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RESEARCH ACTIVITY FORMS IN THE PROFESSIONAL TRAINING OF FUTURE LIBRARY, INFORMATION, AND ARCHIVAL STUDIES SPECIALISTS AT TECHNICAL UNIVERSITIES

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The article analyzes the forms of research activity undertaken by future specialists in library, information, and archival studies within the framework of their professional training at institutions of higher technical education. The author substantiates the relevance of the topic in the context of digitalization and the growing demands for professional competence among specialists capable of managing information resources, implementing innovations, and addressing complex sectoral challenges.

The article highlights the integration of research activities into the educational process as a critical factor in developing students' analytical, critical, and creative thinking, as well as their capacity for independent scientific inquiry. It examines the legislative framework governing student research in Ukraine and draws on the experience of leading Ukrainian and European universities, where scientific research is systematically integrated into educational programs.

A review of typical curricula from selected Ukrainian technical universities (IFNTUOG, Lviv Polytechnic National University, TNTU, and KhAI) reveals how various disciplines contribute to the development of students' research competencies. The article identifies key forms of research engagement, ranging from academic exercises, such as annotated bibliographies, abstracts, and seminar reports to more advanced research activities, including individual and group projects, coursework, and full-scale scientific research (e.g., qualification theses and participation in grant or project initiatives under faculty supervision). The necessity of applying the principle of double entry in forming students' research competence is emphasized. Explicitly, this is realized through academic disciplines focused on developing scientific knowledge and investigative skills; implicitly, it is embedded in interdisciplinary learning, research-related tasks in other courses, and internship activities. The article also underscores the significant role of extracurricular research activities, such as participation in student scientific societies, conferences, internships, and the preparation of scholarly publications.

Special attention is given to the role of academic supervisors and the importance of creating an educational environment that fosters student research. Participation in such activities not only deepens students' professional expertise but also equips them with innovative competencies, enhances academic mobility, and boosts employability. Ultimately, research engagement is presented as a strategic factor in cultivating a new generation of professionals.

***Keywords*:** professional training; research activity; library, information, and archival studies; research competence; educational innovation; digital society; technical universities

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ФОРМИ НАУКОВО-ДОСЛІДНОЇ ДІЯЛЬНОСТІ МАЙБУТНІХ ФАХІВЦІВ З БІБЛІОТЕЧНОЇ, ІНФОРМАЦІЙНОЇ ТА АРХІВНОЇ СПРАВИ В ПРОЦЕСІ ПРОФЕСІЙНОЇ ПІДГОТОВКИ У ЗАКЛАДАХ ВИЩОЇ ТЕХНІЧНОЇ ОСВІТИ

Марина ШЛЕНЬОВА

Стаття присвячена аналізу форм науково-дослідної діяльності майбутніх фахівців бібліотечної, інформаційної та архівної справи в процесі їхньої професійної підготовки у закладах вищої технічної освіти. Авторка обґрунтовує актуальність теми в контексті цифровізації суспільства та підвищених вимог до професійної компетентності фахівців, здатних ефективно працювати з інформаційними ресурсами, впроваджувати інновації та розв'язувати складні галузеві завдання.

У статті акцентовано на тому, що інтеграція науково-дослідної діяльності в освітній процес є важливою умовою розвитку аналітичного, критичного та креативного мислення здобувача освіти, а також їхньої здатності до самостійного наукового пошуку. Проаналізовано законодавчі основи організації студентської науки в Україні та досвід провідних українських та європейських університетів, де наукові дослідження органічно поєднуються з навчальними програмами.

Авторка здійснює огляд змісту типових освітніх програм вітчизняних технічних закладів освіти (ІФНТУНГ, НУ «Львівська політехніка», ТНТУ, ХАІ), звертаючи увагу на інтеграцію дисциплін, що сприяють розвитку дослідницьких умінь. Визначено ключові форми науково-дослідної діяльності: від навчально-пошукових (формування анотованих списків літератури, рефератів, доповідей на семінарах тощо), навчально-дослідних завдань (виконання індивідуальних і групових проєктів, курсових робіт) до повноцінних науково-дослідних робіт (кваліфікаційні роботи, участь разом з науковими керівниками у грантовій і проєктній діяльності тощо). Наголошено на необхідності реалізації принципу подвійного входження компонента в систему при формуванні науково-дослідницької компетентності майбутніх фахівців бібліотечної, інформаційної та архівної справи. Експліцитно такий напрям присутній у системі професійної підготовки у вигляді навчальних дисциплін, безпосередньо спрямованих на набуття знань, умінь і досвіду науково-пошукової та дослідницької діяльності; імпліцитно – в міжпредметних зв’язках, при виконанні навчально- та науково-дослідних завдань у межах вивчення інших дисциплін і проходження практик. Підкреслено непересічну роль позааудиторної діяльності здобувачів освіти (робота у наукових гуртках, товариствах, участь у конференціях, стажування, підготовка наукових статей тощо).

Особливу увагу приділено ролі наукового керівника, а також необхідності створення сприятливого освітнього середовища для розвитку студентської науки. Підкреслюється, що участь у дослідницькій діяльності забезпечує здобувачам освіти не лише глибокі фахові знання, але й навички інноваційної діяльності, сприяє їхній академічній мобільності та підвищенню конкурентоспроможності на ринку праці. Науково-дослідна діяльність розглядається як стратегічна умова формування фахівців нового покоління.

Ключові слова: професійна підготовка; науково-дослідна діяльність; бібліотечна, інформаційна та архівна справа; дослідницька компетентність; інновації в освіті; цифрове суспільство, заклади вищої технічної освіти

General statement of the problem and its connection with important scientific or practical tasks. The training of future specialists in library, information, and archival studies at institutions of higher technical education is a complex and multifaceted process that necessitates a comprehensive approach, alignment with current trends, and the integration of innovative methodologies. In today's information-driven society, where technology shapes the ways data is stored, transmitted, and processed, traditional educational formats are increasingly being replaced by integrated models that emphasize research-based learning. Incorporating a research component into the educational process is not only a means of enhancing educational quality but also a pressing necessity, driven by transformations in the professional sphere, rising expectations of graduates, and the demand for well-developed creative and analytical thinking.

Scientific research, when embedded in the educational process, enables students to deepen their theoretical understanding, apply and validate it in practice, master research methodologies, and develop individualized approaches to solving professional challenges.

The integration of research activities into the professional training of future specialists in library, information, and archival sciences within technical higher education institutions requires a systematic strategy and coordinated support from the state, academic institutions, and employers. For this reason, exploring the effective incorporation of research into professional training is of paramount importance in the context of educational modernization and the formation of a new generation of highly competent professionals.

This article aims to identify and characterize the forms of research activity undertaken by future specialists in library, information, and archival science within the framework of their professional training.

Analysis of recent studies and publications that have initiated solutions to this problem. The integration of research activities into the professional training of future specialists in library, information, and archival studies represents a key factor in enhancing the quality of professional education amid the digital transformation of society. Engagement in scientific research enables students in higher education to acquire the skills necessary for working with large volumes of information, mastering contemporary data management technologies, and developing innovative approaches to the preservation and promotion of documentary heritage.

According to the Law of Ukraine "On Higher Education" (2014), student research is recognized as an essential component of the educational process and a vital aspect of academic and personal development. The legislation guarantees students the right to participate in research and development projects, conferences, symposia, and academic competitions, as well as to publish the results of their research. Student self-governance bodies and scientific societies, including those of undergraduate and graduate students, doctoral candidates, and early-career researchers, play a pivotal role in fostering scientific activity within higher education institutions. They contribute to the popularization of science, the improvement of research quality, and the expansion of international academic collaboration. The law

further ensures student involvement in decision-making regarding the enhancement of research activities and provides mechanisms for both moral and material recognition of scientific achievements. These provisions collectively contribute to the creation of a supportive environment for nurturing the scientific potential of young scholars.

In the "White book of national education of Ukraine", edited by V. G. Kremen (2009), student research is identified as a key component of higher education, essential for both specialist training and the advancement of innovation. The document emphasizes that research activity should foster the integration of education and science while shaping students' research and innovative thinking skills that are indispensable in the context of an information society and a knowledge-based economy.

An analysis of scholarly contributions by leading Ukrainian and international researchers, including L. Alyoshkina & I. Novak (2021), I. Babukh (2023), O. Bashkir (2021), M. Kniazian (2020), T. Medvedovska (2024), O. Otravenko (2020), V. Proshkin & I. Proshkina (2016), N. Rodinova (2024), O. Tytarenko, T. Borysova, V. Tytarenko, A. Tsyna, Y. Sribna & I. Vazhenina (2024), V. Lamanauskas & D. Augienė (2014), as well as G. Zikirova, T. Saadalov, K. Turdubaeva, & Z. Abdullaeva (2021) confirms that the integration of research activity into the educational process contributes significantly to the development of analytical thinking, the formation of professional competence, and the enhancement of academic mobility among future specialists. This, in turn, ensures the preparation of competitive professionals capable of operating effectively in the digital era and playing an active role in modernizing Ukraine's scientific and informational landscape.

O. Bashkir (2021) underscores that successful scientific and pedagogical research is impossible without a comprehensive understanding of its methodology, theoretical foundations, technologies, methods, and organizational structure.

The article by L. Alyoshkina & I. Novak (2021) examines the role of research activity as a key component of students' professional training. The authors emphasize that the effective organization of such activity fosters the development of independence, critical thinking, and the creative potential of future specialists. They also note that engaging students in scientific research enhances their motivation to learn and cultivates skills essential for successful professional practice. The article presents examples of how research is integrated into the educational process at higher education institutions and outlines prospects for its further development in the context of ongoing reforms and the modernization of higher education in Ukraine.

M. Kniazian (2020) considers student research as a foundational element in the formation of professional self-development competence. Research activity is characterized as a form of cognitive engagement encompassing all stages of scientific inquiry: problem identification, analysis of sources, selection of appropriate methods, experimentation, and synthesis of findings. The study reveals that research work cultivates critical thinking, methodological literacy, innovative capacities, and a sustained drive for professional self-improvement among higher education students.

M. Knyazyan identifies three phases in the scientific research activity of students, corresponding to dominant task types: the preparatory phase (focused on theoretical training), the modification phase (solving tasks by analogy), and the creative phase (developing and applying innovative solutions). The study concludes that research engagement promotes self-directed learning and the preparation of competitive professionals, while also highlighting the need for a more thorough examination of the organizational strategies that support this process.

In the article by V. Proshkin & I. Proshkina (2016), student research is presented as a vital component of professional training. The authors emphasize that research activities are an integral part of the educational process, contributing to students' creative development, the enhancement of professional competencies, personal self-realization, and the preparation of highly qualified specialists. The study finds that engagement in research fosters scientific culture and innovative thinking among students. The article highlights the experience of Luhansk Taras Shevchenko National University, where the scientific achievements of academic staff and departments are evaluated with particular attention to student research supervision. This includes preparing students for scientific competitions and olympiads, as well as supporting the publication of student research findings. The authors demonstrate that systematic monitoring of research activities, including those involving students, positively impacts the quality of professional training. One example of such monitoring is the use of electronic portfolios at Borys Grinchenko Kyiv University, which document the achievements of students under faculty supervision, including published works and awards from academic competitions.

Scientific supervisors play a crucial role in the development of students' research competencies. They not only introduce students to contemporary approaches in organizing scientific inquiry but also motivate them to pursue independent solutions to complex research problems and implement innovative ideas. As noted by N. Rodinova (2024), active student involvement in real research projects, laboratory work, and the publication of research findings in peer-reviewed academic journals constitutes a significant stage in their professional development.

T. Medvedovska (2024) asserts that the purpose of organizing student research in higher education is not only to deepen professional knowledge but also to develop the ability to conduct independent inquiry, apply critical thinking, and adapt research results to practical professional contexts. The author concludes that research activity expands students' worldview, stimulates intellectual curiosity and creativity, and fosters the competencies required for effective functioning in the information society.

According to V. Otravenko (2020), the effective preparation of future specialists for scientific activity yields the best results when students are actively engaged in scientific communication at various levels. Participation in academic and practical conferences, seminars, webinars, competitions, olympiads, discussions, and training sessions contributes significantly to the formation of research competencies, the development of cognitive, analytical, and critical thinking skills, and the ability to conceptualize and interpret scientific problems. Such engagements not only facilitate interaction with current scientific advancements but also offer students the

opportunity to apply their knowledge in authentic research contexts. This experiential learning plays a crucial role in the training of highly qualified professionals, including those in the fields of library, information, and archival studies.

O. Bartosh (2024) underscores the importance of developing scientific and research skills among social work students in Ukraine, as stipulated by national educational standards. A study conducted at Uzhhorod National University demonstrates that extracurricular activities, such as participation in research groups, volunteering, academic conferences, student competitions, sociological surveys, and international projects, play a crucial role in this development. These activities foster students' independence, stimulate research interest, and enhance motivation for scientific inquiry. The findings suggest that research skill development should be embedded not only in formal curricula but also actively reinforced through extracurricular engagement.

O. Tytarenko et al. (2024) investigate strategies for enhancing student motivation toward scientific research activity at Poltava V. G. Korolenko National Pedagogical University. Their educational experiment involved 143 students and incorporated participation in research clubs, academic conferences, and scholarship programs aimed at cultivating critical thinking and teamwork skills. Following the intervention, the experimental group demonstrated a 26% increase in high motivation and a 40% decrease in low motivation, in contrast to the control group. The authors identify key challenges in promoting research engagement, including time and financial constraints, limited mentorship, and insufficient access to material and technical resources, all of which directly affect students' scientific involvement and career development.

More than a decade ago, researchers V. Lamanauskas & D. Augienė (2014) addressed the state of scientific research activity (SRA) among bachelor's students in Lithuanian universities. Their 2013–2014 Delphi study revealed both the potential for cultivating essential research competencies and the persistent challenges impeding this goal. While universities provide a relatively supportive environment, offering publication opportunities and lecturer guidance, students often face low motivation, time limitations due to employment, and fragmented research experiences, frequently limited to qualification theses. Additionally, weak institutional science policies, the low attractiveness of research careers, and the inactivity of student scientific associations hinder sustained engagement. The study highlights enabling factors, such as intrinsically motivated students, the use of modern teaching methods, prospects for postgraduate studies, faculty support, and students' intellectual curiosity. The authors recommend integrating innovative teaching strategies, student involvement in faculty-led research, interdisciplinary teamwork, research-oriented curricula, revitalized student associations, and comprehensive project-based learning. However, heavy teaching loads and the low social prestige of scientific work continue to obstruct consistent SRA development. Modernizing academic programs and expanding opportunities for applied research are seen as critical to fostering students' analytical and creative potential for diverse career paths.

G. Zikirova et al. (2021) examine the development of research competence among bachelor's students in Kyrgyz universities, particularly within mathematics education. Their study demonstrates that problem-based learning supports the acquisition of analytical, synthetic, and communicative skills through goal-setting, data processing, and the presentation of research outcomes. Research competence, as defined by the authors, encompasses subject-specific knowledge, practical abilities, and self-organization, while also promoting collaboration and critical thinking. Contextualized and interdisciplinary learning enhances the applicability of research skills; however, barriers such as limited student awareness and time constraints persist. The authors emphasize that structured institutional support is necessary to cultivate students' scientific worldviews and enable meaningful engagement in independent research, thereby preparing them for professional roles in a knowledge-based society.

G. Eklund (2018) investigates Finnish students' experiences with research-based education, highlighting both its perceived strengths and limitations. Most students acknowledge the value of participating in research activities, such as writing bachelor's theses, engaging with scientific literature, and applying research methods, which they view as essential for developing critical thinking and professional autonomy. Students particularly appreciate how research empowers them to justify pedagogical decisions, enhance classroom practices, and pursue ongoing professional development. They regard research as a vital tool for becoming reflective, competent educators capable of adapting to changing educational contexts. However, some students express difficulty in connecting research activities to their everyday learning experiences, often perceiving their education as overly theoretical and lacking sufficient practical application. Despite these concerns, the majority view research as a central component of their teacher preparation and future professional role, while also advocating for stronger integration of research into real-world classroom contexts.

In a subsequent study, G. Eklund et al. (2022) examine the development of research skills among teacher education students through structured research and development (R&D) assignments. These assignments require students to identify authentic classroom problems, design small-scale studies, collect and analyze data, and reflect on their findings. Beyond these formal tasks, students also engage in ongoing informal research practices, such as critical reading and reflective writing, throughout their coursework and thesis projects. Collectively, these experiences contribute to the development of methodological competence, strengthen critical thinking, and nurture a research-oriented mindset essential for evidence-based teaching.

An analysis of the scientific literature confirms that student research activity plays a critical role in the formation of professional competencies and the development of innovative thinking. It fosters critical thinking, independence, motivation, and enhances students' analytical and communication skills, contributing directly to the training of competitive professionals. Scientific research work typically encompasses key stages of inquiry and phases of activity (preparatory,

modification, and creative) and is integrated into the educational process through various curricular and extracurricular formats, including research projects, academic conferences, competitions, subject-specific Olympiads, and student scientific societies. Despite its significance, the effectiveness of student research activity is often constrained by low motivation, insufficient resources, and limited time. To improve the quality and outcomes of such work, a systematic organizational approach is required, along with strong support from academic supervisors and adequate material and technical resources.

Presentation of the main research material. In the context of professional training for future specialists in library, information, and archival studies, the selection of effective forms for organizing students' research activity has become increasingly urgent. This is driven by the growing demands placed on graduates, who are now expected not only to possess robust theoretical knowledge but also to demonstrate the ability to independently analyze information processes, identify current challenges in the field, and propose scientifically sound solutions. Well-structured research activities significantly contribute to the development of critical thinking, independent inquiry, scientific literacy, and the capacity to work effectively with information resources in a rapidly evolving digital environment. It is no coincidence that one of the world's most respected institutional evaluation systems, the QS World University Rankings, includes research productivity indicators such as H-index citations, citations per paper, and academic reputation among its core metrics, alongside *employer reputation* (QS World University Rankings, 2023). In 2024, top positions in the Library & Information Management subject category were occupied by universities where the training of future professionals is entrusted to academic staff with the highest levels of scientific productivity and impact, as well as internationally recognized research reputations (Fig. 1).

I. The University of Sheffield (United Kingdom);
II. University of North Carolina, Chapel Hill (USA);
III. University of Washington (USA);
IV. University of Michigan-Ann Arbor (USA);
V. University of Illinois at Urbana-Champaign (USA);
VI. McGill University (Canada);
VII. Nanyang Technological University, Singapore (NTU) (Singapore);
VIII. University of British Columbia (Canada);
IX. University of Maryland, College Park (USA);
X. University of Texas at Austin (USA).

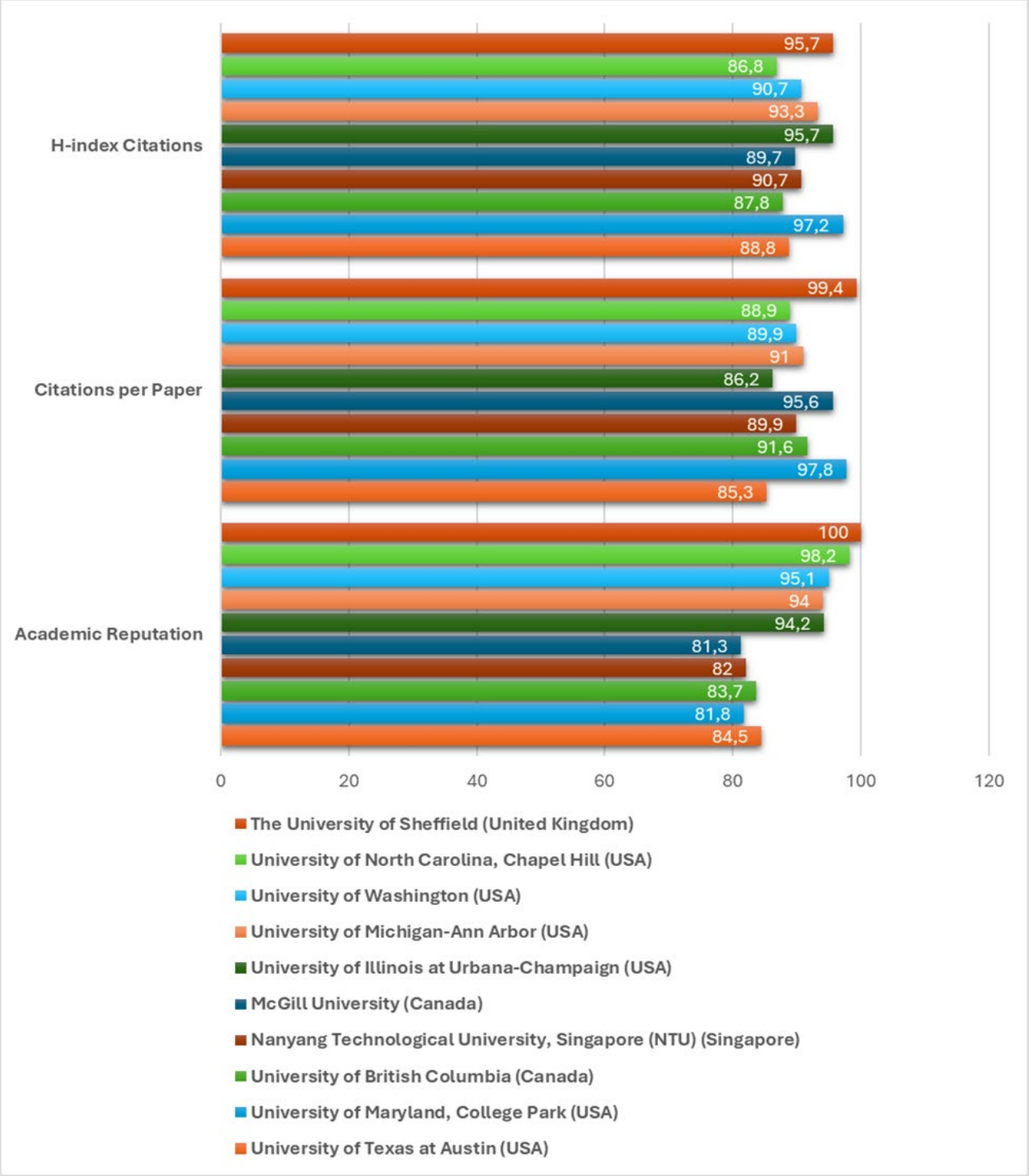

Fig. 1. Indicators of scientific effectiveness and influence of the highest-ranked teaching staff in the field of Library & Information Management*

**Source: Developed by the author based on QS World University Rankings, 2023*

In the context of technical education, traditionally focused on engineering and technological disciplines, the integration of a humanities component, particularly scientific research in the social sciences and humanities, presents several challenges. These include insufficient attention to the methodology of scientific inquiry, a limited range of academic disciplines aimed at developing research skills, and low student

motivation to engage in collaborative research projects with faculty. Such shortcomings hinder the development of analytical and research competencies essential for successful professional engagement in today's information society. In light of this, it is important to analyze the implementation of first-level (bachelor's) educational programs in the specialty 029 "Information, Library, and Archival Studies" at institutions of higher technical education. The goal is to assess the extent to which these programs create favorable conditions for student research activity and whether their content and organizational structures effectively support the development of students' capacity for independent scholarly work.

Notably, the "Standard of Higher Education for the First (Bachelor's) Level" in specialty 029 "Information, Library, and Archival Studies" identifies as its first program learning outcome (PLO1): To know and understand the scientific principles of organizing, modernizing, and implementing the latest technologies in information, library, and archival activities (Ministry of Education and Science of Ukraine, 2018, p. 8).

The developers of the Standard indicate that this learning outcome is to be achieved through the formation of a range of general (GC) and specialized (SC) competencies (Ministry of Education and Science of Ukraine, 2018, p. 16), including:

- GC1. Ability to think abstractly, analyze, and synthesize.
- GC3. Knowledge and understanding of the subject area and professional activities.
- GC6. Proficiency in the use of information and communication technologies.
- GC7. Ability to search for, process, and analyze information from diverse sources.
- GC9. Ability to work collaboratively in a team setting.
- GC10. Ability to communicate effectively with representatives of other professional groups at various levels, including experts from other fields of knowledge and sectors of economic activity.
- GC12. Ability to preserve and promote the moral, cultural, and scientific values and achievements of society, based on an understanding of the historical and developmental patterns of the subject area, its role in the broader system of knowledge about nature and society, and its relevance to societal, technological, and technical progress. This also includes the ability to engage in various forms of physical activity to support active recreation and a healthy lifestyle.
- SC1. Ability to select, analyze, evaluate, systematize, monitor, organize, store, disseminate, and provide access to information and knowledge in any format.
- SC7. Ability to implement innovative technologies for the creation of information products and services, thereby enhancing the quality of information services provided by information, library, and archival institutions.
- SC9**.** Ability to apply public relations and other applied socio-communication technologies within the framework of modern information and technological infrastructure.
- SC11. Ability to utilize automated information retrieval systems and to organize electronic libraries and archives.

- SC14. Ability to pursue lifelong learning with a high degree of autonomy, continuously improving one's level of information culture (Ministry of Education and Science of Ukraine, 2018, pp. 6–8).

It is important to note that the focus on acquiring research skills by first-level (bachelor's) students majoring in 029 "Information, Library, and Archival Studies" is not confined to a single program learning outcome. This article does not seek to provide a comprehensive analysis of the relevant educational standard. Rather, it examines the practical implementation of this standard in the educational programs of several Ukrainian universities.

In the first-level (bachelor's) educational program "Documentation and Information Activities" (2024) at Ivano-Frankivsk National Technical University of Oil and Gas, student research activity is positioned as an integral component of professional training. This is evident from the structure and content of the academic curriculum. A dedicated course, "Introduction to the Specialty and Student Research Work", offered in the first and second semesters, is specifically designed to encourage early student engagement in scientific inquiry. It introduces the fundamentals of research methodology and the specific features of scholarly work within the domain of documentation and information sciences. The overall objective of the program includes the preparation of specialists capable of addressing complex, specialized problems using the tools and methods of information, library, and archival science. Student research activity is intended to foster analytical thinking, the ability to manage information flows, and proficiency in utilizing information resources, competencies that are essential for professional practice. Research work is integrated into the educational process alongside internships (e.g., training in information activities and pre-diploma internships) and qualification projects, underscoring its importance in the development of research competencies through practical and independent work. Although student research activity is not explicitly identified as a standalone component in the competency-to-curriculum correspondence matrices or the mapping of program learning outcomes to educational components, its key elements are embedded within practice-oriented courses such as "Information and Analytical Activities" and "Analytical and Synthetic Information Processing". These disciplines cultivate scientific research skills and the ability to interpret and apply research findings. Thus, the program demonstrates a systematic approach to fostering students' scientific competence, an essential condition for their professional development and academic advancement.

In the first-level (bachelor's) educational program "Social Communications and Information Activities" (2024) at Lviv Polytechnic National University, student research skills are cultivated through practice-oriented disciplines such as *"*Analytics of Digital Scientific Services" *and "*Information Search Technologies".

The first-level (bachelor's) educational program *"*Information, Library, and Archival Studies*"* (2021) at Ternopil Ivan Puluj National Technical University is also designed to foster students' abilities in independent scientific research, critical analysis, and the interpretation of information within the fields of information activities and social communications. The program aims to train specialists capable

of generating, collecting, analyzing, and disseminating consolidated information for use in management, informational, and sociocultural contexts. Student engagement in research is closely linked to the acquisition of key competencies, including GC3: the ability to search for, process, and analyze information from various sources; GC4: the ability to master methods of acquiring, storing, and processing information; PC3**:** the ability to organize and conduct information and analytical activities. Program learning outcomes further emphasize the importance of research skills PLO3: to search for information from diverse sources to solve field-specific problems; PLO4: to conduct experimental research and apply research skills to professional subjects; PLO5: to evaluate information flows and resources based on reliability and relevance criteria; PLO11: to apply methods of systematic analysis in information activities. Through courses such as *"*Analytical and Synthetic Information Processing" and *"*Information Technologies for Monitoring and Data Analysis"*,* students progressively develop essential research competencies. They are trained to work with various types of information sources, critically engage with scholarly materials, perform data analysis, and utilize modern digital tools. The completion of a course project and a final qualification paper enables students to consolidate their acquired knowledge and complete the full cycle of scientific inquiry, from formulating a research problem to presenting results. This experience fosters scientific reasoning, encourages evidence-based decision-making, enhances information literacy, and prepares students for further academic advancement or professional success in the information field.

The educational and professional program of the first (bachelor's) level of higher education "Information, Library, and Archival Studies*"*, implemented at National Aerospace University "Kharkiv Aviation Institute" (2023), is designed to develop students' competencies in independent scientific research, as well as in the processing and interpretation of information within the domains of information processes and social communications. These objectives are achieved through the study of specialized disciplines that integrate theoretical foundations with practical research components, alongside the completion of coursework and qualification projects that foster critical thinking and prepare students for research-related roles in their future professional practice.

According to the "Magna Charta Universitatum" (2011), a modern university must closely align education with scientific inquiry. The educational process should be responsive to both the evolving needs of society and the latest developments in science. One of the core principles of university activity is the freedom of scientific research, which fosters an academic environment conducive to the training of highly qualified specialists.

The implementation of this principle, the freedom of scientific inquiry, is clearly evident in the curricula of European universities offering programs in library and information science. For example, the first-level (bachelor's) educational program "Bachelor of Library Science and Bibliography" at the University of Library Science and Information Technologies (2024) encompasses not only disciplines that explore the nature, structure, and functions of library and information activities but

also explicitly aims to develop students' research competencies. Throughout the course of study, students acquire methods of scientific analysis of information processes, gain foundational knowledge in scientific communication, and learn to use tools for data collection, processing, and interpretation. Particular emphasis is placed on the implementation of research projects and the completion of coursework and qualification theses grounded in real-world problems. Practical training in leading libraries is accompanied by applied case analysis and the formulation of evidence-based recommendations, all of which contribute to the development of research skills and critical thinking capabilities essential for both continued academic advancement and effective professional performance.

The first-level (bachelor's) higher education program "Information & Library Studies" at the University of Strathclyde (2024) integrates student research activity as a core component of academic training and fosters an environment conducive to the development of students' scientific potential. The program effectively combines theoretical instruction with practical experience and research engagement. To qualify for the degree, students are required to complete an individual research project under the supervision of an academic advisor, which must include an element of original inquiry. This capstone project promotes the acquisition of independent research skills, critical thinking, and analytical competencies. Additionally, the program incorporates a practical component in the form of internships in libraries and information institutions, enabling students to apply theoretical knowledge in real-world professional settings.

Similarly, the bachelor's program "Library and Information Science" at Humboldt University (2024) closely integrates theoretical foundations with applied research, particularly in areas such as digital libraries, scientific data management, and open access. Students engage in project-based learning, internships, and hands-on research, all of which cultivate analytical thinking and research capabilities. The program benefits from international cooperation through its membership in the iSchool Caucus, ensuring high academic standards and supporting the development of globally competitive professionals in the field of information science.

A comparative analysis of educational programs reveals that research activity plays a pivotal role in the professional preparation of future specialists in library, information, and archival science. Research involvement enables students to gradually acquire essential competencies in analytical thinking, informed engagement with information sources, and a critical approach to professional challenges. Active participation in scientific inquiry supports the mastery of key research stages, such as problem formulation, source analysis, and interpretation of results, which, in turn, enhances students' ability to navigate the contemporary information landscape and equips them to address practical issues in their future careers.

At the same time, one of the key principles of the systematic approach, the principle of double entry of a component into the system (Yurieva, 2016, pp. 251–252), suggests that the development of students' research competencies is most effective when scientific inquiry is integrated into the educational process in two distinct but complementary ways: (1) explicitly, as a dedicated educational

component, and (2) implicitly, through interdisciplinary connections, practical training, and extracurricular activities.

This thesis is supported by the implementation experience of leading educational programs aimed at preparing future specialists in library, information, and archival science, where student research activities extend beyond the formal curriculum. Modern universities actively seek to engage students in authentic scientific inquiry through a variety of modalities.

Within the academic process, such engagement includes studying specialized disciplines such as “Fundamentals of Scientific Research”, “Presentations in Science and Technology,” “Internet Technologies and Resources”, “Database Management Systems”, “Analytical and Synthetic Processing of Documentary Information”, and “Library and Information Support for Professional Activities”. It also involves the completion of initial educational and research assignments, such as compiling annotated bibliographies, conducting literature reviews, writing abstracts, and delivering seminar presentations. As students advance, they undertake more complex individual research tasks, including coursework and qualification papers that must contain a substantial research component. These forms of academic work serve not only as practical tools for applying acquired knowledge but also as opportunities to develop skills in working with scientific sources and addressing profession-specific research challenges. In this way, the formation of research competencies is explicitly and systematically embedded within the professional training of future specialists in library, information, and archival science.

The implicit integration of research competence into the professional training system for bachelor’s students majoring in 029 “Information, Library, and Archival Studies” is primarily reflected in educational and research tasks embedded across various academic disciplines and practical components, as well as in students’ extracurricular and co-curricular activities. These include, among others:

- participation in scientific circles and student research societies**,** which creates conditions for acquiring initial experience in scientific communication, working with sources, formulating research questions, and practicing critical analysis of information;
- engagement in scientific and practical conferences, seminars, project competitions, and grant programs, which offers opportunities to test research outcomes, develop academic communication skills, and build competence in publicly presenting one’s own scientific ideas;
- internships in professional institutions (such as libraries, archives, and information centers), which facilitate the integration of theoretical knowledge with practical analytical experience, foster skills in handling large data sets, and enhance the ability to search for, process, and systematize information using contemporary technologies;
- preparation and publication of scientific articles, as well as participation in international academic exchanges and research collaborations, which supports students’ integration into the global scholarly community, cultivates intercultural

academic competence, and encourages further self-development and engagement in research careers.

In view of these considerations, it is reasonable to propose a classification of the forms of research activity available to higher education students (Fig. 2).

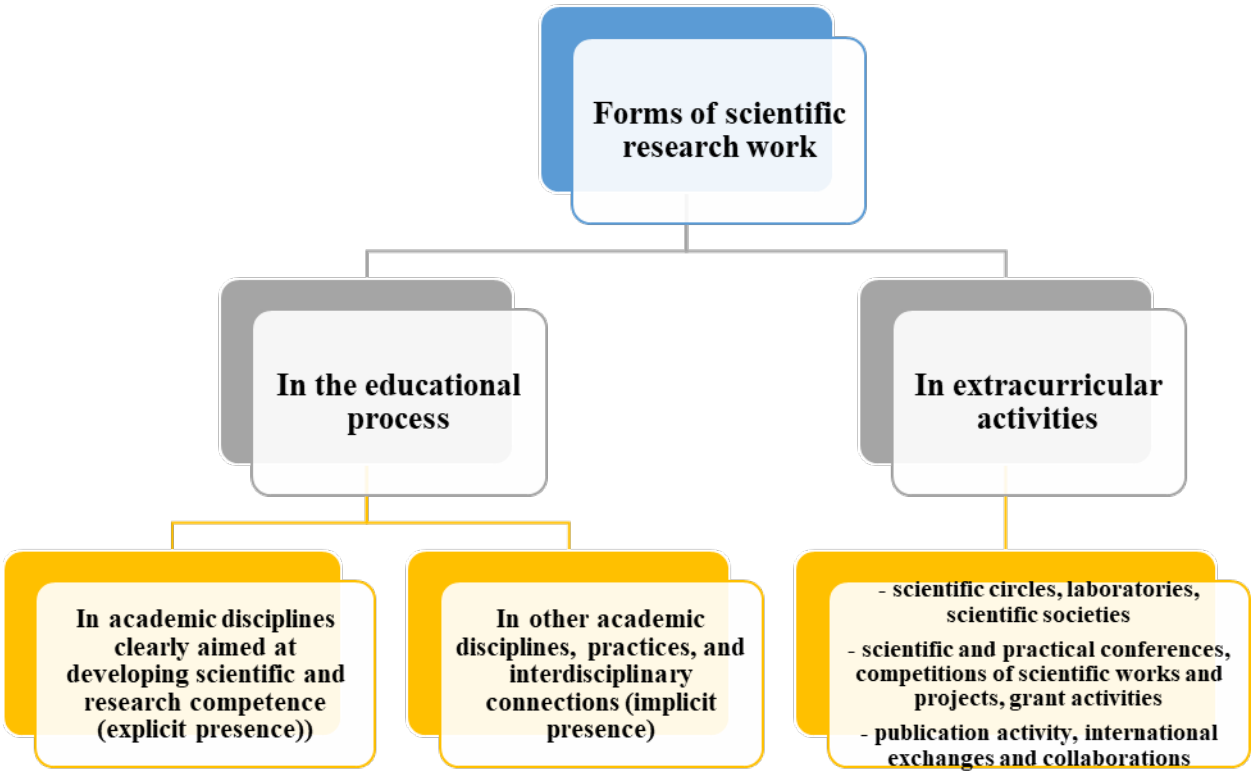

Fig. 2. Classification of forms of scientific research work among higher education students

The effective organization of these forms of scientific activity requires deliberate and sustained pedagogical support from academic and teaching staff. This includes systematic mentoring of students during the preparation of individual or collaborative research projects, the writing of theses and scholarly articles, and the development of research presentations and reports. Such support enables students to gradually acquire essential skills in planning and conducting scientific inquiries, presenting research findings with academic rigor, working with diverse sources, and developing analytical thinking and the capacity to formulate well-grounded conclusions.

Participation in research activities entails not only the mastery of traditional research methods but also the active application of interdisciplinary approaches to address complex challenges in the fields of library, information, and archival science. Scientific inquiry in these domains necessitates proficiency in classical research methodologies (e.g., source analysis, systematization, synthesis, and comparison), alongside interdisciplinary strategies that integrate knowledge from information technologies, social communication, management, law, and cultural studies. This integrative approach enables students to investigate multifaceted processes such as

the digital transformation of the information environment, the protection of digital heritage, the development of electronic archives, and the implementation of open-access systems. Engaging students in research activities that address interdisciplinary problems, for instance, analyzing the impact of digital tools on cultural heritage preservation or designing electronic cataloguing systems that consider legal aspects of data access, fosters the development of a holistic scientific perspective and a systematic approach to their future professional roles.

Moreover, the practical component of research, implemented through work in libraries, archives, and information institutions, serves as a valuable source of empirical data. This allows students to bridge theoretical learning with real-world digital practices and situational analysis.

Conclusions and prospects for further research in this field. Scientific research activities represent not only a key element of professional training for students in library, information, and archival studies but also a critical factor in fostering their readiness for innovation in the rapidly evolving information society.

The forms of student research activity must be diverse and integrative, encompassing involvement in both the formal educational process and extracurricular initiatives. These should include:

- engagement in academic disciplines directly focused on research competence development;
- participation in interdisciplinary collaborations;
- extracurricular research pursuits such as membership in scientific circles, participation in academic conferences and seminars, involvement in grant programs, international exchanges, and internships within professional institutions.

This comprehensive approach not only establishes a solid foundation for research competence but also cultivates a sustained interest in continuous self-development and creative inquiry.

It is important to emphasize that the formation of a modern specialist is not limited to the transmission of knowledge but also involves nurturing the ability to generate new knowledge. Future professionals in library, information, and archival fields must be equipped not only to adapt to changes in the professional landscape but to actively shape its development through scientific inquiry, innovative problem-solving, and the adoption of advanced technologies and methodologies.

Therefore, the integration of research activities into professional education is not merely an urgent pedagogical task but a strategic imperative. This integration should be guided by a systemic approach, involving:

- continuous updates to educational programs,
- active student engagement in scientific research,
- the development of supportive research infrastructure,
- student participation in interdisciplinary projects, and
- the encouragement of international academic mobility.

Such a framework ensures the production of highly qualified, competitive graduates ready to lead and innovate in the global information environment.

References

Альошкіна, Л. П., Новак, І. М. (2021). Особливості організації та перспективи розвитку науково-дослідної роботи здобувачів вищої освіти у вітчизняних закладах вищої освіти. *Ефективна економіка*, *2*. https://doi.org/10.32702/2307-2105-2021.2.101

Башкір, О. І. (2021). Методологія науково-педагогічного дослідження як навчальна дисципліна. *Педагогіка формування творчої особистості у вищій і загальноосвітній школах*. 74(2), 79–82. https://doi.org/10.32840/1992-5786.2021.74-2.15

Велика Хартія університетів (Magna Charta Universitatum). (2011, 5 травня). ЄвроОсвіта. https://euroosvita.net/prog/print.php/prog/print.php?id=1049

Вища освіта через дослідження: Концептуальні засади здійснення й оцінювання. (2014). У В. І. Луговий & О. Г. Ярошенко (Ред.), *Концептуально-методологічні основи проектування методів і засобів діагностики освітніх результатів у вищих навчальних закладах* (сс. 48–60). Педагогічна думка. https://lib.iitta.gov.ua/id/eprint/8434/1/Концепт-метод%20основи%20проектування%20методів%20і%20засобів%20діагностики%20осв%20рез%20у%20ВНЗ.pdf

Закон України «Про вищу освіту» № 1556-VII (2014). *Відомості Верховної Ради* (ВВР), 37–38, ст. 2004. https://zakon.rada.gov.ua/laws/show/1556-18#Text

Князян, М. (2020). Науково-дослідницька діяльність як чинник формування компетентності професійного саморозвитку майбутніх фахівців. *Актуальні питання гуманітарних наук*, *6*(27), 84–87. https://doi.org/10.24919/2308-4863.6/27.204647

Кремінь, В. Г. (Ред.). (2009). *Біла книга національної освіти України (Проект)*. АПН України. https://bazaluk.com/library/kremen-v/books/66/download

Медведовська, Т. (2024). Науково-дослідницька діяльність студентів закладів вищої освіти. In *Education and science of today: Intersectoral issues and development of sciences* (p. 335–340). European Scientific Platform. https://doi.org/10.36074/logos-18.10.2024.078

МОН України. (2018). Стандарт вищої освіти за спеціальністю 029 "Інформаційна, бібліотечна та архівна справа" для першого (бакалаврського) рівня вищої освіти. (2018). *Наказ МОН України № 1378*. https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2021/07/28/029-Inform.bibliot.ta.arkh.spr-bakalavr.28.07.pdf

Alioshkina, L., & Novak, I. (2021). Features of the organization and prospects of development of scientific research work of students in domestic higher education institutions. *Efektyvna ekonomika*, *2*. https://doi.org/10.32702/2307-2105-2021.2.101.

Bashkir, O. (2021). Methodology of scientific and pedagogical research as an educational discipline. *Pedagogy of creative personality formation in higher and general academic schools*, *74*(2), 79–82. https://doi.org/10.32840/1992-5786.2021.74-2.15.

Magna Charta Universitatum (2011, May 5). Euroosvita. https://euroosvita.net/prog/print.php/prog/print.php?id=1049.

Higher education through research: Conceptual principles of implementation and evaluation. (2014). In V. I. Lugovyi & O. G. Yaroshenko (Eds.), Conceptual and methodological principles of designing methods and means of diagnosing educational outcomes in higher educational institutions (pp. 48–60). Pedagogical thought. https://lib.iitta.gov.ua/id/eprint/8434/1/Концепт-метод%20основи%20проектування%20методів%20і%20засобів%20діагностики%20осв%20рез%20у%20ВНЗ.pdf

Law of Ukraine “On Higher Education” No. 1556-VII (2014). *Vidomosti Verkhovnoi Rady* (VVR), 37–38, Art. 2004. https://zakon.rada.gov.ua/laws/show/1556-18#Text.

Kniazian, M. (2020). Research activities as a factor to form the future specialists’ competence of professional self-development. *Humanities Science Current Issues*, *6*(27), 84–87. https://doi.org/10.24919/2308-4863.6/27.204647.

Kremen, V. G. (Ed.) (2009). *White book of national education of Ukraine* (Draft). APS of Ukraine.. https://bazaluk.com/library/kremen-v/books/66/download.

Medvedovska, T. (2024). Research activity of students of higher education institutions. In *Education and science of today: Intersectoral issues and development of sciences* (p. 335–340). European Scientific Platform. https://doi.org/10.36074/logos-18.10.2024.078

Ministry of Education and Science of Ukraine. (2018). Standard of higher education in the specialty 029 "Information, library and archival affairs" for the first (bachelor's) level of higher education. (2018). *Order of the Ministry of Education and Science of Ukraine No. 1378*. https://mon.gov.ua/static-objects/mon/sites/1/vishcha-osvita/zatverdzeni%20standarty/2021/07/28/029-Inform.bibliot.ta.arkh.spr-bakalavr.28.07.pdf

Освітньо-професійна програма "Інформаційна, бібліотечна та архівна справа" (2023). Національний аерокосмічний університет ім. М. Є. Жуковського "Харківський авіаційний інститут". https://khai.edu/assets/files/Osvit_program/bakalavri/2023-rik-naboru/opp-029-2023-2024-gotovo(1).pdf

Освітня програма "Документознавство та інформаційна діяльність" (2024). Івано-Франківський національний технічний університет нафти і газу. https://nung.edu.ua/sites/default/files/2024-09/029_%D0%86%D0%A1_%D0%91_2024.pdf

Освітня програма "Інформаційна, бібліотечна та архівна справа" (2021). Тернопільський національний технічний університет імені Івана Пулюя. https://tntu.edu.ua/storage/pages/00000486/op029b.pdf

Освітня програма "Соціальні комунікації та інформаційна діяльність" (2024). Національний університет "Львівська політехніка". https://directory.lpnu.ua/majors/ihsn/6.029.00.04/8/2024/ua/full

Отравенко, О. В. (2020). Науково-дослідна робота як складова якісної професійної підготовки здобувача вищої освіти. *Вісник Луганського національного університету імені Тараса Шевченка. Педагогічні науки* , 1(332), 47–55. https://doi.org/10.12958/2227-2844-2020-1(332)-47-55

Прошкін, В. В., & Прошкіна, І. О. (2016). Моніторинг ефективності університетських наукових досліджень як засіб забезпечення якості професійної підготовки студентів. *Вісник Луганського національного університету імені Тараса Шевченка. Педагогічні науки*, *3*(1), 205–212. http://nbuv.gov.ua/UJRN/vlup_2016_3(1)__28

Родінова, Н. (2024). Науково-дослідна робота здобувачів вищої освіти: на прикладі участі у наукових гуртках. *Вісник науки та освіти*, 2(20), 1129–1139. https://doi.org/10.52058/2786-6165-2024-2(20)-1129-1139

Юр'єва, К. А. (2016). *Порівняльна етнопедагогіка в професійній підготовці майбутніх учителів початкових класів* (І. Ф. Прокопенко, Ed.). ФОП В. В. Петров. https://dspace.hnpu.edu.ua/handle/123456789/18838

Bartosh, O. (2024). Cultivating Scientific and Research Skills of Social Work Students Outside the Classroom, *Youth Voice Journal*, 14, 30–56, https://dspace.uzhnu.edu.ua/jspui/handle/lib/62961

Educational program “Bachelor of Library Science and Bibliography” (2024). University of Library Studies and Information Technologies. https://www.bakalavratosvita.com/institutions/uni

Educational and professional program “Information, Library and Archival Affairs” (2023). National Aerospace University “Kharkiv Aviation Institute”. https://khai.edu/assets/files/Osvit_program/bakalavri/2023-rik-naboru/opp-029-2023-2024-gotovo(1).pdf.

Educational program “Documentation and Information Activity” (2024). Ivano-Frankivsk National Technical University of Oil and Gas. https://nung.edu.ua/sites/default/files/2024-09/029_%D0%86%D0%A1_%D0%91_2024.pdf.

Educational program “Information, Library and Archival Studies” (2024). Ternopil Ivan Puluj National Technical University. https://m.tntu.edu.ua/storage/pages/00000317/pvn-nrk-b029.pdf.

Educational program “Social Communications and Information Activity” (2024). Lviv Polytechnic National University. https://directory.lpnu.ua/majors/ihsn/6.029.00.04/8/2024/ua/full.

Otravenko, O. (2020). Research work as a component of high-quality vocational training for higher education applicants. *Bulletin of Luhansk Taras Shevchenko National University*, *1*(332), 47–55. https://doi.org/10.12958/2227-2844-2020-1(332)-47-55

Proshkin, V., & Proshkina, I. (2016). Monitoring of effectiveness of universities’ scientific researches as a way of guaranteeing quality of students’ professional training. *Bulletin of Luhansk Taras Shevchenko National University. Pedagogical Sciences*, *3*(1), 205–212. http://nbuv.gov.ua/UJRN/vlup_2016_3(1)__28.

Rodinova, N. (2024). Research work of higher education students: on the example of participation in scientific circles. *Bulletin of Science and Education*, *2*(20), 1129–1139. https://doi.org/10.52058/2786-6165-2024-2(20)-1129-1139.

Yuryeva, K. A. (2016). *Comparative ethnopedagogy in the professional training of future primary school teachers* (I. F. Prokopenko, Ed.). PPI V. V. Petrov. https://dspace.hnpu.edu.ua/handle/123456789/18838.

Bartosh, O. (2024). Cultivating Scientific and Research Skills of Social Work Students Outside the Classroom, *Youth Voice Journal*, 14, 30-56, https://dspace.uzhnu.edu.ua/jspui/handle/lib/62961

Educational program “Bachelor of Library Science and Bibliography” (2024). University of Library Studies and Information Technologies. https://www.bakalavratosvita.com/institutions/uni

versity-of-library-studies-and-information-technologies/bakalavr-bibliotekoznavstva-ta-bibliografiyi

Educational program "Information & Library Studies" (2024). The University of Strathclyde in Glasgow, Scotland. https://www.strath.ac.uk/courses/postgraduatetaught/informationlibrarystudies/

Educational program "Library and Information Science" (2024). Humboldt University in Berlin, Germany. https://www.daad.de/en/studying-in-germany/universities/all-degree-programmes/detail/humboldt-university-berlin-library-and-information-science-w6983/?hec-id=w6983

Eklund, G., Mestad, I., Aksland, Ch., & Jegstad, K. M. (2022). Research assignments in teacher education: Norwegian undergraduate student teachers' experiences of the writing process. *Acta Didactica Norden*, *16*(3). https://doi.org/10.5617/adno.9196

Eklund, G. (2018). Student teachers' experiences of research-based teacher education and its relationship to their future profession – A Finnish case. *Nordisk Tidskrift för Allmän Didaktik*, 4(1), 3–17. https://doi.org/10.57126/noad.v4i1.12208

Lamanauskas, V., & Augienė, D. (2014). Bachelor students' scientific research activity at university: Situation analysis and improvement possibilities. In. M. Bilek (Ed.), *Science and technology education for the 21st century: Research and research oriented studies* (Proceedings of the 9th IOSTE symposium for Central and Eastern Europe) (p. 297–312). Gaudeamus Publishing House. https://www.academia.edu/8371676/bachelor_students_scientific_research_activity_at_university_situation_analysis_and_improvement_possibilities

QS World University Rankings. (2023, June, 27). *QS world university rankings by subject 2024: Library & information management*. QS Universities. https://www.qschina.cn/en/university-rankings/university-subject-rankings/2024/library-information-management

Tytarenko, O., Borysova, T., Tytarenko, V., Tsyna, A., Tytarenko, V., Sribna, Y., & Vazhenina, I. (2024). Forming positive motivation of higher education students for research activities. *Cadernos De Educação Tecnologia E Sociedade*, *17*(se1), 125–136. https://doi.org/10.14571/brajets.v17.nse1.125-136

Zikirova, G., Saadalov, T., Turdubaeva, K., & Abdullaeva, Z. (2021). How to use research activity tools in bachelor students research competence formation. *Creative Education, 12*, 1995–2001. https://www.scirp.org/pdf/ce_2021090615271264.pdf

versity-of-library-studies-and-information-technologies/bakalavr-bibliotekoznavstva-ta-bibliografiyi

Educational program "Information & Library Studies" (2024). The University of Strathclyde in Glasgow, Scotland. https://www.strath.ac.uk/courses/postgraduatetaught/informationlibrarystudies/

Educational program "Library and Information Science" (2024). Humboldt University in Berlin, Germany. https://www.daad.de/en/studying-in-germany/universities/all-degree-programmes/detail/humboldt-university-berlin-library-and-information-science-w6983/?hec-id=w6983

Eklund, G., Mestad, I., Aksland, Ch., & Jegstad, K. M. (2022). Research assignments in teacher education: Norwegian undergraduate student teachers' experiences of the writing process. *Acta Didactica Norden*, *16*(3). https://doi.org/10.5617/adno.9196

Eklund, G. (2018). Student teachers' experiences of research-based teacher education and its relationship to their future profession – A Finnish case. *Nordisk Tidskrift för Allmän Didaktik*, 4(1), 3–17. https://doi.org/10.57126/noad.v4i1.12208

Lamanauskas, V., & Augienė, D. (2014). Bachelor students' scientific research activity at university: Situation analysis and improvement possibilities. In. M. Bilek (Ed.), *Science and technology education for the 21st century: Research and research oriented studies* (Proceedings of the 9th IOSTE symposium for Central and Eastern Europe) (p. 297–312). Gaudeamus Publishing House. https://www.academia.edu/8371676/bachelor_students_scientific_research_activity_at_university_situation_analysis_and_improvement_possibilities

QS World University Rankings. (2023, June, 27). *QS world university rankings by subject 2024: Library & information management*. QS Universities. https://www.qschina.cn/en/university-rankings/university-subject-rankings/2024/library-information-management

Tytarenko, O., Borysova, T., Tytarenko, V., Tsyna, A., Tytarenko, V., Sribna, Y., & Vazhenina, I. (2024). Forming positive motivation of higher education students for research activities. *Cadernos De Educação Tecnologia E Sociedade*, *17*(se1), 125–136. https://doi.org/10.14571/brajets.v17.nse1.125-136

Zikirova, G., Saadalov, T., Turdubaeva, K., & Abdullaeva, Z. (2021). How to use research activity tools in bachelor students research competence formation. *Creative Education, 12*, 1995–2001. https://www.scirp.org/pdf/ce_2021090615271264.pdf

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