UDC: 37.091.12:004.9:37.015.3

Oksana Ovcharuk
Doctor of Pedagogy, Professor
Head of the Comparative Studies Department for Information and Education Innovations,
Institute for Digitalisation of Education of the NAES of Ukraine, Kyiv, Ukraine
ORCID ID 0000-0001-7634-7922
ovcharuk@iitlt.gov.ua

TEACHERS' PROFESSIONAL DEVELOPMENT AND DIGITAL READINESS: GLOBAL TRENDS AND UKRAINIAN CONTEXT

Abstract. The article analyses teachers' readiness to use digital self-assessment tools and their impact on teachers' motivation for professional development. International experience and research results on the use of digital tools by teachers are presented. The text discusses various frameworks and documents related to teachers' digital competence, including DigCompEdu: the European Framework for the Digital Competence of Educators; the UNESCO ICT Competency Framework for Teachers; and the AI Competency Framework for Teachers. It also presents international approaches to utilising digital self-assessment tools for motivation and professional development. Additionally, the text highlights Ukrainian teachers' perspectives on using digital tools for self-improvement. In addition, it presents valuable insights into Ukrainian teachers' perspectives on integrating digital tools into their self-development. Limitations in the use of self-assessment tools by domestic teachers are highlighted. The role of such tools in the modern educational environment and in teachers' working conditions is emphasised. The interrelationships among self-assessment methods, expected results, and their impact on teacher motivation and professional development are summarised and presented, which is a novelty of the study. For this generalisation, the results of surveys conducted in 2023-2025, with the author's participation, by the scientists of the National Academy of Educational Sciences of Ukraine, were used. Further study of international experience and best foreign and domestic practices of using digital tools for self-assessment and motivation of teachers has the potential to improve existing methods and standards for the professional development of teachers. The results of the study can be used to update professional development programs for teaching staff.

Keywords: teachers; digital tools; digital competence; professional development; readiness; motivation

1. INTRODUCTION

The widespread use of digital technologies by teachers and students has prompted the educational community to develop effective ways to teach and use new digital tools for acquiring knowledge. Teachers have become active agents of change, especially during the period of martial law in Ukraine, amid blackouts and restrictions on Internet access. Recent state decisions and several regulatory documents indicate an active policy of digitalising education. This is confirmed, first of all, by the Law of Ukraine "On the National Informatisation Program" [1], Draft Concept of Digital Transformation of Education and Science for the Period Until 2026 [2], Order of the Ministry of Education and Science of Ukraine "On approval of methodological recommendations on certain issues of obtaining education in general secondary education institutions under martial law in Ukraine" dated 05/15/2023 No. 563 [3] and several other strategic decisions. The Ministry of Education and Science published Order No. 532 of April 1, 2025, "On the Creation of a Working Group to Develop Changes to the Requirements for an Interactive Electronic Application to the Textbook", which indicates the importance of teachers and students mastering these forms of knowledge acquisition (https://osvita.ua/legislation/Ser_osv/94480/).

© Oksana Ovcharuk, 2026.

Teachers are increasingly interested in mastering new teaching tools, assessing their professional potential, identifying needs, and receiving necessary instructions and advanced training. This is confirmed, in particular, by numerous studies conducted in recent years [4]; [5]. In addition, as of 2022, as part of the PISA study, teachers reported the absence and insufficient quality of digital systems for managing the educational process and identified the need for new digital resources to implement tasks in general secondary education [6].

In response to the need to assess citizens' readiness and digital competence, the Ministry of Digital Transformation launched the Diya portal in 2020. It developed the digital literacy test called “Digital Grammar for Teachers.” This test is now part of the certification process for educators. Additionally, the Ministry initiated the National Digital Literacy Campaign, “Digital Education” (https://thedigital.gov.ua/projects/osvita), which includes a series of educational programs designed to support teachers.

Despite the importance of assessing teachers' readiness and motivation, these issues often go overlooked by both researchers and policymakers. The level of professional competencies among teachers is closely tied to their motivation for continuous development and learning. This area addresses self-reflection and self-assessment of their competencies, particularly in the use of digital technologies. Currently, most studies focus on evaluating teachers' skills in using distance-learning tools and managing classroom instruction. However, there is less emphasis on teachers' self-education and motivation. In challenging circumstances, many teachers find themselves isolated in addressing unresolved issues related to Internet access, stress, and the significant workload associated with lesson preparation.

In recent years, considerable attention has been paid to teacher certification, where a significant place is given to digital tools. Thus, Digital Education. Action is a tool created for self-assessment of digital competence, which is used to confirm a teacher's ability to use tools for conducting lessons and for their own professional needs. However, such certification demonstrates a certain inequality of teachers working in large cities, where the provision of teachers and schools with digital tools is significantly higher than that of teachers from small towns and villages in Ukraine, particularly in regions that are close to war zones and occupied territories. This demotivates teachers not only at the level of performing professional duties, but also at the level of self-development and self-improvement, leaving no time for this. Therefore, it is necessary to highlight the problematic field of research, namely the lack of attention of the educational community and educational politicians to the use of self-assessment tools for professional competences by teachers, the imperfection of existing tools, the pressure of the need to undergo certification with limited opportunities to use new tools, as well as the impact of these factors on teachers' motivation for professional development, the relationship between the level of digital competence and teachers' motivation and readiness for professional development.

The purpose of this research is to examine how teachers' use of digital technologies influences their motivation for professional development. It also explores the relationship between teachers' levels of digital competence and their desire to enhance their digital skills, considering both the Ukrainian and international contexts.

The scientific novelty and practical significance lie in identifying trends and substantiating the impact of digital technologies on teachers' motivation for professional development, as well as teachers' readiness to use digital tools in times of crisis, in a comparative aspect of Ukrainian and foreign experience.

Analysis of recent research and publications. Teachers’ motivation is a significant driving force that influences their willingness to develop and engage in self-improvement in their professional growth, as well as to implement new and innovative teaching methods. Researchers A. Talwelkar and A. Uppal recognise that participants’ motivation to engage in the continuous process of development can be classified in two ways, including “autonomous

motivation" and "controlled motivation."[7]. Research indicates that the work environment, enthusiasm, and the influence of fellow participants significantly impact teachers' professionalism and motivation. Scholars have identified several challenges that teachers face, including heavy workloads, time constraints, administrative responsibilities, lesson planning, inadequate resources, and insufficient support. These factors hinder their motivation and professionalism in the field. Additionally, competitive salaries and limited benefits contribute to a decline in motivation for professional development. The pressure of standardised testing adversely affects teachers' motivation and their overall learning experience. Furthermore, various bureaucratic obstacles, a lack of autonomy, and unsupportive leadership diminish motivational factors within the organisational structure.

F. M. Mustafaoğlu and F. Alkan analyse the attitudes and perceptions of pre-service teachers. The authors reveal the negative attitudes of pre-service teachers towards artificial intelligence. They identify a range of risks, among which the misleading information caused by artificial intelligence applications, along with issues of data security and privacy. They also reveal the risks that artificial intelligence applications may pose to the teaching profession and educational processes. Moreover, teachers expressed concerns that these applications may weaken the role of teachers and ultimately lead to a decline in the quality of the educational process [8]. At the same time, Ukrainian surveys reveal the teachers' need to study artificial intelligence tools and immersive technologies has increased [5].

In many low-income countries, teachers receive low salaries, which negatively affects the quality of teaching and staff turnover. International initiatives, for example, with the support of international organisations such as UNESCO and the World Bank, are aimed at increasing salaries, providing social guarantees and incentives such as housing programs, rural work allowances and career bonuses [9], [10]. Improving the social status of teachers is also a key objective of UN Sustainable Development Goal 4, which calls for increasing the number of qualified teachers through international cooperation and training [11]. One of the main areas of support is teacher professional development. In many low-income countries, training and postgraduate training programs are implemented, funded by international partners. The World Bank has created a database of projects supporting teacher professional development in countries in Asia, Africa and Latin America, focusing on training, mentoring and developing pedagogical skills [8]. Such programs often include distance learning courses, on-the-job training, and cascade learning models, where trained trainers train other teachers, which allows for scaling up training with limited resources [6]. M. Pietsch, S. Röhl, I. Syvertsen, and C. Cramer consider the conceptual foundations of teacher leadership and their motivation to become leaders. According to the researchers, the leader's self-efficacy, leadership experience and the teacher's personal characteristics are relevant prerequisites for teachers' motivation and intentions. [12]. A. Tecson and E. Malabo, based on their own research, found that there is a high level of job satisfaction among teachers, especially in terms of positive relationships with colleagues, recognition of their contribution and active participation in professional activities. Their research confirmed that the effectiveness of teachers' work is formed, first of all, by motivation, strengthened by transformational leadership and job satisfaction [13]. M.Bañuls, J.Esteve-Faubel, F.León emphasise that the results of their study reveal participants' perceptions of the motivation to use technology in the process of independent learning and highlight the positive value they place on digital tools as resources for motivating their future students. The researchers substantiate the link between the use of technology and improved academic performance in teacher training. In addition, they emphasise the need to implement educational models that not only promote the development of digital skills but also provide solid pedagogical training in this area. Furthermore, researchers argue that the COVID-19 context has become a powerful motivator for online learning. This situation has led to the adaptation of traditional classroom dynamics to digital ones, as well as the simplification of teaching

materials, exams, assignments and activities. Furthermore, positive effects on learning have been observed when teaching has been carried out through virtual tutoring, which has improved the monitoring of learning. It has also contributed to the establishment of pedagogical dialogues with specific instructions and the development of flexible, contextualised, and updated curricula [14]. J.Kumari and J.Kumar identify the factors influencing teachers' motivation and evaluate the influence of motivation on teachers' job performance. They revealed that self-determined and non-self-determined motivation and factors influencing teachers' motivation significantly impact teachers' job performance. The authors found that factors that motivate teachers include a fair career progression system, adequate resources, excellent working conditions, incentives, income, job security, job satisfaction, learning and development, and performance appraisal. [15]. This also correlates with adequate access to technology, which is actively used by teachers today.

Among the well-known theories related to the professional development of teachers and their motivation, researchers most often include Maslow's hierarchy of needs theory, Herzberg's two-factor theory, and the self-determination theory, which explain their motivation, such as recognition, personal growth, fair remuneration, and proper working conditions. Investigating the motivation of teachers in the preschool education system, T. Nedimović and I. Đorđev note that teachers' motivation is influenced by educational reforms that offer new vectors of development [16]. Well-known theories linking human motivation and learning include the so-called Self-Determination Theory, which underlies the concept of lifelong learning. According to the self-determination theory, there are two main types of motivation - intrinsic and extrinsic, both of which are powerful forces that shape our behavior and attitudes. According to E. Deci and R. Ryan, extrinsic motivation is an incentive to a certain behavior based on external sources and means, which leads to external rewards. Such sources include employee evaluation systems, awards and distinctions, as well as respect and recognition from others [17]. This approach correlates with teachers' motivation to use digital technologies, especially for self-assessment of their capabilities and measurement of their professional competence. According to this approach, intrinsic motivation comes from within; that is, there are internal motives that inspire us to behave in a certain way, including our core values, interests and personal sense of morality. The combination of extrinsic and intrinsic motivation encourages a person, a specialist, to learn throughout life, and therefore, the influence of external factors, such as self-assessment tools, can be a powerful means of supporting teachers in their teaching and improving their own professional level.

Important for maintaining teacher motivation is the orientation towards international recommendations and framework documents, in particular, the European Reference Framework of Key Competences for Lifelong Learning [18], Digital Education Action Plan for 2021-2027 (*Digital Education Action Plan*) [19]. In this context, researcher O. Lokshyna notes that with the adoption of the European Reference Framework of Key Competences for Lifelong Learning by Brussels, a new concept of modern European education was proposed, which should form in learners' vital characteristics of a universal nature for application in various rapidly changing contexts - individual, professional, and social. To this end, the components of key competence are not only knowledge, but also skills and attitudes, as well as the ability to apply them in real life [20].

In the context of the existence of several important framework recommendation documents [21], such as the Digital Competence Framework for Educators (DigCompEdu) [22], [23], UNESCO ICT Competency Framework for Teachers) [24], (AI competency framework for teachers) [25], self-assessment tools for teachers that encourage them to use digital tools and instruments in their professional activities are gaining importance. In particular, UNESCO, in the new version of the Framework (Version 3 of the ICT CFT), takes into account the 2030 Agenda for Sustainable Development, while emphasizing the need to develop those

competencies that are relevant for teachers and take them into account within the framework of modern technological development and changing demands of life and work, for example, the ability to use open educational resources, taking into account inclusiveness and ICT, etc.

Several international documents related to the use of artificial intelligence (AI) are important today. The Organisation for Economic Cooperation and Development, in its "Recommendation of the Council on Artificial Intelligence", noted the importance and necessity of adhering to integrity and promoting a human-centric approach to trustworthy AI, which fosters research and preserves economic incentives to innovate [21]. The educational sector in Ukraine is on the path of European integration [26]. In the context of this process, Ukraine is taking certain steps towards the transparent, responsible, and ethical use of AI systems [27]. As a member of the Special Committee on AI at the Council of Europe, in October 2019, Ukraine joined the Recommendation of the Council on Artificial Intelligence of the Organisation for Economic Cooperation and Development [28]. In 2020, in accordance with the order of the Cabinet of Ministers of Ukraine No. 1556 dated December 1, 2020, the Concept for the Development of Artificial Intelligence in Ukraine was approved, which states that the introduction of AI in education is one of the priority areas of its implementation [29]. These processes emphasise the importance and relevance of supporting teachers in using AI and GAI tools for their professional activities.

2. METHODS OF THE STUDY

Mixed data collection methods were chosen for the study (document analysis, questionnaire results, analysis of self-assessment platforms, review of domestic and foreign studies). An analysis of statistical data samples on determining the readiness of teachers to use digital tools in Ukraine was also carried out, and a comparison of surveys contained in articles by foreign authors and international organisations (UNESCO, OECD, EC), in particular the Interagency Network for Education in Emergencies, and in the framework of international documents (DigCompEdu) was carried out. The method of generalisation, systematisation, and identification of relationships between self-assessment methods, expected results and impact on motivation and professional development was also applied. For such generalisation, the results of surveys in 2023-2025, conducted with the participation of the scientists of the National Academy of Sciences of Ukraine, were used [21], [28], [30].

3. RESULTS OF THE RESEARCH

The development of technology and digitalisation has become a factor motivating teachers to self-develop and master digital technologies. A survey of Ukrainian teachers conducted in 2022-2024 showed the activity and interest of teachers in the use of digital technologies, as well as their desire to improve their skills [5], [4]. An important role was played by the fact that the surveys were built on the principles of anonymity and voluntariness, while the organisers used social networks and sent a link to the survey to educational institutions. The most active participants among the 26,226 teachers surveyed in 2024 are primary school teachers (23.4%), heads of general secondary education institutions (10.7%), Ukrainian language and literature (10.6%), mathematics (9.7%), foreign languages (9.2%), and computer science (7.2%), which indicates their interest in participating and their desire to convey their own attitude to the use of digital tools in lessons (Fig. 1).

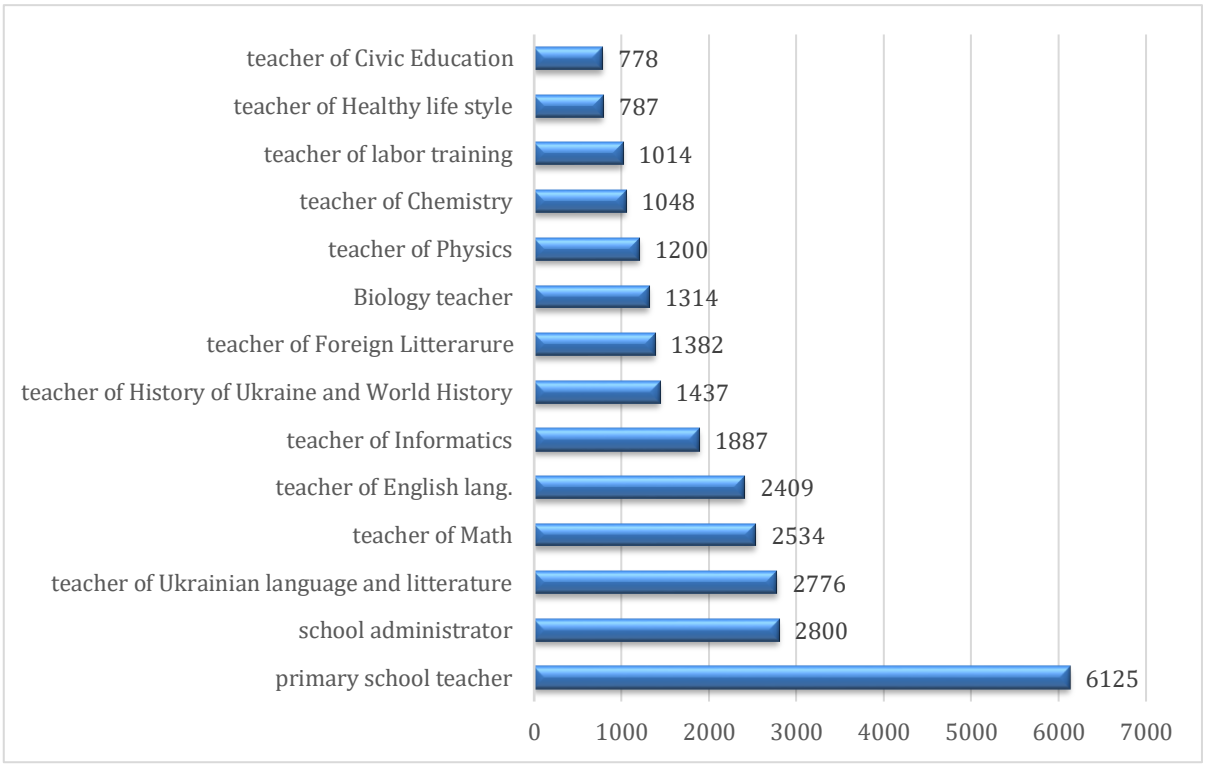

Figure 1. Percentage of participants in the 2024 online teacher survey (26,226 respondents). Source: [30]

To determine the readiness of teachers to use digital tools, a series of surveys of domestic teachers was conducted during 2022-2025, which allowed us to identify the needs and problems associated with the motivation to use digital tools for professional activities. Among the main ones are insufficient training and limited familiarity with digital tools, a lack of educational resources and tools that teachers can use, limited opportunities for professional development, a lack of systemic support, and other factors [30]. Teachers believe that their training and improvement of digital skills should be organised flexibly, according to their needs, and not in standard forms, as was the case before. Teachers are aware of the complexity of the new standards and requirements for them, and they also state the difficulty of passing the certification and ask to cancel it in its current form, due to the high requirements for them. This is especially important in unequal conditions of access to technology and the Internet, in conditions of crisis and wartime.

To motivate a teacher to self-development, it is important to support them from the educational institution. Such support may consist of creating the necessary conditions for teachers to implement their ideas and providing technical support for this process. Appropriate equipment, software and didactic support create such conditions. This is especially important in unstable and crisis conditions of teachers' work. The authors M. Burns, D. Lori [31], who work within the Inter-agency Network for Education in Emergencies (INEE), note several important steps that the education system should take to support teachers. According to scientists, special support should be provided to teachers in low-income and crisis-affected countries. To do this, they propose to develop, use and institutionalise standards for teacher professional development. At the same time, it is necessary to create professional development opportunities that promote teacher collaboration and the exchange of experiences. To further promote teacher collaboration, the INEE network suggests the following actions: 1) organising collaboration, through visiting lessons and providing feedback between teachers; 2) strengthening the exchange of experiences that promotes mutually beneficial learning in the professional community; 3) promoting and supporting effective and active teacher learning

communities. Also, significant attention should be paid to ongoing teacher support, which is a multi-level, complex system of various forms of assistance. Such activities should be designed to help teachers successfully transfer learning from the professional development environment to the classroom. It can include administrative, training, resource, peer, supervisor, and learning support from a more knowledgeable specialist. This may include so-called educational coaching, observation and feedback, i.e., support for teachers in implementing digital technologies within an educational institution. School leaders should be especially aware of this. Investments in highly qualified teacher mentors and trainers with extensive teaching experience are also an important condition for motivating teachers, according to experts from the Interdepartmental Network for Education in Emergencies [31]. Such investments will help strengthen the capacity of teacher professional development professionals and ensure their effectiveness. In addition, to support teachers in particularly hard-to-reach areas or during crises, audio training should be introduced, free, unrestricted access to educational resources through open content should be provided, and teachers should be supported in integrating this content into their teaching [32].

Numerous studies conducted by international researchers also evidence the impact of digital technologies on teacher motivation. Researchers A. Tecson and E. Malabo, who conducted a study of the relationship between job satisfaction, motivation, leadership styles, and teacher performance during the 2024-2025 academic year, found that motivation serves as an important link among leadership, job satisfaction, and teacher effectiveness. In their view, teacher effectiveness is primarily shaped by motivation, reinforced by transformational leadership and job satisfaction [13]. The study found high levels of job satisfaction and motivation among teachers, particularly in positive relationships with colleagues, recognition of their contributions, and active participation in professional activities. Authors K. Purcell, J. Buchanan, and L. Friedrich highlight the influence of digital technologies on teachers' attitudes toward work and motivation across various school subjects. Their study showed that the use of the Internet and other digital technologies has expanded the range of content produced by teachers and has increased the skills that teachers believe they should have. Such changes were reported by 78% of English teachers, 71% of science teachers and 66% of mathematics teachers. At the same time, the majority of teachers surveyed indicated that they use the Internet every week to keep up with events in their field and to find materials that they can use in lesson planning [32]. When asked how often they use the Internet to complete various work tasks, the vast majority of teachers who complete programs of increased complexity and professional training (80%) report receiving email alerts at least weekly to keep them up to date with developments in their field, with 52% reporting doing so daily. Most also use the Internet at least weekly to find content that will interest students (84%) or materials to help them create lesson plans (80%). In contrast, only 18% say they use a social networking site to share ideas with other teachers weekly [32]; [33].

Returning to the range of digital tools that teachers use for self-education and preparation for classes, it is worth paying attention to the trends that are observed in Ukraine and abroad. According to surveys, in Ukraine, today, teachers show significant interest in the use of artificial intelligence (AI). The importance of AI usage by educators is highlighted in UNESCO's papers “Generative AI and the future of education” and “Recommendation on the Ethics of Artificial Intelligence.”[34]; [35]. During the 2025 surveys, teachers were asked to evaluate their level of awareness regarding the use of AI tools, using a scale from 1 (low) to 5 (high). The results showed that 2.5% of respondents rated their awareness as low, 8.9% rated it as slightly above low, 37.3% rated it as average, 35.7% rated it as above average, and 15.5% rated it as high (see Fig. 2). Notably, only 15.5% of teachers considered their awareness of AI to be either high or the highest level. It is concerning that a combined 73% of respondents assessed their awareness

as average (37.3%) or above average (35.7%). This distribution indicates a general lack of sufficient awareness among teachers regarding AI tools.

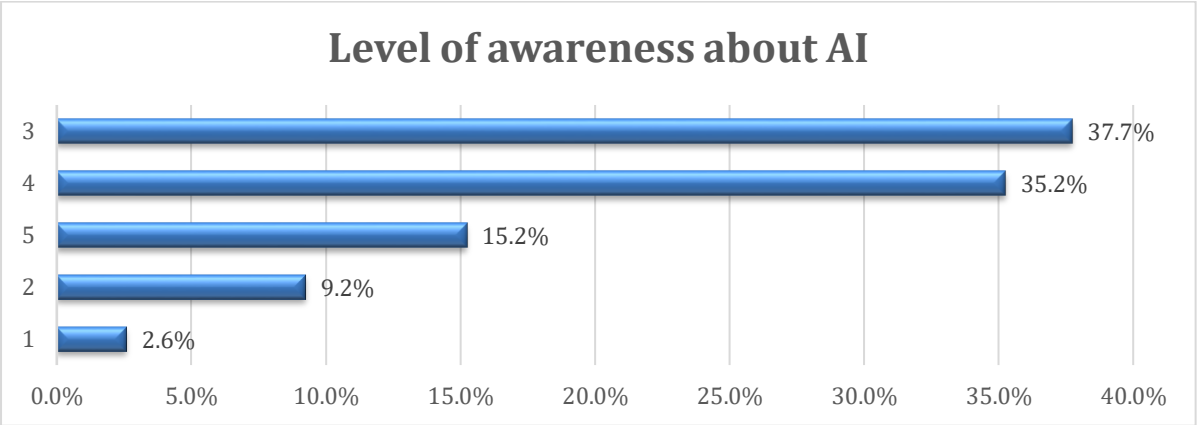

Figure 2. Percentage of participants in the 2025 online teacher survey regarding their awareness of using AI tools. Source: [33]

During the self-assessment of teachers' level of digital competence as part of the 2024 survey [25], it was found that teachers assess their own level of digital literacy as not high enough/professional: only 18.5% of respondents indicated that they can use advanced strategies to search for reliable information on the Internet using web channels [30] The majority of surveyed teachers (46.4%) confirmed that they can search for information independently, without the help of others, and use various search engines. The issue of communication and the use of digital tools by teachers is key to conducting the learning process, since a large proportion of processes are administered and conducted online, and constant communication through digital means of communication with students, parents, and colleagues is an established norm today. These processes are actively and professionally carried out by 57.3% of surveyed teachers, indicating that they use a wide range of communication tools (e-mail, chat, SMS, instant messaging, blogs, micro-blogs, social networks). The remaining teachers indicated an average and basic level of use of the aforementioned communication tools, which indicates the need to increase their level of digital competence. At the same time, only 21.3% of respondents noted that they can create and manage content using tools for collaboration at a professional level (for example, project management systems, spreadsheets on the Internet). Also, 60.8% of teachers remain at a basic level in their ability to create simple digital content (e.g., text, tables, images, audio files), indicating a significant proportion of educators who need further training.

An important component of teachers' digital competence is the safe use of digital tools, with 22.3% of respondents indicating that they can install security programs on their devices that they use to access the Internet (antivirus, firewall), and only 11.1% indicating that they can check the security and system configuration of devices and installed programs that they regularly use. Only 13.8% of teachers know what to do in case of a computer infection with a virus, can configure or change the antivirus program and configure the security of their digital devices.

It was particularly important to determine teachers' needs for updating their digital skills during the survey. Only 20.3% of teachers reported constantly updating their digital skills and systematically working to improve their professional competence. However, 38.9% indicated that they are aware of the need to update their digital skills regularly, and 40.8% that they use opportunities to fill gaps in their knowledge of information and digital technologies [5]. This situation is directly related to the conditions in which Ukrainian teachers work today. In particular, among the 26,226 teachers surveyed in 2024, despite difficult working conditions,

83.5% remained at their educational institutions and continued to work. Only 11.6% have the status of internally displaced persons (IDPs), moved but continue to work in their institutions remotely. Some teachers went abroad and also work remotely at their educational institutions in Ukraine, accounting for 1.9% (2.2% in 2023). The statistics for teachers who stayed at home in the temporarily occupied territory and continue to work remotely in the Ukrainian education system are disappointing: 0.5% of the total number of respondents. It is also worth noting that among those with IDP status who moved and lost their jobs due to the war, 0.3% are teachers, and among those who stayed at home and lost their jobs, 0.2% are teachers [5].

The resulting picture enables us to identify the level of teachers' readiness to use digital tools and to clarify the relationship among the methods teachers use to motivate their professional development, the range of tools they use, and the factors that influence their motivation. Among the methods of self-assessment of the level of use of digital tools by teachers that influence their choice of further professional development courses, the following should be noted: analysis of international and domestic recommendation documents and standards; questionnaires and testing using digital platforms; participation in focus groups; and comparative analysis of self-assessment results and real indicators of professional activity. We can also add observations and the exchange of experience with colleagues to this list (Table 1). All of the above methods make it possible to systematise approaches to developing one's own motivation to use digital tools, obtain one's own profile and determine the level of digital competence, find gaps, and realise the need for obtaining knowledge and skills in the field of using digital technologies in the context of one's own specifics and the subject of teaching.

Table 1.

Relationship between research methods, expected results, and impact on teacher motivation and professional development

Methods for researching teacher motivation	Expected results	Impact on motivation	Impact on professional development
Analysis of domestic and international scientific sources, standards and recommendation documents	Systematisation of theoretical approaches to self-assessment and digital tools in accordance with international self-assessment trends	Raising awareness about the importance of self-assessment and the need to use self-assessment tools	Building a knowledge base for selecting effective professional development platforms and strategies through the use of self-assessment tools that have been researched
Questionnaire and observation	Identifying the level of awareness, attitude and experience regarding the use of digital self-assessment tools, and their systematisation	Awareness of one's own needs and strengths/weaknesses through generalisation and systematisation of the tools used and the identified results of self-assessment	Determining areas of professional development in the context of using various types of questionnaires, observation sheets, etc., for self-assessment
Testing using digital platforms	Obtaining an individual digital competence	Increased intrinsic motivation through personalised feedback	Creating an individual learning trajectory and using

(e.g. SELFIE for Teachers)	profile, both personal and for the educational institution where the teacher works	with the digital platform, through receiving information about the components being evaluated	self-assessment tools and platforms for further professional growth
Participation in interviews and focus groups	Deep understanding of barriers and incentives to using digital tools	Strengthening the sense of belonging and significance of one's own experience through the opportunity to express one's own thoughts and outline development prospects	Developing joint recommendations for school teams based on the results of interviews and participation in focus groups, and identifying gaps in professional development
Comparative analysis of self-assessment results and real indicators of professional activity	Identifying correlations between the level of competencies, requirements and standards, and the success of innovation implementation	Strengthening faith in one's own abilities to achieve the quality indicators contained in professional standards	Focus on achieving a higher level of professional skills, developing your own development plans and self-improvement

To understand how to effectively connect the use of digital self-assessment tools with the improvement of professional skills, we first identified different forms of digital self-assessment. The tools listed in Table 2 serve as examples, and this selection can be expanded to include additional tools. The forms of self-assessment include online testing, the creation of electronic portfolios, and the analysis of previously obtained self-assessment results. Additionally, we evaluated effective platforms for online learning and self-assessment. To gain a comprehensive understanding of how to effectively connect the use of digital self-assessment tools with the enhancement of professional skills, we identified various forms of digital self-assessment. The tools highlighted in Table 2 provide valuable examples, and this selection can be further expanded to incorporate a wider array of resources.

These self-assessment forms encompass online testing, which offers immediate feedback and personalised learning paths; the creation of electronic portfolios, where individuals can showcase their skills and achievements; and the analysis of previously acquired self-assessment results, enabling users to track their progress over time. Furthermore, we will assess a variety of effective platforms for online learning and self-assessment, exploring their features and benefits for fostering professional development.

Table 2.

Forms of digital self-assessment and their contribution to improving the professional level of a teacher

Self-assessment form	Examples of digital tools	What evaluates	How does it contribute to improving the professional level
Online tests and questionnaires on	SELFIE for Teachers, DigCompEdu Check-	Level of digital literacy and	Allows you to identify strengths

digital competency	In, Microsoft Digital Literacy Assessment	pedagogical use of ICT	and weaknesses, and create an individual development plan
E-portfolio	Google Sites, Mahara, Microsoft OneNote Class Notebook	Achievements, lesson plans, digital materials, and student feedback	Systematises own work, demonstrates progress, and motivates to improve materials
Data analysis from online learning platforms	Google Classroom, Moodle, Edmodo, ClassDojo	Student activity, task completion, level of engagement	Helps to evaluate the effectiveness of methods and change the approach to learning
Video recording of lessons with further analysis	Loom, Screencast-O-Matic, Zoom (recording), Panopto	Teaching methodology, communication, lesson pace, and visual materials	Promotes self-reflection and improvement of teaching methods
Comparative analysis of student results	Google Sheets, Excel, Learning Analytics tools	Dynamics of success, achievement of educational goals	Provides an opportunity to assess the impact of one's work on learning outcomes
Self-assessment within a professional framework	European Framework for the Digital Competence of Educators (DigCompEdu), UNESCO ICT CFT	A comprehensive set of pedagogical and digital competencies	Provides a holistic approach to professional growth, focused on international standards
Peer review in the digital environment	Padlet, Miro, Google Docs (comments), TeachPitch	Peer evaluation of educational materials and methods	Allows you to receive constructive feedback and be inspired by new ideas

Surveys have revealed that research methods requiring active teacher participation—such as questionnaires, digital testing, and interviews—have the most significant impact on motivation. This is because they allow for direct feedback and foster a sense of personal progress. Direct feedback contributes to a sense of personal progress. Additionally, methods like comparative analysis and literature reviews offer a deeper understanding of trends and serve as a foundation for developing a long-term professional development strategy. These aspects become especially important in wartime conditions in Ukraine, since unexpected limitations on conducting the educational process and sometimes insurmountable barriers to improving teachers' professional qualifications prevent them from carefully planning their professional development and limit their access to it. It is important to note that both domestic and foreign researchers have identified a strong link between self-assessment and professional development. To better understand this connection, it is crucial to determine how self-assessment results influence the selection of courses, training, and advanced learning opportunities. Additionally, assessing teachers' awareness and readiness to utilise digital

services for self-assessment, as well as their familiarity with these services, is essential. The systematic examination of self-assessment forms, along with their impact on motivation and professional development, can provide valuable insights into the current needs of teachers and effective strategies for promoting their professional self-improvement.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Recent studies reveal that both domestic and foreign researchers emphasise key aspects of teachers' motivation for professional development, particularly in relation to their use of digital tools and platforms. Surveys conducted in Ukraine over the past few years demonstrate that teachers require substantial support from both the state and the educational institutions where they are employed, especially when it comes to integrating digital technologies for professional training and enhancing the educational process. Importantly, our study is informed by research focusing on teachers' attitudes toward the use of digital tools during periods of crisis and wartime in Ukraine.

Approaches to identifying teachers' attitudes and motivation for professional improvement through the use of digital tools were investigated, namely, conducting voluntary self-assessment, creating conditions for access to the use of digital tools, expanding the resource base of educational and instructional materials, involving teachers in online projects and creating institutional types of motivation for teachers, supporting them in crisis conditions. It was found that there is a clear interdependence of teachers between the level of their digital competence and the motivation to constantly improve their level of digital skills, master new forms of digital interaction between colleagues and with students, and creatively approach conducting lessons in their subjects.

The opinions of foreign authors indicate that modern teachers are experiencing significant pressure from standardised testing, which negatively impacts their motivation levels. This pressure arises from various factors, including bureaucratic obstacles, a lack of autonomy, and unsupportive leadership. These elements diminish teachers' motivation for self-improvement. In Ukraine, these challenges are further complicated by wartime conditions, which include temporary displacement from homes, school closures, and a shift to distance learning. On the other hand, European researchers emphasise the collaborative processes involved in the digitalisation of education within a global context. They also highlight the standardisation of teacher skills and competencies, as well as the influence of international standards and practices in fostering teacher motivation through professional development and support during crises.

It was found that in times of crisis, teachers’ motivation for professional development using digital tools is related to the need to organise the educational process and communicate with students, colleagues, and parents through digital means. Questions aimed at identifying teachers’ needs for using digital tools prompted teachers to reflect on the need to master these tools. Both positive and negative attitudes were found.

Therefore, the study conducted makes it possible to state that self-assessments carried out by teachers using digital tools reveal their gaps and direct them to specific topics that teachers need to master. The influence of digital tools on teachers’ motivation and desire to develop is also proven by the examples given by foreign researchers. Educators must be equipped with strategies, digital tools, and assessment methods to effectively adapt their teaching. Individual differences in self-assessment also play an important role in which of the available strategies will be implemented. Therefore, the prospects for further research may concern the theoretical substantiation and scientific and methodological support for improving the self-assessment process using digital tools, studying the impact on teachers' motivation, respectively, the use of certain tools and conducting such self-assessment on a regular basis. It is also important to

continue studying foreign experience, studying the best practices of using digital self-assessment tools, assessing the effectiveness of teachers and school teams, and the impact on the overall quality of teachers' professional development.

REFERENCES (TRANSLATED AND TRANSLITERATED)

[1] Law of Ukraine, "On the National Informatisation Program," Law No. 2807-IX, Dec. 1, 2022. *Vidomosti Verkhovnoi Rady*, no. 51, art. 127, 2023. [Online]. Available: https://zakon.rada.gov.ua/laws/show/2807-20#Text. Accessed: Feb. 6, 2026. (in Ukrainian)

[2] Ministry of Education and Science of Ukraine, "Concept of Digital Transformation of Education and Science until 2026," Mar. 3, 2025. [Online]. Available: https://mon.gov.ua/static-objects/mon/sites/1/news/2021/05/25/tsifrovizatsiigromadskeobgovorennya.docx. (in Ukrainian)

[3] Ministry of Education and Science of Ukraine, "On approval of methodological recommendations on certain issues of obtaining education in general secondary education institutions under martial law in Ukraine," Order No. 563, May 15, 2023. [Online]. Available: https://zakon.rada.gov.ua/rada/show/v0563729-23#Text. Accessed: Sep. 6, 2025. (in Ukrainian)

[4] O. Ovcharuk, "Challenges, opportunities and readiness for using digital instruments by Ukrainian teachers: 2024 survey results," in *Lecture Notes in Networks and Systems*, 2025, pp. 169–175. doi: 10.1007/978-3-031-83520-9_16. (in English)

[5] O. V. Ovcharuk, "Monitoring teachers' readiness to use digital tools during the war in Ukraine," *Information Technologies and Learning Tools*, vol. 98, no. 6, pp. 52–65, Dec. 2023. doi: 10.33407/itlt.v98i6.5478. (in Ukrainian)

[6] H. Bychko, T. Vakulenko, T. Lisova, M. Mazorchuk, V. Tereshchenko, S. Rakov, V. Horokh, et al., *National Report on the Results of the International Study of Educational Quality PISA-2022*, V. Tereshchenko and I. Klymenko, Eds. Kyiv, Ukraine: Ukrainian Center for Educational Quality Assessment, 2023. [Online]. Available: https://pisa.testportal.gov.ua/wp-content/uploads/2023/12/PISA-2022_Naczionalnyj-zvit_povnyj.pdf. (in Ukrainian)

[7] A. S. Talwelkar and A. G. Uppal, "Role of motivation on professionalism in teachers," in *Studies in Systems, Decision and Control*, 2025, pp. 291–310. doi: 10.1007/978-3-031-84628-1_24. (in English)

[8] F. M. Mustafaoğlu and F. Alkan, "ARTIFICIAL INTELLIGENCE IN EDUCATION: ATTITUDES AND PERCEPTIONS OF PRE-SERVICE TEACHERS", *ITLT*, vol. 110, no. 6, pp. 120–134, Dec. 2025, doi: 10.33407/itlt.v110i6.6341. (in English)

[9] UNESCO Institute for Statistics, "Teachers and educational quality indicators," Montreal, Canada: UNESCO, 2020. [Online]. Available: http://uis.unesco.org/en/topic/teachers. Accessed: Feb. 13, 2026. (in English)

[10] World Bank, *Teacher Professional Development Repository*. Washington, DC, USA: World Bank, 2021. [Online]. Available: https://documents1.worldbank.org/curated/en/565931630423561518/pdf/World-Bank-Teacher-Professional-Development-Repository.pdf. Accessed: Feb. 13, 2026. (in English)

[11] United Nations, "Sustainable Development Goal 4: Quality Education," New York, NY, USA: United Nations, 2015. [Online]. Available: https://sdgs.un.org/goals/goal4. Accessed: Feb. 13, 2026. (in English)

[12] M. Pietsch, S. Röhl, I. M. Syvertsen, and C. Cramer, "Opening the black box of teacher leader development: An investigation of teachers' motivation to lead," *International Journal of Educational Research*, vol. 132, p. 102632, 2025. doi: 10.1016/j.ijer.2025.102632. (in English)

[13] A. Tecson and E. Malabo, "Job satisfaction, motivation, leadership styles, and teachers' performance: A structural model," *Psychology and Education: A Multidisciplinary Journal*, vol. 41, no. 4, pp. 465–475, 2025. doi: 10.70838/pemj.410405. (in English)

[14] Gómez-Trigueros, I. M., Ruiz-Bañuls, M., Esteve-Faubel, J. M., & León, F. M. (2024). Teacher Motivation: Exploring the integration of technology and didactics in the narratives of future teachers. *Social Sciences*, *13*(4), 217. https://doi.org/10.3390/socsci13040217. (in English)

[15] Kumari, J., & Kumar, J. (2023). Influence of motivation on teachers' job performance. *Humanities and Social Sciences Communications*, *10*(1). https://doi.org/10.1057/s41599-023-01662-6. (in English)

[16] T. Nedimović and I. Đorđev, "Motivation of preschool teachers for professional development in the field of fostering early childhood development," *Research in Pedagogy*, vol. 15, no. 1, pp. 1–13, 2025. doi: 10.5937/istrped2501001n. (in English)

[17] E. L. Deci and R. M. Ryan, "Self-determination theory: A macrotheory of human motivation, development, and health," *Canadian Psychology*, vol. 49, pp. 182–185, 2008. doi: 10.1037/a0012801.

[18] Council of the European Union, "Council Recommendation of 22 May 2018 on key competences for lifelong learning," 2018/C 189/01. [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7. (in English)
[19] European Commission, "Digital Education Action Plan (2021–2027)." [Online]. Available: https://education.ec.europa.eu/focus-topics/digital-education/action-plan. Accessed: Jun. 28, 2024. (in English)
[20] O. Lokshyna, "European reference framework of key competences for lifelong learning: Updated vision of 2018," *Ukrainian Pedagogical Journal*, no. 3, pp. 21–30, Sep. 2019. (in Ukrainian)
[21] OECD legal instruments. 2024. [Online]. Available: https://legalinstruments.oecd.org/en/instruments/oecd-legal-0449 (in English)
[22] F. Caena & C. Redecker, (2019). Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (Digcompedu). *European Journal of Education, 54*(3), 356–369. https://doi.org/10.1111/ejed.12345. (in English)
[23] Joint Research Centre, "DigCompEdu: European framework for the digital competence of educators." [Online]. Available: https://joint-research-centre.ec.europa.eu/digcompedu_en. (in English)
[24] UNESCO, *ICT Competency Framework for Teachers*. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000265721. Accessed: Feb. 19, 2026. (in English)
[25] UNESCO, *AI Competency Framework for Teachers*. Paris, France: UNESCO, 2024. doi: 10.54675/ZJTE2084. (in English)
[26] European Union and Ukraine, "Association Agreement between the European Union and Ukraine." [Online]. Available: https://ips.ligazakon.net/document/MU14097Z?an=2. Accessed: Jun. 28, 2024. (in English)
[27] Government of Ukraine, "Strategy for Ukraine's integration into the EU Digital Single Market (Roadmap)." [Online]. Available: https://docs.google.com/document/d/1XgGb7AWSs7Ktl6Pl5xuYDpLFV0mtOTSN/edit#. Accessed: Jul. 11, 2024. (in Ukrainian)
[28] OECD, "OECD Legal Instruments," 2024. [Online]. Available: https://legalinstruments.oecd.org/en/instruments/oecd-legal-0449. Accessed: Sep. 2, 2025. (in English)
[29] Cabinet of Ministers of Ukraine, "On approval of the Concept for the Development of Artificial Intelligence in Ukraine," Order No. 1556-r, 2020. [Online]. Available: https://zakon.rada.gov.ua/go/1556-2020-%D1%80. Accessed: Sep. 2, 2025. (In Ukrainian)
[30] *Monitoring Teachers' Readiness and Needs for Using Digital Tools and ICT: 2024 Analytical Report*, Ed. Kyiv, Ukraine: Institute for Digitalisation of Education of NAES of Ukraine, 2024. [Online]. Available: https://lib.iitta.gov.ua/id/eprint/743978. (in Ukrainian)
[31] Global Partnership for Education, "7 recommendations to improve teacher professional development in fragile contexts," *Education for All Blog*, Oct. 15, 2016. [Online]. Available: https://www.globalpartnership.org/blog/7-recommendations-improve-teacher-professional-development-fragile-contexts. Accessed: Sep. 27, 2025. (in English)
[32] K. Purcell, J. Buchanan, and L. Friedrich, "How teachers are using technology at home and in their classrooms," Pew Research Center, Feb. 2013. [Online]. Available: https://surl.li/zpcgvy. (in English)
[33] O. M. Spirin, O. I. Liashenko, S. H. Lytvynova, Yu. I. Malovanyi, O. P. Pinchuk, and O. M. Sokoliuk, *Digital Transformation of Education: Artificial Intelligence in the Modern Educational Space*. Kyiv, Ukraine: Institute for Digitalisation of Education of NAES of Ukraine, 2025. [Online]. Available: https://lib.iitta.gov.ua/id/eprint/747330. (in Ukrainian)
[34] Generative AI and the future of education. UNESCO eBooks. 2023. https://doi.org/10.54675/hoxg8740. (in English)
[35] Recommendation on the Ethics of Artificial Intelligence. In UNESCO eBooks. 2022. [Online]. Available: https://unesdoc.unesco.org/ark:/48223/pf0000381137 (in English)

Text of the article was accepted by Editorial Team 08.03.2026.

ПРОФЕСІЙНИЙ РОЗВИТОК УЧИТЕЛІВ І ЦИФРОВА ГОТОВНІСТЬ: ГЛОБАЛЬНІ ТЕНДЕНЦІЇ ТА УКРАЇНСЬКИЙ КОНТЕКСТ

Оксана Овчарук
доктор педагогічних наук, професор,
завідувач відділу компаративістики інформаційно-освітніх інновацій
Інститут цифровізації освіти НАПН України, м.Київ, Україна
ORCID ID 0000-0001-7634-7922
ovcharuk@iitlt.gov.ua

Анотація. У статті аналізується питання готовності вчителів до використання цифрових засобів самооцінювання та їх впливу на мотивацію педагогів до професійного розвитку. Представлено міжнародний досвід та результати досліджень щодо використання вчителями цифрових інструментів. Описано вітчизняні нормативні та міжнародні рамкові документи щодо рівня цифрової компетентності вчителів (DigCompEdu, European Framework for the Digital Competence of Educators), рамку ІКТ-компетентності для вчителів ЮНЕСКО (UNESCO ICT Competency Framework for Teachers, AI competency framework for teachers). Представлено зарубіжні дослідження та підходи до використання цифрових засобів самооцінювання мотивації та професійного розвитку. Подано бачення українських учителів щодо використання цифрових засобів для саморозвитку. Виокремлено обмеження на використання вітчизняними вчителями засобів самооцінювання. Підкреслено роль цифрових інструментів в умовах їх використання вчителями в сучасному освітньому середовищі. Узагальнено та подано взаємозв'язки між методами самооцінювання, очікуваними результатами та їхнім впливом на мотивацію вчителів, а також на професійний розвиток вчителя, що є новизною даного дослідження. Для такого узагальнення було використано результати опитувань педагогів упродовж 2023–2025 років, проведених ученими НАПН України та іншими установами в Україні. Подальше вивчення міжнародного досвіду та кращих зарубіжних та вітчизняних практик використання цифрових інструментів для самооцінювання та мотивації вчителів має потенціал для вдосконалення існуючих методів та стандартів для професійного розвитку вчителів. Результати дослідження можуть бути використані для оновлення програм професійного розвитку педагогічних працівників та розроблення підходів до оцінювання стану готовності та мотивації вчителів до використання ІКТ.

Ключові слова: учителі; цифрові інструменти; цифрова компетентність; професійний розвиток; готовність; мотивація.

This work is licensed under Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.