65(2), 146-152.

Zhelanova, V. (2020). Refleksyivna kompetentnist maibutnoho pedahoha: sutnist, struktura, lohika refleksiogenezu[Reflective competence of a future teacher: essence, structure, and logic of reflexiogenesis]. *Pedahohichna osvita: teoriia i praktyka*[Pedagogical Education: Theory and Practice], (33(1)), 17-23.

Ivanova, S. M. (2018). Problema rozvytku informatsiino-doslidnytskoi kompetentnosti naukovykh i nauково-pedahohichnykh pratsivnykiv z vykorystanniam vidkrytykh elektronnykh nauково-osvitnykh system[The problem of developing information-research competence of scientific and scientific-pedagogical workers using open electronic scientific-educational systems]. *Informatsiini tekhnolohii i zasoby navchannia*[Information Technologies and Learning Tools], (68(6)), 291-305.

Kiiashko, L. I. (2019). Refleksyivna kompetentnist maibutnoho vchytelia pochatkovoii shkoly[Reflective competence of a future primary school teacher].

Kodliuk, Ya. P., & Kobryn, Z. A. (2021). Kliuchova kompetentnist molodshykh shkoliariv "navchannia vprodovzh zhyttia": zmistovyi aspekt[Key competence of junior schoolchildren "learning throughout life": substantive aspect].

Konovalchuk, I. I. (2011). Sutnist i struktura innovatsiinoi kompetentnosti pedahoha zahalnoosvitnoho navchalnoho zakladu[The essence and structure of innovative competence of a general education teacher]. *Visnyk Prykarpatskoho natsionalnoho universytetu. Serii: Pedagogika*[Bulletin of the Precarpathian National University. Series: Pedagogy], 85-88.

Lenkova, O. O., & Tretiak, O. M. (2021). Suchasna pedagogika v Ukraini v konteksti osvity vprodovzh zhyttia[Modern pedagogy in Ukraine in the context of lifelong learning].

Lytvynenko, S. A., & Yamnitskyi, V. M. (2014). Formuvannia refleksyvnoi kompetentnosti u profesiinii pidhotovtsi maibutnykh psykholohiv[Formation of reflective competence in the professional training of future psychologists].

Malykhin, O. V., & Herasymova, O. I. (2015). Formuvannia refleksyvnoi kompetentnosti studentiv v osvitnomu protsesi vyshchoi pedahohichnoi shkoly[Formation of students' reflective competence in the educational process of a higher pedagogical school].

Markozova, O. O. (2016). Navchannia vprodovzh zhyttia–neobkhidna peredumova dosiahnennia zhyttievoho uspihu liudyny[Lifelong learning as a prerequisite for achieving personal success]. *Visnyk Natsionalnoho universytetu Yurydychna akademiia Ukrainy imeni Yaroslava Mudroho. Serii: Politolohiia*[Bulletin of the National University "Yaroslav the Wise Law Academy of Ukraine". Series: Political Science], (2), 198-205.

Nykitiuk, I. V. (2018). Rozvytok profesiinykh kompetentnostei pedahohiv v umovakh innovatsiinoho osvitno-vykhovnoho seredovyshcha[Development of teachers' professional competencies in the conditions of an innovative educational environment]. *Pedahohichni poshuk*[Pedagogical Search], (3), 73-76.

Ovcharuk, O. V. (2023). Instrument samoosiniuvannia tsyfrovoi kompetentnosti vchytelia yak skladova monitorynhu yakosti osvity[A self-assessment tool for teachers' digital competence as a component of education quality monitoring]. *Naukovi zapysky. Serii: Pedahohichni nauky*[Scientific Notes. Series: Pedagogical Sciences], (210), 42-47. <https://doi.org/10.36550/2415-7988-2023-1-210-42-47>

Onopriienko, O. V. (2021). Kontrolno-otsiniuvalna diialnist u Novii ukrainskii shkoli: kharakterystyka osobystisnykh dosiahnenn uchniv[Control and assessment activities in the New Ukrainian School: characteristics of students' personal achievements]. *Visnyk Natsionalnoi akademii pedahohichnykh nauk Ukrainy*[Bulletin of the National Academy of Pedagogical Sciences of Ukraine], 3(1).

Pokrova, S. V. (2022). Otsiniuvavno-analitychna kompetentnist u strukturi profesiinoi diialnosti vchytelia pochatkovykh klasiv[Assessment-analytical competence in the structure of professional activity of a primary school teacher].

Polyakova, O. V. (2022). Informatsiino-tsyfrova kompetentnist pedahoha yak chynnyk realizatsii kultury demokratii v osviti[Teacher's information and digital competence as a factor in the implementation of a culture of democracy in education]. *Vseukrainska naukovo-praktychna internet-konferentsiia "Realizatsiia v doshkilnii ta pochatkovii osviti pryntsyviv demokratii: zva-zhenist, obiznanist, dosvid"*[All-Ukrainian scientific-practical online conference "Implementation of the principles of democracy in preschool and primary education: deliberation, awareness, experience"], September 15, 2022, Kyiv, Ukraine.

Potapiuk, L. M., & Potapiuk, I. P. (2019). Informatsiino-tsyfrova kompetentnist yak chynnyk zabezpechennia reformuvannia osvity v Ukraini[Information and digital competence as a factor in ensuring education reform in Ukraine].

Radkevych, V. (2024). Rozvytok innovatsiinoi kompetentnosti vykladachiv zakladiv profesiinoi osvity: teoretychni aspekty[Development of innovative competence of vocational education teachers: theoretical aspects]. In H. Hresiak, I. Zymomria, & V. Il'nyts'kyi (Eds.), *Rozvytok suchasnoi osvity i nauky: rezultaty, problemy, perspektyvy*[Development of modern education and science: results, problems, perspectives], Volume 11: Kohnityvni horyzonty: perspektyvy dlia nauky ta osvity[Cognitive Horizons: Perspectives for Science and Education], pp. 192-206. Konin – Uzhhorod – Peremyshl – Kherson: Posvit. https://lib.iitta.gov.ua/id/eprint/741587/1/Monografia_2024_4_uklad-982-994.pdf

Radkevych, O. (2024). Aktualni kompetentnosti pedahohichnykh pratsivnykiv u konteksti tsyfrovizatsii osvitnoho protsesu[Relevant competencies of teaching staff in the context of digitalization of the educational process]. *Transformatsiia osvity v konteksti protsesiv hlobalizatsii*[Transformation of education in the context of globalization], 86.

Radkevych, O. P. (2023). Elektronni zasoby vnutrishnoho kontroliu ta otsiniuvannia yakosti osvity[Electronic means of internal control and evaluation of education quality]. *Innovatsiina profesiina osvita*[Innovative Professional Education], 2(9), 161-165. <https://doi.org/10.32835/2786-619X.2023.2.9.161-165>

Radkevych, O. P., & Radkevych, O. M. (2021). Stanovlennia ta rozvytok navchannia vprodovzh zhytia[Evolution and development of lifelong learning]. In *Colloquium-journal*, (Vol. 2, No. 1(88), pp. 66-69).

Radkevych, O., & Radkevych, O. (2021). Stanovlennia ta rozvytok navchannia vprodovzh zhytia[Evolution and development of lifelong learning]. In *Colloquium-journal*, (No. 1(88), pp. 65-69). Holoprystanskyi miskraionnyi tsentr zainiatosti.

Radchenko, M. I. (2017). Shliakhy formuvannia innovatsiinoi kompetentnosti studentiv[Ways to develop students' innovative competence].

Raskalinos, V. (2011). Refleksyvna kompetentnist yak skladova profesiinoi kharakterystyky maibutnoho fakhivtsia[Reflective competence as a component of the professional characteristics of a future specialist]. *Problemy pidhotovky suchasnoho vchytelia*[Problems of Preparing a Modern Teacher], (4(1)), 176-182.

Savchenko, O. V. (2016). Refleksyvna kompetentnist yak vazhlyvyi faktor orhanizatsii systemy refleksyvnoho dosvidu na osobystisnomu rivni[Reflective competence as an important factor in organizing a system of reflective experience at the personal level]. *Naukovi visnyk Khersonskoho derzhavnoho universytetu. Serii "Psykhologichni nauky"*[Scientific Bulletin of Kherson State University. Series "Psychological Sciences"], 1(1), 98-105.

Sakhno, O. V. (2020). Informatsiino-tsyfrova kompetentnist yak vazhlyva skladova profesiinoi diialnosti pedpratsivnyka[Information and digital competence as an important component of a teacher's professional activity]. URL: <https://lib.iitta.gov.ua/728318>.

Sinenko, K. O. (2021, September). Sutnist definitsii "informatsiino-tsyfrova kompetentnist osobystosti"[The essence of the definition "information-digital competence of personality"]. In *The 11th International scientific and practical conference "European scientific discussions"*(September 12-14, 2021), *Potere della ragione Editore, Rome, Italy*, 176.

Stoika, O. Ya. (2023). Bazovi poniattia tsyfrovizatsii osvity ta pidhotovky vchyteliv v Respublitsi Polshcha, Uhorschchyni i Ukraini[Basic concepts of education digitalization and teacher training in Poland, Hungary, and Ukraine].

Tryfonova, O. M. (2018). Informatsiino-tsyfrova kompetentnist: zarubizhnyi ta vitchyzniani dosvid[Information and digital competence: foreign and domestic experience]. Naukovi zapysky. Serii: Pedagogichni nauky[Scientific Notes. Series: Pedagogical Sciences], 2(173), 221-225.

Chaus, H. H., & Romanets, O. A. (2023). Tsyfrovi aspekty rozvytku otsiniualno-analitychnoi kompetentnosti vchyteliv intehrovanykh kursiv pryrodnychoi osvitnoi haluzi[Digital aspects of the development of assessment-analytical competence of teachers of integrated courses in the natural sciences]. Nauka ta osvita v umovakh vyklykiv sohodennia[Science and Education in the Context of Contemporary Challenges], 215.

Chudesa, A. M. (2020). Informatsiino-tsyfrova kompetentnist pedahoha[Information and digital competence of a teacher]. Tsentri Prohresyvnoi Osvity "Henezum"[Center for Progressive Education "Henezum"]. URL: <https://genezum.org/library/informaciyno-cyfrova-kompetentnist-pedagoga>

Shevchuk, S. S., Yermolenko, A. B., & Kulishov, V. S. (2020). Rozvytok innovatsiinoi kompetentnosti suchasnoho pedahoha profesiinoi shkoly[Development of innovative competence of a modern vocational school teacher]. Imidzh suchasnoho pedahoha[Image of a Modern Teacher], 5(194), 52-58.

Shkvir, O., Haidamashko, I., Dudchak, H., Kazakova, N., & Sivak, N. (2023). Formuvannia otsiniualno-analitychnoi kompetentnosti maibutnikh uchyteliv pochatkovykh klasiv[Formation of assessment-analytical competence of future primary school teachers]. Molod i rynek[Youth and the Market], (1/209), 58-63.

Yatsenko, V. S. (2024). Proiektivannia modeli profilnoi serednoi osvity za zmistom novoi redaktsii profesiinoho standartu vchytelia ZZSO[Designing a model of specialized secondary education according to the content of the new edition of the professional standard for a secondary school teacher]. Profilna serednia osvita: vyklyky i shliakhy realizatsii: zbirnyk materialiv[Profile Secondary Education: Challenges and Ways of Implementation: Collection of Materials], 63-68.

Bykov, V. Y., Spirin, O. M., Biloshchytskyi, A. O., Kuchansky, A. Y., Dikhtiarenko, O. V., & Novytskyi, O. V. (2020). Open digital systems for assessment of pedagogical research results. Information technologies and learning tools, 75(1), 294-315.

McMillan, J. H., & Hearn, J. (2008). Student self-assessment: The key to stronger student motivation and higher achievement. Educational horizons, 87(1), 40-49.

Skrynnyk, O., Lyeonov, S., Lenska, S., Litvinchuk, S., Galaieva, L., & Radkevych, O. (2022). Artificial intelligence in solving educational problems. Journal of Information Technology Management, 14(Special Issue: Digitalization of Socio-Economic Processes), 132-146.

Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., ... & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. Education and information technologies, 28(6), 6695-6726.

КОМПЕТЕНТНОСТІ ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ У СФЕРІ ЕЛЕКТРОННИХ СИСТЕМ САМООЦІНЮВАННЯ ПРОФЕСІЙНОЇ ДІЯЛЬНОСТІ

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Реферат:

Актуальність. Описано важливість впровадження електронних систем самооцінювання професійної діяльності педагогічних працівників. Наголошено, що сучасні освітні реформи потребують об'єктивних та прозорих механізмів оцінювання. Визначено, що впровадження таких систем дає змогу підвищити якість освітнього процесу. Підкреслено необхідність розвитку цифрових та аналітичних компетентностей педагогів для ефективного використання цих систем.

Мета статті полягає в обґрунтуванні компетентностей педагогічних працівників у сфері електронних систем самооцінювання професійної діяльності

Методи: анкетування – для оцінювання педагогами сприйняття та застосування електронних систем у професійній діяльності; інтерв'ю – спрямовувалось на отримання більш глибокого розуміння індивідуального досвіду застосування електронних систем самооцінювання професійної діяльності; аналіз документів/літератури – охоплював навчальні плани, методичні рекомендації, звіти, статті про виконання професійних завдань та інші документи, пов'язані з професійною діяльністю педагогів; спостереження – спрямовувалось на визначення як вчителі використовують електронні системи оцінювання у своїй повсякденній професійній діяльності та як це впливає на їхню взаємодію з учнями

Результати дослідження свідчать, що впровадження електронних систем самооцінювання професійної діяльності педагогів у контексті освітніх реформ є позитивним кроком. Встановлено, що ці системи підвищують об'єктивність, прозорість та ефективність оцінювання, розвиваючи ключові компетентності педагогів: інформаційно-цифрову, оцінювально-аналітичну, інноваційну та рефлексивну. Зазначено важливість безперервного навчання для адаптації до технологічних змін. Виявлено, що педагоги активно використовують цифрові інструменти, такі як онлайн-навчання, відеоконференції, Google Forms та Padlet. Штучний інтелект, хоча впроваджується повільно, має великий потенціал для персоналізації навчання

Висновки. Дослідження підкреслює важливість електронних систем самооцінювання для покращення якості освіти. Розвиток ключових компетентностей педагогів – інформаційно-цифрової, оцінювально-аналітичної, інноваційної та рефлексивної – є вирішальним для ефективного використання цих систем. Ці компетентності дозволяють об'єктивно оцінювати результати навчання, адаптувати освітні стратегії та підвищувати прозорість оцінювання, що позитивно впливає на якість освітнього процесу. Безперервне навчання педагогів забезпечує їхню здатність адаптуватися до технологічних змін і впроваджувати нові підходи у викладанні. Електронні системи стимулюють рефлексію та професійне вдосконалення, що підвищує майстерність педагогів і створює сучасне, інтерактивне освітнє середовище, відповідне вимогам цифрової ери.

Ключові слова: інформаційно-цифрова компетентність, оцінювально-аналітична компетентність, інноваційна компетентність, рефлексивна компетентність; безперервне навчання, якість освіти.

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