

УДК 174-057.4:[378:5](477)

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DOI 10.24139/2312-5993/2025.02/327-337

FORMATION OF ACADEMIC RESEARCH CULTURE IN THE FIELD OF NATURAL EDUCATION: EUROPEAN APPROACHES AND UKRAINIAN REALITIES

The article examines the features of the formation of the academic culture of a researcher in the field of natural science education through the prism of European approaches and Ukrainian realities. The current trends in the development of academic culture in the European space of higher education and the specifics of their implementation in the Ukrainian context are analyzed. The components of academic culture, its role in the formation of the professional identity of a researcher and the impact on the quality of scientific research are considered. The main challenges and prospects for the development of academic culture in natural science education in Ukraine in the context of European integration are identified. Recommendations are proposed for improving the process of forming the academic culture of a researcher, taking into account European experience and national characteristics.

Key words: *academic culture, natural science education, European integration, scientific research activity, academic integrity, international cooperation, professional development, scientific ethics.*

Introduction. In the context of Ukraine's European integration and the globalization of the educational space, the issue of harmonizing Ukrainian and European approaches to the formation of academic culture is of particular relevance. One of the key tasks of the modern system of higher education, in particular in the field of natural sciences, is the formation of the academic culture of the researcher as a component of the professional identity of the future scientist. Academic culture in this context is considered not only as a set of knowledge, skills and norms of behavior, but as a holistic system of values that determines the internal motivation for scientific research, ethical responsibility and intellectual autonomy. According to European approaches, academic culture encompasses such key aspects as scientific integrity, the ability to think critically, openness to interdisciplinary dialogue, respect for academic freedoms and responsibility for the results of scientific activity. In the works of such researchers as Angela Brew (2001), Ronald Barnett (2005), Gerard Delanty (2001), academic culture appears as a dynamic phenomenon that is formed in the process of interaction of the researcher with the socio-cultural environment, institutional requirements and professional ethics. Particular emphasis is placed on the need to integrate education and science, where

scientific research is not an isolated process, but is harmoniously combined with educational activities, contributing to the development of autonomous and responsible thinking.

In the field of natural science education, these approaches acquire special importance, because it is the natural sciences that form the foundations of scientific knowledge and lay the foundation for further research. The formation of academic culture in this context means not only the mastery of methods of scientific analysis, but also the development of critical awareness, the ability to think independently, and the skills of ethical assessment of the results of one's own and collective work.

At the same time, the domestic higher education system, in particular its natural sciences segment, continues to bear the burden of the Soviet scientific and educational paradigm, which is characterized by a rigid hierarchy, the dominance of an authoritarian teaching style, formalism in evaluating research results, and insufficient emphasis on the development of students' research autonomy. This approach contradicts modern European requirements for academic culture, which are based on partnership, dialogue, openness, and freedom of academic choice. Ukraine's integration into the European Higher Education Area, in particular within the Bologna Process, creates real prerequisites for updating approaches to the formation of academic culture. An important challenge in this context is the need to develop adapted educational models that would combine the best European practices with national characteristics. This concerns the need to introduce new formats for training researchers, reorient the educational process towards the formation of an autonomous personality with a high level of academic responsibility, and develop an educational and scientific environment that promotes an open exchange of ideas and the free development of intellectual potential.

Thus, the formation of the academic culture of a researcher in the field of natural science education in modern conditions appears as a multifaceted problem that requires a systematic approach and comprehensive reflection on the part of the scientific and educational community. Solving this problem is strategically important both for improving the quality of higher education in Ukraine and for ensuring its competitiveness in the European educational space.

Analysis of current research. The problem of the academic culture of the researcher is interdisciplinary and covers pedagogy, philosophy of education, ethics of science, as well as the theory and methodology of

scientific activity. In modern scientific discourse, this topic is receiving more and more attention both in the domestic and foreign contexts.

In the works of European scientists (Angela Brew, 2001; Ronald Barnett, 2005; Gerard Delanty, 2001), a deep understanding of the role of the researcher in the context of transformations of higher education is observed. The main emphases in their research are:

1. Integration of education and science. Angela Brew (2001) emphasizes the importance of combining scientific research with the educational process as a means of forming academic culture. She believes that learning through research develops not only professional skills but also academic identity in students, creating an environment where knowledge is co-created (Brew A., 2001).

2. Formation of critical thinking. Ronald Barnett (2005) emphasizes that a true researcher is not only a carrier of knowledge, but also a critical thinking person, capable of ethical judgments and self-analysis. He points out that modern higher education must develop the ability to act in conditions of uncertainty and take responsibility for the consequences of their decisions, which are fundamental features of academic culture (Barnett R., 2005).

3. Academic integrity. Gerard Delanty (2001) considers the university as a moral community that must preserve and transmit the values of academic integrity, responsibility and openness. He emphasizes that the university is not only an educational but also a cultural institution in which civic consciousness is formed and social ties are maintained through scientific ethics (Delanty G., 2001).

In addition, the idea of disciplinary cultures in the academic environment can be traced in the works of researchers such as Tony Becher and Paul Trowler (2001). They emphasize that each scientific discipline forms its own style of thinking, language, types of argumentation and research norms, which, in turn, affects the formation of academic identity (Becher T., Trowler P. R., 2001).

Simon Marginson (2006) explores the globalization dimension of academic culture, emphasizing the need to maintain academic autonomy in the face of growing competition, commercialization of knowledge and internationalization of higher education (Marginson S., 2006).

Thus, in foreign studies, academic culture is interpreted not only as a set of knowledge and norms of behavior, but as a holistic paradigm that forms the identity of the researcher.

Analyzing the scientific achievements of domestic scientists (O. Ilchenko, O. Lokshina, L. Pukhovska, S. Lytvynova, etc.), we draw attention to the fact that the emphasis within the formation of academic culture is carried out mainly in the following spectrums:

1) Academic integrity: Ilchenko and Pukhovska emphasize the need for systematic implementation of the principles of integrity in the educational process, in particular in master's and postgraduate studies.

2) Ethical responsibility of the researcher: Lokshina emphasizes the importance of forming an internal ethical position in scientists, the ability to reflect.

3) Development of research competencies: Litvynova focuses on the methods of training future scientists, emphasizing the need to develop skills in planning, analyzing, and conducting research independently (Ilchenko S., 2022).

The aim of the article is to analyze European approaches to the formation of the academic culture of a researcher in the field of natural science education and to determine the possibilities of their adaptation to Ukrainian realities, taking into account existing challenges and prospects.

Research methods. To achieve the goal, a complex of methods of scientific knowledge was used: theoretical analysis of scientific literature (Ukrainian and foreign), a comparative-analytical method for comparing European and Ukrainian approaches, an expert evaluation method for identifying current problems in the Ukrainian system of natural science education, as well as generalization methods for formulating conclusions.

Presentation of the main material. Academic culture today represents not only compliance with the norms of integrity, but also a system of interdependent value orientations that determine the quality of scientific activity. In the structure of academic culture, the following components are conventionally distinguished: cognitive (knowledge of ethics, research principles, criteria of scientific novelty); practical (application of acquired knowledge in creating a scientific product); communicative (culture of scientific speech, academic writing, public presentations); value (personal responsibility, respect for intellectual property). These components are an integral part of the training of a researcher in the natural sciences, where high accuracy and objectivity are critically important for the formation of a competitive brand of a scientist in the future (Kovalchuk I., 2020).

It should be noted that the formation of the academic culture of a researcher in the field of natural science education requires a comprehensive approach that covers various aspects of the educational process: taking into account European approaches to the formation of academic culture, which are determined by quality standards, open science and research integrity (Semenog O., Kulbabska O., 2021). In the context of European initiatives such as Science Europe and the European University Initiative, the emphasis is on the importance of an interdisciplinary approach, integrating research with societal needs and ensuring high standards of academic integrity. These initiatives contribute to the creation of university alliances that support joint research projects and international cooperation.

The European Education Area defines academic culture as a basic competence of all participants in the scientific process. The documents of the European University Association (EUA), in particular the ERA Development Strategy (European Research Area), emphasize the importance of: integrating courses on academic ethics into educational programs; formation of national institutions for monitoring compliance with academic integrity; introduction of mechanisms for checking plagiarism and falsification of results; development of interdisciplinary and intercultural academic dialogue (EUA, 2020).

A special place is occupied by the culture of scientific speech. In universities in Germany, Finland, and the Netherlands, academic writing is a mandatory part of the educational process from the first year of study. In many countries, student support centers have been created in the preparation of scientific texts, and the use of electronic platforms for checking integrity (Turnitin, URKUND) is an everyday practice.

In Germany, the concept of academic culture emphasizes the quality of research and its practical application. The German scientific community is actively implementing the principles of open science through the Open Access initiative, which provides free access to scientific publications. Universities such as the Technical University of Munich implement programs that support interdisciplinary research by involving students in joint projects with industry (EUA, 2020).

The UK's academic culture is underpinned by a range of initiatives that promote research integrity. For example, the UK Research and Innovation Council implements programmes that support innovation and promote ethical research. Universities such as Oxford and Cambridge actively encourage an

interdisciplinary approach by offering joint programmes across different fields of science (European Commission, 2021).

The Swedish higher education system is characterised by its emphasis on sustainability and open science. Universities such as Uppsala University implement strategies that involve students in research that addresses social and environmental issues. The Swedish scientific community actively supports open data initiatives, which promote transparency and collaboration in research.

In France, the emphasis on academic culture is reflected in national programs aimed at supporting young researchers. For example, the «Investissements d'avenir» (Investments for the Future) program funds projects involving interdisciplinary research and innovation. Universities such as the Sorbonne are actively implementing programs to develop research integrity and academic ethics (Hendrik F., Visser, M., 2019).

The Dutch higher education system is also actively implementing the principles of open science: the University of Amsterdam implements programs that promote the integration of research with society, involving students in projects that have social significance. Dutch researchers actively cooperate with international partners, which contributes to the development of academic culture. In addition, in many European countries there are exchange programs for students and young researchers that promote international cooperation and exchange of experience. For example, the Erasmus⁺ program provides students with the opportunity to study in other European countries, which helps them gain new knowledge and skills, as well as get acquainted with different academic cultures (Altbach P. G., Salmi J., 2011).

Ukraine is gradually rethinking the role of academic culture in higher education. After the adoption of the Law of Ukraine «On Education» (2017) and the introduction of provisions on academic integrity, universities are required to develop internal regulatory documents and create mechanisms for responding to ethical violations. However, there are a number of problems:

- formal approach to academic integrity (lack of effective sanctions);
- low level of academic writing proficiency among students of natural sciences;
- limited number of teachers with experience in preparing scientific publications in international journals;

➤ underestimation of the linguistic component of academic culture (Law of Ukraine «On Education» (as amended), 2017).

At the same time, within the framework of cooperation with the Erasmus+, Horizon Europe, DAAD programs, some Ukrainian universities have introduced courses on academic integrity, trainings on scientific writing and research methodology.

Academic culture in Ukrainian natural sciences education is also in the process of formation. One of the important aspects is the development of innovations and technological progress, which contributes to the introduction of new teaching and research methods. For example, the use of digital technologies in the educational process and the creation of modern scientific laboratories open up new opportunities for students and teachers. An important component of the formation of academic culture is ensuring the quality of education and scientific research.

Domestic reforms are aimed at improving the quality of higher education, in particular, integration into the Bologna process, which involves the adaptation of educational programs to European standards: new mechanisms are being developed to support young researchers who play a key role in the development of the scientific community. A comparative analysis of European and Ukrainian approaches to the formation of academic culture reveals both common features and significant differences.

General trends include the desire to improve the quality of education, the development of international cooperation and the introduction of innovative approaches to the educational process, however, the Ukrainian system faces unique challenges, such as the need to improve institutional autonomy and the development of educational infrastructure. Thus, the formation of an academic culture of a researcher in the field of natural science education is a complex and multifaceted process that requires efforts from educational institutions, government agencies and the scientific community itself. In order to achieve significant results, it is necessary to continue working on the implementation of European practices, adapting them to the Ukrainian context, and to provide support to young scientists who are the future of academic culture in Ukraine (DAAD Ukraine Report, 2021).

For the effective formation of academic culture in natural science education in Ukraine, systemic measures are necessary:

- ✓ creation of interuniversity academic support centers;

- ✓ methodological support for scientific writing courses in Ukrainian and English;
- ✓ development of standard programs on the ethics of scientific research;
- ✓ implementation of electronic systems for tracking academic violations;
- ✓ interdisciplinary cooperation between specialists in natural sciences, pedagogy, linguistics, and ethics.

Conclusions. The academic culture of a researcher is a complex multi-component phenomenon that is formed in the interaction of knowledge, skills, ethical norms, and language competence. Despite the presence of a significant body of theoretical and practice-oriented research devoted to the academic culture of the researcher, in the Ukrainian scientific discourse there is a lack of systematic, interdisciplinary analysis of the specifics of the formation of academic culture in the context of natural science education. The conducted study shows that the academic culture of the researcher is considered as an integral formation that combines ethical norms, cognitive attitudes, methodological literacy, social responsibility and the ability to critical reflection. However, within the natural science education sector, this problem often remains on the periphery of attention, which reduces the effectiveness of the implementation of the principles of academic integrity at the practical level.

European scientific and pedagogical traditions, reflected in the works of such researchers as Brew, Barnett, Delanty and others, offer holistic concepts of academic culture as the basis of scientific identity, which is formed in the interrelation of education, research and ethical practice. In particular, the integration of education and science, the development of the ethical consciousness of the researcher, the normative clarity of the academic environment, and the focus on responsibility to society are the basic guidelines of the European model. However, in the domestic context, these approaches have not yet been systematically applied, and their implementation is often formal or fragmentary. The reason for this is, in particular, the lack of adaptation models capable of translating European standards of academic culture, taking into account the specifics of the Ukrainian educational system, national scientific tradition, and mental characteristics of the academic community.

In addition, insufficient methodological development of approaches to the formation of academic culture among teachers and researchers of natural

sciences was revealed. This problem is further exacerbated by the fact that natural sciences are traditionally focused on "hard" knowledge and skills, while ethical and axiological aspects in educational programs often remain underestimated. For this reason, the principles of academic integrity are perceived not as internally acquired values, but as external regulators that are subject to formal implementation. At the same time, postgraduate programs in Ukraine still do not contain the proper amount of content modules dedicated to the development of academic culture, in particular, research ethics, scientific communication, anti-plagiarism strategies, which determines the low quality of training young scientists for activities in the modern academic environment. Considering the above, promising areas of further scientific exploration are, first of all, the creation of an interdisciplinary model of the formation of the academic culture of a researcher in the conditions of natural sciences education. Such a model should include a set of structural components (cognitive, ethical, methodological, communicative) and be based on the best practices of the European Higher Education Area (EHEA). An important task is also to develop diagnostic tools to identify the level of formation of academic culture among third-level education applicants and teachers of natural sciences. It is also advisable to conduct empirical research on the effectiveness of implementing modules on academic ethics in master's and postgraduate curricula, taking into account the specifics of each scientific specialty.

Further research should also be aimed at analyzing barriers and factors that influence the integration of ethical norms into scientific practice, at studying the experience of Ukrainian and foreign universities in forming an academic community that operates on the basis of mutual trust, openness, responsibility and scientific honesty. In the long term, it is advisable to form a national strategy for the development of academic culture, which should become part of the general educational policy of Ukraine, meeting the challenges of the modern scientific and educational space.

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АНОТАЦІЯ

Приступа Яна. Формування академічної культури дослідника у сфері природничої освіти: європейські підходи та українські реалії.

У сучасних умовах трансформації вищої освіти, активної євроінтеграції України та зростання ролі науки у глобальному розвитку, формування академічної культури дослідника набуває виняткової актуальності. Академічна культура є основою якісної наукової діяльності, дотримання стандартів доброчесності, розвитку професійної автономії та ефективної комунікації в міжнародному науковому середовищі. Особливо важливою ця проблема постає у сфері природничої освіти, де дослідження відіграють критичну роль у забезпеченні технологічного та інноваційного потенціалу країни. Недостатнє формування академічної культури гальмує не лише розвиток особистості дослідника, але й послаблює позиції української науки в європейському просторі. Саме тому вивчення механізмів, умов та європейських моделей формування академічної культури є своєчасним і стратегічно важливим завданням для української системи вищої освіти.

У статті досліджено особливості формування академічної культури дослідника у сфері природничої освіти через призму європейських підходів та українських реалій. Здійснено ґрунтовний аналіз сучасних тенденцій розвитку академічної культури в європейському просторі вищої освіти, розглянуто її ціннісні, нормативні та поведінкові аспекти, а також шляхи їх впровадження в українські освітні практики. Автори підкреслюють, що академічна культура є не лише показником якості освітнього середовища, але й ключовим чинником формування професійної ідентичності дослідника, його наукової етики, світогляду та здатності до самостійної, відповідальної дослідницької діяльності. Особливу увагу приділено ролі академічної культури як основи для розбудови особистісного та професійного бренду науковця. У сучасних умовах, коли конкуренція у сфері науки посилюється, академічна культура виступає не

лише засобом соціалізації в науковій спільноті, а й платформою для розвитку індивідуальної наукової репутації.

Дотримання академічної доброчесності, володіння сучасними науковими комунікативними навичками, активна участь у міжнародній співпраці — все це формує впізнаваність і довіру до дослідника на національному та глобальному рівнях. Акцентовано на тому, що осмислення та культивування академічної культури є не лише освітньою або етичною потребою, а стратегічною умовою конкурентоспроможності українських науковців у світовому просторі. Формування стійкої академічної ідентичності, здатної поєднувати національні традиції з європейськими цінностями, є важливим кроком до інституційної зрілості вищої освіти та посилення впливу української науки на глобальному рівні.

Ключові слова: академічна культура, природничо-наукова освіта, європейська інтеграція, науково-дослідна діяльність, академічна доброчесність, міжнародне співробітництво, професійний розвиток, наукова етика.

УДК 373.21

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DOI 10.24139/2312-5993/2025.02/337-349

МОДЕЛЬ РОЗВИТКУ КРЕАТИВНОСТІ ДІТЕЙ СТАРШОГО ДОШКІЛЬНОГО ВІКУ ЗАСОБАМИ ТЕХНІКИ ПАП'Є-МАШЕ

У статті розроблено та теоретично обґрунтовано модель розвитку креативності дітей старшого дошкільного віку засобами техніки «пап'є-маше», складові якої відображено в трьох сегментах: цільовому, з визначенням мети та завдань; змістово-організаційному, що охоплює зміст процесу розвитку креативності дітей старшого дошкільного віку, принципи організації розвитку креативності дітей старшого дошкільного віку засобами техніки пап'є-маше, педагогічні умови реалізації цієї моделі; діагностично-результативному, який містить критерії, їх показники та рівні для обстеження розвитку компонентів креативності в дітей старшого дошкільного віку, а також прогнозований результат.

Ключові слова: креативність, засоби техніки «пап'є-маше», діти старшого дошкільного віку, розвиток, модель.

Постановка проблеми. Сучасна педагогічна практика все більше звертає увагу на важливість розвитку креативності дітей старшого дошкільного віку як основи для подальшого успішного навчання та адаптації у суспільстві. Один із перспективних напрямів розвитку креативності дітей дошкільного віку ми вбачаємо у використанні художніх технік, зокрема пап'є-маше. Пап'є-маше не лише розвиває дрібну моторику та фантазію, а й стимулює дітей до нестандартних підходів, допомагає формувати образне мислення та почуття композиції. У той же час ця техніка залишається недооціненою у закладах дошкільної освіти через відсутність методичних матеріалів, обмежену підготовку