UDC 001.89:378.046-021.68(045)
DOI: 10.52534/msu-pp3.2025.41

Tetiana Shcherban*

Doctor of Psychology, Professor
Ferenc Rakoczi II Transcarpathian Hungarian University
90202, 6 Kossuth Sq., Berehove, Ukraine
https://orcid.org/0000-0002-3702-8029

Volodymyr Hoblyk

Doctor of Economics, Professor
Mukachevo State University
89600, 26 Uzhorodska Str., Mukachevo, Ukraine
https://orcid.org/0000-0003-1830-3491

Ildiko Greba

PhD, Senior Lecturer
Ferenc Rakoczi II Transcarpathian Hungarian University
90202, 6 Kossuth Sq., Berehove, Ukraine
https://orcid.org/0000-0002-0764-0858

Organisation of scientific activities of postgraduate students in the context of the educational environment transformation: Factors and current trends

Article's History:
Received: 20.04.2025
Revised: 11.09.2025
Accepted: 14.10.2025

Suggested Citation:
Shcherban, T., Hoblyk, V., & Ildiko, G. (2025). Organisation of scientific activities of postgraduate students in the context of the educational environment transformation: Factors and current trends. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 11(3), 41-52. doi: 10.52534/msu-pp3.2025.41.

*Corresponding author

Abstract. The relevance of the study is determined by the need to update approaches to the scientific training of third-level education seekers in line with contemporary challenges, such as the fragmentation of scientific activity support, the gap between theory and practice, and the insufficient motivation of postgraduate students for scientific work. The purpose of the study was to identify effective models of organisations of scientific activity in postgraduate studies and analyse tools for supporting the scientific work of graduate students. The methodological basis of the research was the analysis of scientific sources, an empirical survey of graduate students and analysis of their responses, and statistical processing of the results. A comprehensive approach was applied, combining pedagogical, psychological, and organisational aspects, including the analysis of educational conditions, structural support mechanisms, features of academic behaviour and digital integration. Descriptive statistics and Spearman's rank correlation coefficient were used for quantitative analysis; data were processed using SPSS 28 software suite. For a qualitative analysis of the interviews, thematic coding was used in NVivo 14, which allowed helped to identify dominant patterns and regularities in the respondents' experiences. The results showed that access to international scientific databases correlated with higher self-assessment of scientific progress ($\rho = 0.42$; $p < 0.05$). It was revealed that the effectiveness of scientific activity of graduate students largely depended on comprehensive scientific support, methodological support, digital tools, and participation in international academic networks. The study confirmed that systematic mentoring and institutional support contributed to the growth of publication activity, professional mobility, and integration of graduate students into global scientific communities. The conclusions emphasised the importance of holistic provision of academic activities, and outlined the prospects for further research related to the psychological well-being of graduate students and the assessment of the effectiveness of digital tools in the process of scientific training. The practical significance of the study lies

in the development of a holistic approach to supporting graduate students, which can be integrated into the activities of higher education institutions

Keywords: academic competence; mentoring; digital resources; scientific support; publication activity; international integration; institutional support

INTRODUCTION

The transformation of higher education in Ukraine is accompanied by a number of challenges that significantly affect the system of training doctors of philosophy. In the contemporary conditions of digitalisation, globalisation of science, and military conditions, the issue of organising the scientific activities of graduate students is becoming particularly relevant. Conventional models of scientific leadership, which focus mainly on administrative control and formal evaluation of results, are no longer able to fully ensure the effective functioning of postgraduate studies. They do not consider the growing requirements for the quality of research, the need for academic mobility, and the need for integration into international scientific networks. Simultaneously, graduate students increasingly need holistic institutional support that combines access to digital tools, advanced mentoring practices, and flexible professional development trajectories.

In contemporary research, the issue of reforming graduate school is highlighted in a multidimensional way. L. Khoruzha *et al.* (2022) analysed the impact of the COVID-19 pandemic on the digitalisation of doctoral programmes. The researchers emphasised that the crisis conditions demonstrated the potential of distance learning and digital platforms to ensure interaction between graduate students and supervisors. They noted that digital formats cannot completely replace the conventional academic environment, as they require additional mechanisms of social and psychological support for applicants. This gives grounds to consider digitalisation not as a self-sufficient solution, but as a tool that is integrated into a comprehensive system of support for graduate students. M. Orechova (2021) examined the processes of internationalisation of postgraduate studies in Europe and emphasised the importance of academic mobility, participation in international projects, and access to interdisciplinary research. These results demonstrated the need to create dedicated support programmes to integrate graduate students into the global academic environment. For Ukrainian postgraduate studies, this means that effective scientific training requires not only local support, but also providing opportunities for international cooperation. In times of war, it is necessary to consider restrictions on access to resources and logistical difficulties that can reduce the effectiveness of international exchanges.

Research has shown that mentoring is critical to developing graduate students' autonomy and research competencies. For example, N. Kachynska (2022) noted that the role of a supervisor is being transformed from a formal controller to a mentor and partner in the scientific process, which is especially important in crisis settings, when graduate students face increased demands for autonomy and the ability to adapt to rapid changes in the academic environment. The use of digital tools in the scientific activities of graduate students also contributes to improving their communicative and collaborative competence. In particular, I.I. Novosad *et al.* (2021) demonstrated the effectiveness of cloud services, open scientific platforms and digital laboratories in developing publication activity and integration into the international scientific community. Access to such resources is uneven, which requires attention from universities and government agencies.

Organisational challenges of postgraduate studies in war conditions were confirmed by the findings of I. Kuchyn *et al.* (2024), who noted limited access to resources, impaired academic mobility, and reduced job seekers' motivation. In this context, regular mentoring adapted to the distance format is key to maintaining the academic performance and psychological well-being of graduate students, which is confirmed by recommendations of C.A. Mullen (2022) on supporting graduate students in crisis situations. An important aspect of Ukrainian practice is the regulatory support for the training of doctors of philosophy. In particular, based on open and officially published regulatory documents of leading universities in Ukraine (Uzhhorod National University, Ivan Franko National University of Lviv, Volyn National University, V. Hnatiuk Ternopil National Pedagogical University, and Mukachevo State University), it has been established that they determine the organisation of the educational process, academic integrity, mentoring procedures, and access to academic mobility. This forms the legislative and regulatory framework for the introduction of innovative models of scientific support, in particular, the use of digital platforms and the development of mentoring practices. Thus, although scientific research has already highlighted the technological, organisational, and psychological aspects of supporting graduate students, the comprehensive integration of all factors – digital resources, mentoring, international mobility, and institutional support – in war conditions has not yet been sufficiently analysed. The purpose of the study was to identify the factors that affect the effectiveness of research activities of graduate students, and to assess the role of various forms of support – scientific support, methodological assistance, access to digital resources and international networks – in the development of academic competence and improving the effectiveness of research in higher education institutions of Ukraine in the conditions of war.

MATERIALS AND METHODS

The study was conducted using an integrated approach that combines pedagogical, psychological, and organisational aspects of evaluating the scientific activities of doctoral students. The methodological basis included the analysis of educational conditions, the study of the features of academic behaviour of applicants and the study of structural mechanisms for supporting scientific activities. This approach allowed systematically assessing the factors that affect the effectiveness of scientific work of graduate students, and the role of various forms of support, including scientific support, methodological assistance, access to digital resources and international networks. The study was conducted during March-May 2025 and included three main stages: theoretical and analytical, empirical, and analytical. At the theoretical and analytical stage, a systematic analysis of scientific literature, regulatory documents, and internal regulations of higher educational institutions on the organisation of postgraduate studies was carried out. For this purpose, methods of analysis, generalisation, and systematisation of sources were used, and content analysis of educational and scientific programmes, regulations on postgraduate studies, and academic integrity policies. Approximately 15 documents presented in Table 1 were reviewed.

Table 1. Local regulatory documents of universities

University	Documents
State Higher Educational Institution "Uzhhorod National University"	Uzhhorod National University (2016); Uzhhorod National University (2020); Uzhhorod National University (n.d.).
Ivan Franko National University of Lviv	Ivan Franko National University of Lviv (2017); Ivan Franko National University of Lviv (2023); Ivan Franko National University of Lviv. Postgraduate and Doctoral Studies Department (n.d.).
Mukachevo State University	Mukachevo State University (2020); Mukachevo State University (2021); Mukachevo State University (n.d.).
Ternopil Volodymyr Hnatiuk National Pedagogical University	Ternopil Volodymyr Hnatiuk National Pedagogical University (2020); Ternopil Volodymyr Hnatiuk National Pedagogical University (2023); Ternopil Volodymyr Hnatiuk National Pedagogical University (2025).
Lesya Ukrainka Volyn National University	Lesya Ukrainka Volyn National University (2020); Lesya Ukrainka Volyn National University (2024); Lesya Ukrainka Volyn National University (n.d.).

Source: compiled by the authors

The analysis of these regulatory documents allowed comprehensively assessing local approaches to organising scientific training of graduate students and identifying key areas for improving academic support in Ukrainian universities. At the empirical stage, comprehensive work was organised with the study participants. The research involved 87 postgraduate students in their 1st to 4th years of study (54 in economics and 33 in education) and 12 academic supervisors (9 doctors of science, professors; 3 candidates of science, associate professors) working at three higher education institutions in Ukraine (Mukachevo State University, Uzhhorod National University, Lesya Ukrainka Volyn National University). The respondents were selected based on a target sample, considering their activity in scientific activities, experience of cooperation with scientific supervisors for at least 6 months, and willingness to participate in the study on a voluntary basis. The survey was conducted online in an individual form. Filling out the questionnaire took 20-25 minutes. To collect data, the author's questionnaire "Assessment of the conditions and resources for postgraduate research" was developed, which included 22 open and closed questions. For example, an open question: "What resources of the university do you consider most useful for your own scientific progress?" Closed question (Likert scale): "Rate the level of availability of scientific databases at your university (from 1 – completely inaccessible to 5 – fully accessible)". A separate block of questions was devoted to subjective self-assessment of the scientific progress of graduate students, in particular: "How satisfied are you with your own progress in preparing your dissertation?" (score on a 5-point scale from "1 – not satisfied at all" to "5 – completely satisfied"), and the opportunity to give additional open comments regarding scientific achievements.

Semi-structured interviews with research supervisors lasted 40-50 minutes, were conducted online individually, and were aimed at identifying practical problems accompanied by graduate students and effective mentoring strategies. Examples of questions: "Which mentoring methods were most effective?"; "How do you integrate graduate students into collective research projects?". The interviews

received were subjected to qualitative analysis using the thematic coding method in the NVivo 14 software suite, which allowed structuring the main barriers and supporting factors in the respondents' experience. The analysis of the actual functioning of scientific schools and laboratories allowed assessing the involvement of graduate students in grant and publication activities, and identifying practical aspects of integrating applicants into the scientific environment. Methods of descriptive statistics (mean values, percentage distribution, response ranking) and verification of relationships between indicators using the Spearman rank correlation coefficient were used for quantitative analysis. Data processing was performed in the SPSS 28 software suite. For qualitative analysis of interviews, the method of thematic coding using NVivo 14 was used, which identified dominant topics and patterns in the respondents' experience. The choice of these methods was explained by their ability to comprehensively cover various aspects of the scientific activity of graduate students, ensure the reliability of results, and combine descriptive, analytical, and practically oriented approaches. The main limitation of the study was the use of a target sample and focus on three higher education institutions, which limited the representativeness of results for the entire postgraduate system in Ukraine. The ethical aspects of the study included obtaining informed consent from participants, ensuring confidentiality, voluntary participation, and anonymity of responses. The research was carried out in accordance with the ethical principles of the Declaration of Helsinki (2013) for conducting research involving human subjects.

RESULTS AND DISCUSSION

Transformational processes in the field of training doctoral students are caused by both global challenges (digitalisation, internationalisation of science, implementation of ESG and Open Science standards) and local circumstances (military operations, changes in the legal field of higher education in Ukraine). Consequently, the need to review approaches to the organisation of scientific activities of graduate students is being updated. Doctoral degree seekers are a key link in the development of the scientific potential of the state, and therefore, the effectiveness of their scientific training directly affects the quality of scientific personnel capable of ensuring the innovative development of society. Despite the existence of regulatory support for postgraduate studies, in practice there are problems associated with insufficient integration of graduate students into real research projects, lack of systematic mentoring, unequal access to resources, limited opportunities for international mobility and publication activity. In addition, not all HEIs have a developed infrastructure to support scientific activities (laboratories, interuniversity centres, scientific schools).

Organisational conditions and access to resources

As a result of a comprehensive empirical study, data were obtained on the access of doctoral students to organisational, scientific, methodological, and resource support for scientific activities. The individual results presented in Table 2 demonstrate the distribution of graduate student responses regarding access to various forms of support.

Table 2. Results of the postgraduate student survey

Type of support	Yes (%)	No (%)	Difficult to answer (%)
Availability of an institutional scientific training programme	45.9	34.5	19.5
Access to internal grant programmes	26.4	61.6	12.0
Opportunity to participate in academic mobility	26.4	62.1	11.5
Academic writing advice	36.8	48.3	14.9
Access to international databases (Scopus, WoS)	52.9	33.3	13.8
Publications in scientific professional publications of higher educational institutions	72.4	21.5	6.1
Availability of a digital laboratory	18.4	71.3	10.3

Source: developed by the authors based on the results of a comprehensive empirical study

The highest level of support was recorded in the sphere of publishing opportunities in professional publications of higher educational institutions (72.4%). This indicates that there is a well-developed institutional framework for testing the results of scientific research within universities. This indicator can be explained by the fact that internal publications are more accessible to graduate students, since universities are interested in publishing activity and create their own journals for this purpose. The conditions for entering international publications remain more difficult due to high financial barriers and language requirements. Therefore, university publications serve as the "first step" in the scientific career of graduate students. 52.9% of respondents have access to international databases (Scopus, Web of Science). This can be assessed as a positive result, since international bases form the basis for high-quality bibliographic support of research, and ensure academic integrity. However, the fact that almost half of graduate students are deprived of such access indicates inequality between universities. The reason is the high cost of subscriptions and insufficient financial support for scientific activities. As a result, many applicants are limited to local resources or open databases, which reduces the level of their research work.

Less common is the practice of consulting academic writing: only 36.8% of graduate students indicated that such assistance was available. This suggests that systematic training of scientists often depends on their own initiative, and universities do not always create specialised centres for

academic writing. The likely reason is insufficient funding and personnel shortages in this area. As a result, graduate students often face difficulties in the design of publications, which reduces their chances of success in international publications. The level of access to internal grant programmes (26.4%) and academic mobility opportunities (26.4%) was low. This situation indicates limited stimulation of scientific activity of graduate students both inside and outside the HEI. The reasons may be insufficient development of grant infrastructure in Ukraine and the impact of military conditions, which significantly limited opportunities for travel, internships, and international research projects. As a result, graduate students remain deprived of important mechanisms for integration into the global academic space. Digital infrastructure became the least well-off area: only 18.4% of graduate students noted the presence of digital laboratories (in particular, in shelters). This indicator is explained by the fact that most universities do not have the resources to create full-fledged virtual or cloud laboratories. In military conditions, the lack of digital solutions becomes even more critical, because they could compensate for limited access to physical equipment and ensure the continuity of scientific work.

In general, the data show that conventional forms of support (publications in internal publications) remain the most accessible, while contemporary tools for scientific development (grants, mobility, digital environment) remain inaccessible. This makes it difficult for graduate students to integrate into the global academic community and reduces the quality of training for young scientists. The data in Table 3 reinforce this conclusion. In particular, 68% of the surveyed graduate students noted limited access to full-text scientific databases (Scopus, Web of Science, JSTOR). The reason lies in the high cost of subscriptions, which not all universities can afford. This creates inequality of opportunities between different institutions and directly affects the quality of preparation of research papers and dissertations.

Table 3. Access of graduate students to organisational and resource support for scientific activities ($n = 87$)

Indicator	Share of respondents, %
Access to the scientific library of the HEI	83.9
Possibility of publication in professional publications of HEIs	72.4
Satisfaction with contact with the supervisor	70.1
Access to full-text electronic databases	43.7
Possibility of using research equipment	35.6
Access to academic mobility	26.4
Participation in a research school or research group	28.0
Involvement in interuniversity/international projects	22.0
Participation in grant activities	12.0
Regular meetings with the supervisor (monthly and more often)	43.0
Regular access to international databases	18.0

Source: developed by the authors based on the results of the survey

57% of respondents reported irregular scientific consultations with managers. This can be explained by the overload of scientific supervisors and the lack of systematic mechanisms for monitoring the quality of supervision. As a result, the effectiveness of scientific work of graduate students decreases, and the time frame for preparing dissertations may be delayed. Another issue is the low level of integration into collective research projects: only 28% of graduate students participate in the activities of scientific schools, projects or laboratories. This indicates the dominance of the individual format of work, which does not meet international standards, where collective science is the norm. The reason may be the limited number of active research groups in the HEIs and the weak development of a team research culture. As a result, graduate students lose the opportunity to gain collaboration experience, which makes it difficult for them to integrate into international academic networks. The results show that conventional forms of institutional support remain the most stable. A significant proportion of graduate students use libraries (83.9%), have the opportunity to publish in professional publications of educational institutions (72.4%), and support scientific supervisors (70.1%). This indicates the preservation of the basic elements of the academic environment that ensure a minimum level of scientific activity. However, these forms mainly reproduce the Soviet model of training scientific personnel and do not meet the contemporary challenges associated with digitalisation, international integration, and grant competition.

More problematic is the regularity of scientific support: only 43% of graduate students have monthly or more frequent meetings with supervisors. This limits the possibility of timely adjustment of research and creates the risk of a superficial approach to methodological issues. Irregular consultations may be conditioned by an excessive burden on academic supervisors or the lack of a system of formalised control over the quality of support. The level of access to full-text electronic databases remains low (43.7%). This situation has direct consequences: it complicates the drafting of literary reviews, limits the updating of research topics, and increases the risk of violating the principles of academic integrity through the use of outdated sources. This result also explains the low level of publication activity in publications included in international databases. Only 35.6% of graduate students have access to research equipment. This critically narrows the possibilities for conducting empirical

work, especially in the natural, technical, and biomedical sciences. In fact, a significant proportion of graduate students remain limited only to theoretical research, which reduces the innovative potential of their work.

International integration was also minimal: only 26.4% of graduate students took advantage of academic mobility, 22% are involved in interuniversity or international projects, and only 18% have regular access to international databases. Participation in grant activities is 12%, which actually indicates the lack of an established grant culture in graduate school. Such indicators indicate the fragmentary integration of Ukrainian graduate students into the global scientific space and the imperfection of institutional mechanisms to support international activity. It is also important that only 28% of graduate students belong to research schools or research groups. This limits opportunities for teamwork, academic mentoring, and socialisation in the scientific community. The lack of systematic integration into research teams increases the sense of isolation of graduate students and reduces the level of academic culture. Thus, on the one hand, graduate students have access to basic resources (libraries, local publications, scientific supervisors), but on the other hand, there is a significant shortage of development tools: international bases, grants, equipment, digital laboratories, and integration into research teams. This imbalance forms a model of "minimum support", which allows meeting the formal requirements for preparing a dissertation, but limits the competitiveness of Ukrainian graduate students in the international scientific environment. Consequently, the results indicate structural inequality in graduate students' access to organisational, infrastructural, and international support. On the one hand, basic institutional support (libraries, managers, internal publications) is functioning. On the other hand, the lack of resources in the field of digital infrastructure, academic mobility and grant opportunities hinders the realisation of the full scientific potential of young researchers. This requires a review of state and institutional policies to support the scientific development of graduate students, especially under martial law.

Profile of methodological training and academic activity

The results of the study revealed an insufficient level of methodological competence among the majority of graduate students surveyed. Only 36% of respondents indicated that they have a sufficient level of methodological training that allows them to independently formulate hypotheses, choose adequate research methods, form a sample and perform statistical data processing. Other graduate students (64%) reported significant difficulties at each of these stages, in particular: 32% admitted that they are not sure about the correct choice of research methods; 18% experience difficulties in determining the target sample and methods of its representative selection; 14% have limited knowledge in the field of mathematical and statistical processing of results; 8% do not have access to qualified methodological support or advice. This indicates that a significant part of applicants needs additional training in the field of scientific research methodology, including contemporary quantitative and qualitative approaches.

As for academic activity, it is also characterised by unevenness and poor results in individual graduate students. In particular: only 17% of respondents have three or more scientific publications indexed in international scientometric databases (Scopus, Web of Science, etc.); 42% of graduate students have from one to two publications, mainly in national journals or collections of conference abstracts; 41% either have no scientific publications at all, or are limited to participating in conferences without further publication of materials. The reasons for low publication activity include: lack of academic writing skills in English; insufficient motivation or unclear understanding of the requirements for high-quality publication; organisational difficulties (insufficient support from scientific supervisors, difficulties with funding publications in the public domain). Thus, the profile of methodological training and academic activity of graduate students demonstrates the need for systemic changes in the programme of training highly qualified personnel. Especially relevant are the introduction of mandatory courses in research methodology, classes on academic writing, and mentoring support in publication activities.

Views of scientific supervisors and factors of effectiveness of scientific activity of graduate students

Research supervisors in semi-structured interviews noted the increased workload and lack of time for individual support of each graduate student. All respondents stressed the importance of creating internal academic communities, mentoring programmes, and interdisciplinary seminars. About three-quarters of respondents consider it necessary to introduce a centralised digital platform that would provide planning, recording, and monitoring of scientific activities of graduate students. Generalisation of the answers of scientific supervisors identified several factors that significantly limit the realisation of the scientific potential of doctoral students. Supervisors noted that support for graduate students within the university is fragmented: consultations are provided mainly on request, but there is no systematic research support programme. In addition, graduate students often do not receive regular feedback and are forced to independently search for sources of scientific and methodological support. According to the author's interpretation, this situation is explained by the lack of clearly structured mentoring mechanisms in most higher education institutions. As for methodological support, seven managers noted the lack of specialised courses in academic writing and scientific ethics. It was noted that they could only provide advice on writing papers, but there were no full-fledged courses in academic writing and ethics. On the contrary, it was also emphasised that graduate students often did not have the skills to work independently with Scopus and Web of Science databases without the help of scientific supervisors. According to the author's interpretation, such results were conditioned by limited resources of

universities and insufficient attention to the development of academic competencies within structured programmes. In addition, eight supervisors reported the limited international communication of graduate students. It was noted that opportunities for sending graduate students for internships or conferences abroad were significantly limited due to the war. In addition, even if students had a desire, academic mobility programmes temporarily did not function. According to the author's interpretation, this significantly reduced the integration of Ukrainian graduate students into global scientific networks and limited their experience in interdisciplinary collaborations.

Five managers positively assessed the impact of digitalisation on the scientific training process. It was noted that, despite the lack of opportunities to travel abroad, remote webinars and online conferences helped to maintain contacts with international colleagues. Other supervisors noted that the active use of video conferencing for consultations provided graduate students with regular feedback. Such results showed partial compensation for wartime restrictions due to digital solutions. Thus, the responses of managers confirmed the existence of both problematic and positive trends: structural gaps and limited resources significantly hinder the development of graduate students, while digitalisation and remote support open up compensatory mechanisms to support their scientific activity. Analysis of local regulatory documents of Ukrainian HEIs confirmed that the institutional framework of postgraduate studies remains insufficiently complete. The most significant issue was that the requirements for organising scientific training differ significantly between universities, which creates unequal conditions and the dependence of the quality of support on the local initiative of the institution. Individual plans of graduate students are mostly formal in nature and perform only a reporting function, without providing systematic monitoring of research progress. Mechanisms for internal evaluation of research quality are poorly integrated: regulation is mostly limited to procedural aspects, while academic integrity checks, relevance of the topic, and quality of publications are ignored. There is also weak institutional support for publication activity, because most documents do not have incentives for publication in publications indexed in international databases. Finally, the issues of providing digital resources are fragmented: library collections are mentioned, but the system policy regarding access to full-text electronic databases, digital laboratories, and research tools is practically not traced. As a result, the results of the content analysis show that the regulatory and institutional conditions for the functioning of postgraduate studies in Ukraine are largely focused on formal compliance with procedures and only partially aimed at the development of research competencies and international integration of young scientists. The results of the quantitative analysis revealed the main trends in the assessment of graduate students' level of scientific training, level of support, and barriers to research activities. In particular, the correlation analysis showed a moderate positive interdependence between graduate students' access to international scientific databases (Scopus, Web of Science, EBSCO, etc.) and their subjective self-assessment of scientific progress (rated on a 5-point Likert scale) ($\rho = 0.42$; $p < 0.05$). This showed that the systematic use of full-text sources is associated with a higher level of satisfaction with their own research results and greater publication activity, which emphasised the importance of information support as a factor of academic socialisation and integration of young scientists into the global scientific community.

However, limited access to international databases for a significant part of graduate students may explain the overall low effectiveness of dissertation research and the insufficient level of representation of Ukrainian applicants in international publications. This indicates a direct impact of inequality in the use of digital resources on the scientific productivity and competitiveness of future PhDs. The results of a qualitative analysis of semi-structured interviews confirmed key barriers and support factors. Interviews with research supervisors have shown that increasing workload and lack of time limit the possibilities of individual support for graduate students. The managers emphasised the importance of internal academic communities, mentoring programmes and interdisciplinary seminars, and the positive impact of digitalisation, which allows for remote consultations and participation of graduate students in online events. The generalisation of quantitative and qualitative results emphasised that the level of information and methodological support is one of the key predictors of graduate student success. Providing systematic access to international databases, combined with the development of mentoring and academic communities, can increase the efficiency of scientific work and the overall competitiveness of Ukrainian science. The results of the study are consistent with the conclusions of researchers on the problems and prospects of organising the scientific activities of graduate students, confirming the systemic nature of the challenges faced by doctoral students. The analysis of empirical data, interviews with scientific supervisors and content analysis of local regulatory documents obtained from open and officially published sources on the websites of Ukrainian universities identified a number of key factors that significantly affect the effectiveness of scientific activities of graduate students.

The first critical factor is the level of scientific support and mentoring. As noted by A. Samko (2021), the quality of supervision directly affects the academic growth of applicants, while executive overload and lack of a clear mentoring structure limit the progress of graduate students. The results of the study confirm this thesis: scientific supervisors noted a significant workload and lack of time for regular consultations. Graduate students require comprehensive support that combines academic, methodological and psychological aspects. Research by M. Hladchenko (2023) also emphasised the need for a strategic rethinking of the supervision model in Ukrainian postgraduate studies – through the development of structured mentoring

programmes, co-supervision, and a supportive learning environment. The study by M. Polkinghorne *et al.* (2023) proved that involving multiple consultants or co-mentors for various aspects of research contributes to improving the quality of research papers and motivating applicants. The study also found that universities that implement multi-mentoring demonstrate higher effectiveness of graduate students in research planning and publication preparation. In addition, respondents stressed the importance of a personalised approach and regular feedback, which correlates with international results by C.A. Mullen (2021), who pointed to the role of supportive online mentoring during crisis situations, particularly the COVID-19 pandemic.

The second factor is methodological and academic support. As noted by P. Luzan & O. Titova (2025), insufficient development of courses in academic writing, scientific ethics, and work with scientometric bases limits the ability of graduate students to work effectively with scientific information and form a research culture. But in the study, more than 60% of respondents reported a lack of methodological assistance. Digital tools for scientific communication partially compensate for this shortfall, confirming the potential of online training and remote consultations in maintaining academic competence. Interviews with supervisors have shown that structured courses in methodology and academic writing significantly increase graduate students' confidence in completing research tasks and stimulate their publication activity. It is important to note that unequal access to such programmes in different universities of Ukraine, which was emphasised by M. Hladchenko (2025), creates an imbalance in the training of graduate students and requires systematic institutional solutions at the level of the Ministry of Education and local regulations.

The third factor is access to digital resources and technologies. The research by S. Tolochko (2021) and Ye. Kuznetsov (2025) emphasised that digitalisation of education contributes to the academic socialisation of graduate students and expands their opportunities for integration into the international scientific community. The data of the study show a moderate positive correlation between access to international databases and subjective self-assessment of scientific progress ($\rho = 0.42$; $p < 0.05$). However, access to statistical and analytical programmes (SPSS, R, Atlas.ti, NVivo) limits the productivity of graduate students and reduces their representation in international publications, which is consistent with the findings of M.A. Shynenko *et al.* (2024), which emphasised the role of digital platforms in the development of information and analytical competencies. Respondents noted that the use of cloud services and open scientific platforms significantly increases the effectiveness of teamwork and interdisciplinary projects. Therefore, digitalisation of graduate school is an important tool that can partially compensate for the limitations associated with physical access to resources and academic libraries.

The fourth factor is institutional support and the academic environment. C. Halse & S. Mowbray (2011) noted that effective integration of applicants into research teams creates interdisciplinary competencies and network connections. Research data showed that only about a third of graduate students have the opportunity to participate in research schools or teams. Participation in collective projects, which are a mandatory practice in European universities, allows developing collaboration skills and improves the quality of research. In the Ukrainian context, most graduate students work in isolation, which reduces motivation and limits opportunities for professional development. Interviews with supervisors have shown that institutional support, in particular, the creation of mini-research groups and providing access to the University's internal resources, can significantly improve the integration of graduate students into the scientific environment.

The fifth factor is participation in international cooperation and academic mobility. Y. Zayachuk (2025) argued that access to international exchange programmes contributes to professional growth and the development of a global network of contacts. L. Filipova & D. Miller (2025) proved that strategic international cooperation is key to the future of Ukrainian higher education after the war. But in the study, only 26.4% of graduate students had access to academic mobility programmes, and only 18% of respondents confirmed regular access to international databases. These data showed significant limitations in the integration of Ukrainian graduate students into the global scientific community. Digital tools and online consultations, as noted by V. Stynska (2024), create alternative ways of academic integration, helping to maintain international contacts even in crisis conditions. Interviews in the study confirmed that graduate students actively use webinars and online conferences to share experiences, which partially compensates for the limitations of physical mobility.

As a result, the discussion of the results shows that the effectiveness of research activities of graduate students is determined by the interaction of several key factors: the organisation of scientific support and mentoring, methodological support, access to digital resources, institutional integration, and participation in international programmes. The identified factors are interrelated: the lack of one of them limits the potential of others, which affects the quality and effectiveness of scientific research. For example, limited access to digital databases reduces the effectiveness of methodological support and reduces opportunities for teamwork. Similarly, the lack of systematic mentoring makes it difficult to use available resources and reduces motivation. Consideration of these factors when developing graduate student support policies can increase the competitiveness of Ukrainian science at the international level. Recommendations include the introduction of structured mentoring programmes, the development of distance methodological trainings, expanding access to digital resources, and encouraging participation in international projects (Everitt, 2024). In addition, it is necessary to integrate psychological support and promote the creation of a collective scientific environment that would allow graduating students to adapt to crisis conditions and maintain

a high level of academic performance. Thus, the results of the study confirm that comprehensive support, which combines academic support, digital resources, methodological assistance and international integration, is critical for the development of effective postgraduate studies in Ukraine, especially in the context of war and the transformation of the educational system.

CONCLUSIONS

The results of the study showed a number of key patterns in supporting the scientific activities of graduate students. In particular, conventional forms of security, such as access to libraries (83.9%), publications in professional publications of HEIs (72.4%), and scientific supervisor (70.1%), remain the most accessible. Simultaneously, regular contact with the manager was provided only for 43% of respondents, which limits timely methodological support. 43.7% of graduate students have access to electronic full-text databases, while only 35.6% of respondents can use research equipment. International cooperation is also limited: 26.4% have participation in academic mobility programmes, 22% – in interuniversity or international projects, and only 18% of respondents confirmed regular access to international databases. Only 12% of graduate students declared participation in grant activities, which indicates a low level of systematic support.

Correlation analysis showed a moderate positive relationship between access to international scientific bases and self-assessment of graduate students' scientific progress ($\rho = 0.42$; $p < 0.05$), which emphasises the importance of information support for the effectiveness of research activities. The analysis of interviews with academic supervisors confirmed the high level of workload and lack of time for individual support, but simultaneously revealed the importance of mentoring programmes, internal academic communities and digital platforms as factors for improving performance. Content analysis of regulatory documents of HEIs showed the fragmentation of institutional support, insufficient integration of methodological support, and the formal nature of individual plans of graduate students.

The results of the study allowed identified key factors influencing the scientific activity of graduate students: regularity of methodological support, access to information and digital resources, availability of internal grant and research programmes, opportunities for international cooperation and integration into the scientific environment. Prospects for further research are related to the analysis of the effectiveness of various models of support for graduate students in comparison between institutions and industries, and to determining the best practices for digitalisation of scientific support. Additionally, it is advisable to study the impact of mentoring programmes and participation in international projects on the publication activity and academic performance of applicants for an academic degree, which would allow developing recommendations for improving postgraduate studies and increasing the competitiveness of Ukrainian scientists.

ACKNOWLEDGEMENTS

None.

FUNDING

None.

CONFLICT OF INTEREST

None.

REFERENCES

[1] Declaration of Helsinki. (2013). Retrieved from https://www.wma.net/policies-post/wma-declaration-of-helsinki/.
[2] Everitt, J. (2024). Learning from doctoral supervisors' and candidates' reflections on a supervisory model. *Innovations in Education and Teaching International*, 62(2), 717-730. doi: 10.1080/14703297.2024.2343831.
[3] Filipova, L., & Miller, D. (2025). Specific features of the development of international academic mobility among Ukrainian humanities students in the digital society. *Professional Education: Methodology, Theory and Technologies*, 11(1), 34-45. doi: 10.69587/pemtt/1.2025.34.
[4] Halse, C., & Mowbray, S. (2011). The impact of the doctorate. *Studies in Higher Education*, 36(5), 513-525. doi: 10.1080/03075079.2011.594590.
[5] Hladchenko, M. (2023). Strategising PhD supervision in Ukrainian higher education. *Tertiary Education and Management*, 29, 491-505. doi: 10.1007/s11233-023-09117-y.
[6] Hladchenko, M. (2025). International cooperation of Ukrainian researchers: Consequences of the full-scale Russian invasion. *arXiv*. doi: 10.48550/arXiv.2505.20944.
[7] Ivan Franko National University of Lviv. (2017). *Regulations on the Postgraduate and Doctoral Studies Department of Ivan Franko National University of Lviv*. Retrieved from https://lnu.edu.ua/wp-content/uploads/2017/05/reg_aspirantura.pdf.
[8] Ivan Franko National University of Lviv. (2023). *Regulations on the organisation of the educational process for doctoral students at Ivan Franko National University of Lviv*. Retrieved from https://aspirantura.lnu.edu.ua/wp-content/uploads/2023/04/Polozhennia-pro-orhanizatsiiu-osvitnoho-protsesu-zdobuvachiv-vyshchoi-osvity-stupenia-doktora-filosofii-u-LNU-imeni-Ivana-Franka.pdf.
[9] Ivan Franko National University of Lviv. Postgraduate and Doctoral Studies Department. (n.d.). *Documents*. Retrieved from https://aspirantura.lnu.edu.ua/documents/.

[10] Kachynska, N. (2022). Ukrainian universities and the challenge of research capacity development. In M. Chankseliani, I. Fedyukin & I. Frumin (Eds.), *Building research capacity at universities* (pp. 139-158). Cham: Palgrave Macmillan. doi: 10.1007/978-3-031-12141-8_8.
[11] Khoruzha, L., Lokshyna, O., Mazur, N., & Proshkin, V. (2022). Doctoral education in Ukraine: The application of digital tools and services by Doctoral Students under COVID-19 pandemic. *Multidisciplinary Journal for Education, Social and Technological Sciences*, 9(1), 87-112. doi: 10.4995/muse.2022.16768.
[12] Kuchyn, I., Bielka, K., Lymar, L., & Puljak, L. (2024). Academic performance, perceptions, and motivations of medical PhD students in Ukraine during wartime: A mixed methods study. *BMC Medical Education*, 24, article number 1421. doi: 10.1186/s12909-024-06400-3.
[13] Kuznietsov, Ye. (2025). Theoretical foundations for the development of digital skills of vocational education teachers: Innovative tools, integrative approaches. *Professional Education: Methodology, Theory and Technologies*, 11(1), 57-69. doi: 10.69587/pemtt/1.2025.57.
[14] Lesya Ukrainka Volyn National University. (2020). *Code of Academic Integrity of Lesya Ukrainka Volyn National University*. Retrieved from https://ra.vnu.edu.ua/wp-content/uploads/2020/11/Kodeks-akademichnoyi-dobrochesnosti.pdf.
[15] Lesya Ukrainka Volyn National University. (n.d.). *Regulations on the organisation of the educational and scientific process for higher education students at the third (educational and scientific/educational and creative) and scientific levels at Lesya Ukrainka Volyn National University*. Retrieved from https://surl.li/aaadlj.
[16] Luzan, P., & Titova, O. (2025). Development of PhD students' research competence: A technological approach. *Pedagogical Sciences: Theory, History, Innovative Technologies*, 1(141), 121-141.
[17] Mukachevo State University. (2020). *Regulations on teaching practice for postgraduate students*. Retrieved from https://msu.edu.ua/wp-content/uploads/2021/04/%D0%9F%D0%BE%D0%BB%D0%BE%D0%B6%D0%B5%D0%BD%D0%BD%D1%8F-%D0%BF%D1%80%D0%BE-%D0%BF%D1%80%D0%B0%D0%BA%D1%82%D0%B8%D0%BA%D1%83.pdf?utm.
[18] Mukachevo State University. (2021). *Regulations on the procedure for preparing candidates for higher education PhD and doctor of science degrees at Mukachevo State University. New edition*. Retrieved from https://surl.li/wbcnqz.
[19] Mukachevo State University. (n.d.). *Regulations academic integrity at Mukachevo State University*. Retrieved from https://surl.li/tghrco.
[20] Mullen, C.A. (2021). Mentoring in times of crises, pandemics, and social distancing. *International Journal of Mentoring and Coaching in Education*, 10(2), 139-143.
[21] Mullen, C.A. (2022). Guiding online students in a crisis: An intervention for mentoring educational leadership doctoral candidates. *Journal of Research on Leadership Education*, 18(3), 510-533. doi: 10.1177/19427751221097147.
[22] Novosad, I.I., Kudoiar, O.S., & Boiko, N.V. (2021). Digitalization of the university educational environment under global challenges. *Bulletin of Lviv Polytechnic National University. Problems of Economics and Management*, 2(3), 112-120. doi: 10.23939/ekon2021.03.112.
[23] Orechova, M. (2021). Internationalisation of higher education in Central and Eastern Europe: Conceptualisation of the definition inside the region. *Acta Paedagogica Vilnensia*, 46, 119-131. doi: 10.15388/ActPaed.46.2021.8.
[24] Polkinghorne, M., Taylor, J., Knight, F., & Stewart, N. (2023). Doctoral supervision: A best practice review. *Encyclopedia*, 3(1), 46-59. doi: 10.3390/encyclopedia3010004.
[25] Uzhhorod National University. (2016). *Regulations on academic mobility of students at Uzhhorod National University*. Retrieved from https://www.uzhnu.edu.ua/uk/infocentre/get/21269.
[26] Lesya Ukrainka Volyn National University. (2024). *Regulations on the organisation of the educational process at the first (bachelor's) and second (master's) levels at Lesya Ukrainka Volyn National University*. Retrieved from https://ed.vnu.edu.ua/wp-content/uploads/2024/09/2024-olozhennya_pro_org_anizatsiyu_navch._pr_otsesu_u_VNU_%D1%80%D0%B5%D0%B4.pdf.
[27] Uzhhorod National University. (2020). *Regulations on the organisation of the educational process at the state higher educational institution "Uzhhorod National University"*. Retrieved from https://www.uzhnu.edu.ua/uk/infocentre/get/31357.
[28] Samko, A. (2021). Digital competence of academic staff in the system of postgraduate education. *Education Analytics of Ukraine*, 2(13), 33-43. doi: 10.32987/2617-8532-2021-2-33-43.
[29] Shynenko, M.A., Tkachenko, V.A., & Labzhinsky, Y.A. (2024). Development of digital competence of academic staff: Foreign experience. *Scientific Journal of the Mykhailo Dragomanov Ukrainian State University. Series 2. Computer-Oriented Learning Systems*, 23(30), 133-144. doi: 10.31392/UDU-nc.series2.2024.23(30).12.
[30] Stynska, V. (2024). Digitalisation of the educational process in higher education institutions under martial law in ukraine on the basis of research at the Vasyl Stefanyk Precarpathian National University. *Annales Universitatis Mariae Curie-Skłodowska. Sectio J, Paedagogia Psychologia*, 37(3), 91-103. doi: 10.17951/j.2024.37.3.91-103.

[31] Ternopil Volodymyr Hnatiuk National Pedagogical University. (2020). *Code of academic integrity of the Ternopil Volodymyr Hnatiuk National Pedagogical University*. Retrieved from https://tnpu.edu.ua/about/public_inform/academ_dobrochesnist/kodeks_academich_dobroches.pdf.

[32] Ternopil Volodymyr Hnatiuk National Pedagogical University. (2023). *Regulations on the Postgraduate and Doctoral Studies Department*. Retrieved from https://tnpu.edu.ua/about/public_inform/upload/2023/Polozhennia_pro_viddil_aspirantury_i_doktorantury.pdf.

[33] Ternopil Volodymyr Hnatiuk National Pedagogical University. (2025). *Rules for admission to postgraduate studies at Ternopil Volodymyr Hnatiuk National Pedagogical University for 2025*. Retrieved from https://tnpu.edu.ua/abiturient/pdf/2025/dodatok_10.pdf.

[34] Tolochko, S. (2021). Digital competence of teachers in the conditions of digitalization of educational establishments and distance learning. *Bulletin of the T.H. Shevchenko National University "Chernihiv Colehium"*, 169(13), 28-35. doi: 10.5281/zenodo.5077823.

[35] Uzhhorod National University. (n.d.). *Info-center. Documents.* Retrieved from https://www.uzhnu.edu.ua/uk/infocentre/60861.

[36] Zayachuk, Y. (2025). International student mobility as an internationalization strategy: The case of Ukraine. *Journal of International Students*, 15(1), 45-61. doi: 10.1016/j.ssaho.2025.101507.

Тетяна Щербан
Доктор психологічних наук, професор
Закарпатський угорський університет імені Ференца Ракоці II
90202, пл. Кошута, 6, м. Берегове, Україна
https://orcid.org/0000-0002-3702-8029
Володимир Гоблик
Доктор економічних наук, професор
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево, Україна
https://orcid.org/0000-0003-1830-3491
Ілдіко Греба
Доктор філософії, старший викладач
Закарпатський угорський університет імені Ференца Ракоці II
90202, пл. Кошута, 6, м. Берегове, Україна
https://orcid.org/0000-0002-0764-0858

Організація наукової діяльності аспірантів в умовах трансформації освітнього середовища: чинники та сучасні тенденції

Анотація. Актуальність дослідження визначається необхідністю оновлення підходів до наукової підготовки здобувачів вищої освіти третього рівня відповідно до сучасних викликів, таких як фрагментація підтримки наукової діяльності, розрив між теорією і практикою, недостатня мотивація аспірантів до наукової роботи. Метою дослідження було виявлення ефективних моделей організації наукової діяльності в аспірантурі та аналіз інструментів підтримки наукової роботи аспірантів. Методологічною основою дослідження був аналіз наукових джерел, емпіричне опитування аспірантів та аналіз їхніх відповідей, а також статистична обробка результатів. Застосовано комплексний підхід, що поєднує педагогічні, психологічні та організаційні аспекти, включаючи аналіз умов навчання, механізмів структурної підтримки, особливостей академічної поведінки та цифрової інтеграції. Для кількісного аналізу використовували описову статистику та коефіцієнт рангової кореляції Спірмена; дані обробляли за допомогою програмного комплексу SPSS 28. Для якісного аналізу інтерв'ю було використано тематичне кодування в NVivo 14, що дозволило виявити домінуючі закономірності та закономірності в досвіді респондентів. Результати показали, що доступ до міжнародних наукових баз даних корелював з вищою самооцінкою наукового прогресу ($\rho = 0{,}42$; $p < 0{,}05$). Було виявлено, що ефективність наукової діяльності аспірантів значною мірою залежала від комплексної наукової підтримки, методологічної підтримки, цифрових інструментів та участі в міжнародних академічних мережах. Дослідження підтвердило, що систематичне наставництво та інституційна підтримка сприяли зростанню публікаційної діяльності, професійній мобільності та інтеграції аспірантів у глобальні наукові спільноти. У висновках підкреслено важливість комплексного забезпечення академічної діяльності та окреслено перспективи подальших досліджень, пов'язаних із психологічним благополуччям аспірантів та оцінкою ефективності цифрових інструментів у процесі наукової підготовки. Практичне значення дослідження полягає у розробці комплексного підходу до підтримки аспірантів, який може бути інтегрований у діяльність закладів вищої освіти

Ключові слова: академічна компетентність; наставництво; цифрові ресурси; наукова підтримка; публікаційна діяльність; міжнародна інтеграція; інституційна підтримка