

РОЗДІЛ 1 ОСВІТА ТА ПЕДАГОГІЧНІ НАУКИ

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THE PROGRAM OF RESEARCH INTO TRAINING OF SCIENTIFIC AND PEDAGOGICAL STAFF FOR ACADEMIC ENTREPRENEURSHIP

ПРОГРАМА ДОСЛІДЖЕННЯ ПІДГОТОВКИ НАУКОВО-ПЕДАГОГІЧНИХ ПРАЦІВНИКІВ ДО АКАДЕМІЧНОГО ПІДПРИЄМНИЦТВА

At the beginning of the 21st century, universities not only perform educational and scientific functions, but also become centres of innovative development and entrepreneurial activity. Academic entrepreneurship contributes to the commercialisation of scientific research, the expansion of cooperation between universities and businesses, as well as the strengthening of the economic potential of society. This requires appropriate training of university employees for the implementation of academic entrepreneurship. The article analyses the scientific and pedagogical literature on the research problem, which forms the basis for developing a research program for training scientific and pedagogical staff for academic entrepreneurship. The aim of the article is to highlight the research program for the training of scientific and pedagogical staff for academic entrepreneurship. It is concluded that the research program is developed following the defined goal, and the implementation of research tasks is based on the application of a complex of theoretical and applied scientific methods. The research algorithm is developed through sequential tasks, each of which creates the basis for solving the next one. The stages of the research process are determined, including: "search and design" stage (formulation of the problem, tasks, development of the research program); theoretical and conceptual stage (development of theoretical and methodological foundations and the concept of training); diagnostic and technological stage (creation of a diagnostic apparatus, conducting a pedagogical experiment); analytical and final stage (processing and analysis of experimental data). The methodological foundations of the research are based on principles (objectivity, evidence, holistic study, essential analysis, unity of historical and logical, continuity, systematicity, personally oriented learning) and approaches (terminological, systemic, structural-functional, synergetic, personality and activity oriented). They provide the strategic and tactical direction of the research.

Key words: research program, scientific and pedagogical research, scientific principles, methodological approaches, research stages, scientific and pedagogical staff, training of scientific and pedagogical staff, academic entrepreneurship.

На початку 21 століття університети не лише виконують освітні та наукові функції, а й стають центрами інноваційного розвитку та підприємницької діяльності. Академічне підприємництво сприяє комерціалізації наукових досліджень, розширенню співпраці між університетами та бізнесом, а також зміцненню економічного потенціалу суспільства. Це вимагає відповідної підготовки працівників університету до реалізації академічного підприємництва. У статті виконано аналіз науково-педагогічної літератури з дослідницької проблеми, що формує основу для розробки програми дослідження підготовки науково-педагогічних працівників до академічного підприємництва. Метою статті є висвітлення програми дослідження підготовки науково-педагогічних кадрів для академічного підприємництва. Зроблено висновок, що дослідницька програма розробляється відповідно до визначеної мети, а реалізація дослідницьких завдань базується на застосуванні комплексу теоретичних та прикладних наукових методів. Алгоритм дослідження розробляється через послідовні завдання, кожне з яких створює основу для вирішення наступного. Визначено етапи дослідницького процесу, серед яких: етап пошуково-проектувальний етап (формулювання проблеми, завдань, розробка дослідницької

програми); теоретико-концептуальний етап (розробка теоретико-методологічних основ та концепції навчання); діагностико-технологічний етап (розробка діагностичного апарату, проведення педагогічного експерименту); аналітико-підсумковий етап (обробка та аналіз експериментальних даних). Методологічні основи дослідження базуються на принципах (об'єктивності, доказовості, цілісного вивчення, сутнісного аналізу, єдності історичного та логічного, наступності, системності, особистісно орієнтоване навчання) та підходах (термінологічного, системного, структурно-функціонального, синергетичного, особистісно-діяльнісного). Вони забезпечують стратегічний та тактичний напрям дослідження.

Ключові слова: програма дослідження, науково-педагогічне дослідження, наукові принципи, методологічні підходи, етапи дослідження, науково-педагогічні працівники, підготовка науково-педагогічних працівників, академічне підприємництво.

Problem statement. At the beginning of the 21st century, universities not only perform educational and scientific functions, but also become centres of innovative development and entrepreneurial activity. Academic entrepreneurship contributes to the commercialisation of scientific research, the expansion of cooperation between universities and businesses, as well as the strengthening of the economic potential of society. Today's labour market requires specialists who combine scientific activity with entrepreneurial skills. Accordingly, the training of university staff and their professional development is a necessity.

The development of a research program for the training of scientific and pedagogical staff for academic entrepreneurship is a significant step that contributes to both the organisation of research and improving the quality of professional training, the development of the university system and adaptation to the modern challenges of globalisation and the innovative economy.

Analysis of recent research and publications. The methodology of scientific and pedagogical research, the specifics of its implementation are highlighted in the scientific and pedagogical literature [1–10]. Its development forms the basis for mastering methodological tools and contributes to ensuring the scientific validity of scientific and pedagogical research, a clear definition of the goal and objectives, principles and methodological approaches, which ensure its logical consistency and reliability of the results [9]. It allows to avoid random approaches and supports the qualitative analysis of the data obtained [1]. Understanding the structure of scientific and pedagogical research is vital, as it allows us to build it based on clearly defined stages. This ensures the systematic solution of research tasks [3]. The methodological competence of the researcher allows to choose the most effective methods and tools for solving specific tasks, which ensures the relevance of the results obtained and the possibility of their further use.

The aim of the article. The aim of the article is as follows: to highlight the research program for

the training of scientific and pedagogical staff for academic entrepreneurship.

Presentation of the main material. Researchers emphasise the need for “clear formulation of the goal and objectives of the research” [1, p. 116]. In scientific and pedagogical sources, the goal is interpreted as “a well-founded idea of the general final or intermediate results of scientific research” [9, p. 53], the task as “specification of the general goal, objectives taking into account the subject of research” [9, p. 54]. It is a kind of detailing of the goal of the research and the specifics of its achievement.

According to the author's idea, the organisation of scientific and pedagogical research involves the implementation of several tasks that present the algorithm for achieving the research goal, in particular through the organisation of the research process. We set the goal to solve the current problem of modern higher education by substantiating the concept, development and experimental verification of the effectiveness of training scientific and pedagogical staff for academic entrepreneurship in the university system of professional development. To achieve the research goal, we determined the tasks, the implementation of each of which forms the basis for the next task, since they are formulated based on “analysis of the level of development (study) of the object from the point of view of the set goal and the minimum of questions, the answers to which are necessary to achieve the goal” [3, p. 41]:

1) to study the state of research on the problem of training scientific and pedagogical staff of a modern university for academic entrepreneurship in the theory and practice of pedagogical science;

2) to substantiate the theoretical principles and methodological approaches to training scientific and pedagogical staff for academic entrepreneurship;

3) to define and characterise the essence and component structure of the scientific and pedagogical staff readiness for academic entrepreneurship, as well as to develop a diagnostic apparatus for measuring its formation;

4) to develop and substantiate the concept of training scientific and pedagogical staff for academic

entrepreneurship in the system of professional development of modern universities;

5) to identify the pedagogical conditions for training scientific and pedagogical staff for academic entrepreneurship and to substantiate the feasibility of their implementation;

6) to design a system of training scientific and pedagogical staff for academic entrepreneurship and to experimentally verify its effectiveness;

7) to develop and implement scientific and methodological support for the training of scientific and pedagogical staff for academic entrepreneurship in the professional development system of a modern university.

Taking into account the developed algorithm for achieving the research goal, we conditionally structured the research process into several stages. We characterise the successive stages of the study of the training of scientific and pedagogical staff of modern universities for academic entrepreneurship, the solution of the corresponding research tasks and the methods used in the study of pedagogical reality.

The first (search and design) stage involves the formulation of a scientific problem regarding the training of scientific and pedagogical staff for academic entrepreneurship. In this context, the researchers state, “the problem of scientific research is formulated based on the needs of modern educational practice. Therefore, solving the problem is the goal of the study. Based on theoretical analysis and studying the real state of the problem in practice, the researcher determines specific tasks. The definition of the research problem determines the choice of the object and subject of the study” [3, p. 41].

In our study, the hypothesis is formulated in the format of the assumption that the formation of the readiness of scientific and pedagogical staff for academic entrepreneurship in the system of professional development of a modern university will be effective if it is based on scientifically sound theoretical, methodological and methodological principles. Taking into account that “a scientific hypothesis is a precisely sound assumption that requires further theoretical and experimental verification (prediction of how the studied process or phenomenon will develop)” [2, p. 27], we specified the general hypothesis through several partial hypotheses.

The first (search and design) stage covers the development of a scientific and pedagogical research program. “A research program is a statement of its theoretical and methodological principles in accordance with the main purpose of the work and the hypothesis of the research, indicating the rules of

the procedure, as well as the logical sequence of operations for their verification” [4, p. 180]. Traditionally, the program of our research provides for several sections, including “theoretical (objectives of the task, subject and object of the research, definition of concepts); methodological (substantiation of the sample, substantiation of data collection methods, methods of data processing and analysis); organizational (research plan, procedure for studying units)” [9, p. 26], and also performs a number of functions: methodological (presentation of methodological approaches and prospects for considering the subject of research); methodical (presentation of the methods for conducting scientific research); epistemological (focus on obtaining new knowledge about the training of scientific and pedagogical staff for academic entrepreneurship); design (designing the research implementation process).

During the first stage of the research, the methodology is substantiated, which presents “a set of methods, techniques for conducting” the research, “a system of rules for using methods, techniques, and operations” [10, p. 74]; and also involves the use of primary research methods that allow for the search and collection of information; secondary research methods that are used to process and analyse quantitative and qualitative experimental data; as well as verification research methods that we use to verify the results obtained in the research process [10].

We agree with the statement that “any pedagogical research is carried out at the theoretical and empirical levels. Theoretical research involves operating with scientific concepts, categories, principles, formulating laws, axioms, etc. A researcher who possesses the appropriate theoretical concepts can more clearly see and study various pedagogical phenomena and processes, structural elements, including subjects of education” [2, p. 188]. In this context, the second (theoretical and conceptual) stage involves the development of theoretical and methodological foundations of the research, as well as the concept of scientific exploration dedicated to the study of the problem of training scientific and pedagogical staff for academic entrepreneurship in the university system of professional development. Actually, theoretical foundations in the scientific and methodological literature are interpreted as “basic theoretical rationales, based on which the researcher develops the theory of the problem under study” [9, p. 64]; “scientific facts from pedagogy and basic pedagogical branches of knowledge (philosophy, sociology, psychology, cybernetics), which are used

in planning research, combining its results into a single whole or interpreting them” [4, p. 177]. The study of scientific literature substantiates the necessity to base the research on the knowledge of philosophy, economics, public administration, psychology, sociology, and pedagogy.

The methodological foundations of the study, as the researchers argue, should be understood as “rationales based on which the theoretical premises of the planned study should be developed as a means of increasing the practical effectiveness of pedagogical processes and phenomena” [4, p. 173]; “a general strategy of cognition, a system of scientific principles, forms and methods of research that ensure the achievement of the final result” [5, p. 18]. They present “methodological principles (strategic guidelines) of the study of pedagogical phenomena”, as well as methodological approaches (tactical techniques)” [4, p. 149]. It is emphasised that “in essence, this is the basis of cognition and transformation of reality. Defining the methodology, the researcher states from which positions, approaches and principles he studies the problem” [9, p. 64]. Our study identifies the principles (objectivity, evidence, holistic study, essential analysis, unity of historical and logical, continuity, systematicity, personally oriented learning) and approaches (terminological, systemic, structural-functional, synergetic, personality and activity oriented), which are the origin for the study.

Based on the scientific analysis of theoretical and methodological principles, the author’s concept of training scientific and pedagogical staff for academic entrepreneurship in the professional development system of a modern university has been developed.

The third (diagnostic and technological) stage presents the work on the development of diagnostic tools (criteria: motivational-value, cognitive-informational, activity-operational, personal-reflective and their indicators), with the help of which the dynamics in the levels of formation of the readiness of scientific and pedagogical staff for academic entrepreneurship are measured through the prism of defined and characterised components (motivational, cognitive, activity, personal). At this stage, a pedagogical experiment is conducted, which is traditionally organised following the ascertaining and formative stages.

Throughout the fourth (analytical and final) stage of the scientific and pedagogical research, an analysis of the research and experimental data is performed using the appropriate method of mathematical statistics (processing of actual, experimental data on the formation of the readiness of scientific and pedagogical staff for academic entrepreneurship). Here we draw up the summaries and formulate conclusions regarding the research performed. Actually, the analysis of the experimentally obtained data is comparative in nature, based on which we interpret the content information and draw conclusions about the effectiveness of the proposed system of scientific and pedagogical staff training for academic entrepreneurship.

Conclusions and prospects for further research.

Thus, the research program is developed following the defined goal, and the implementation of research tasks is based on the application of a complex of theoretical and applied scientific methods. A clear definition of the goal and tasks is key in scientific and pedagogical research. The goal is considered as a generalised final result, and the tasks specify it following the subject of the study. The research algorithm is developed through sequential tasks, each of which creates the basis for solving the next one. This approach ensures the integrity and logical sequence of the research process. The stages of the research process are determined, including: search and design stage (formulation of the problem, tasks, development of the research program); theoretical and conceptual stage (development of theoretical and methodological foundations and the concept of training); diagnostic and technological stage (creation of a diagnostic apparatus, conducting a pedagogical experiment); analytical and final stage (processing and analysis of experimental data). The methodological foundations of the research are based on principles (objectivity, evidence, holistic study, essential analysis, unity of historical and logical, continuity, systematicity, personally oriented learning) and approaches (terminological, systemic, structural-functional, synergetic, personality and activity oriented). They provide the strategic and tactical direction of the research.

The prospects for further research include the organisation of a pedagogical experiment, the analysis of its results and their interpretation.

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