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Research competence as the basis of students' professional competence formation

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Abstract.
The purpose of the research is to investigate research competence as the basis of students' professional competence formation. The definition to the notion of research competence as a complex personal formation has been given. Analysis of a significant number of studies and publications with the focus on the study of theoretical foundations of students' scientific research activity organization, scientific research organizations, formation of readiness for scientific research activity has been done. Researchers' approaches to defining the essence of the concept "research competence" have been distinguished. The characteristics of research competence, which are generally recognized as common and mandatory, have been identified. Research competence is considered as an indicator of the quality of education and is characterized by future specialists' adaptation abilities to the conditions of multi-role research activity, including the ability to design and implement it, personal and professional self-realization, establishing interpersonal, business, professional, social connections and the ability to continue self-education.

Keywords:
research competence
personal formation
future specialists

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The current goals of modernization in the educational sector of Ukraine are aimed at the developing a national education system, which must meet the challenges of time and the needs of an individual who is able to realize oneself in a constantly changing society. In this regard, one of the most urgent tasks in the development of the education sector is to bring the content of education closer to science, creating an organic combination of research, educational and teaching activities in higher education.

Society today needs competent specialists who know how to think creatively, find original solutions and are ready for scientific and innovative activities. The question of the research competence development in students of higher education institutions is extremely relevant, and one of the main tasks of the future specialists' professional training is the development of readiness for scientific research, the formation of research behavior, mastering practical methods and technologies in a specific field, the ability to work in professional situations of uncertainty.

The purpose of the article is to reveal the essence of the concept of "research competence" and to define its main characteristics.

Analysis of psychological and pedagogical literature shows a significant number of studies and publications with the focus on the study of theoretical foundations of students' scientific research activity organization (B. Andrievskyi, E. Barbina, V. Slastionin, R. Shyshka, S. Winton, K. White), scientific research organizations (O. Dzezynskiy, O. Mykytiuk, N. Puzyryova), formation of readiness for scientific research activity (P. Gorkunenko, L. Sultanova, M. Evans, M. Tight), factors of success in students' scientific research work (L. Avdeyeva, V. Trush). At the same time, the conducted analysis gives grounds to state that the concept of research competence and its main characteristics remains debatable.

UNESCO publications interpret the concept of "competence" as a combination of knowledge, skills, values and attitudes applied in everyday life. According to Sectoral Standards of Higher Education, the Methodological Recommendations for the Development of Sectoral Standards of Higher Education, the

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competence approach includes knowledge how to act, as well the knowledge of how to be. It is a subject area in which an individual is well-versed and in which he/she shows readiness to perform activities [1].

Researchers have different approaches to defining the essence of the concept "research competence". In particular, L. Karpova interprets it as an integrated personal and professional quality that reflects the motivation for scientific research, the level of the research methodology mastering it in the practical plane, the formation of personally significant qualities [2].

Scientist P. Nechypurenko considers research competence as a complex personal formation, which can be characterized by the knowledge and skills necessary for the implementation and organization of research activities, a positive attitude towards it and awareness of its significance, regardless of whether it is carried out individually or in a team [3]. In general, Ukrainian scientists agree that research competence is an integrated characteristic of personality qualities, a productive block formed through experience, knowledge, skills, attitudes, behavioral reactions; it is a set of knowledge and skills necessary for planning, implementation and analysis of search activities.

Foreign researchers O. Zlatkin-Troitschanskaia, R. Shavelson, K. Kuhn, assess the state of research on the competencies measurement in higher education in the context of modern trends in international research in mathematics and natural sciences; they note that according to the results of AHELO (Evaluation of learning outcomes in higher education) competencies measuring in higher education is a complex and multidimensional task that poses major methodological problems [4].

According to researcher A. Vlok from the Department of Business Management of the South African University of Stellenbosch, competence refers to a complete block of requirements that must be fulfilled in a certain context. This includes competence in uncertain and unpredictable situations that require more than at skills acquired in the professional sphere. Thus, competencies should be considered as a combination of skills, knowledge and attitudes with

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models of personal competencies and as a way of their interaction to results' achievement. After a thorough review of the literature, the author comes to the conclusion that definitions of competence vary from abstract psychological constructs to direct observation of behavior, innovative and urgent [5].

The experts of the international commission of the Council of Europe "DeSeCo" (Definition and Selection of Competencies) define the concept "competence" as the ability to satisfy individual and social needs, to perform assigned tasks; they emphasize that its structure includes knowledge, cognitive and practical abilities and skills, attitudes, emotions, values, ethical norms, motivation [6]. M. Durmuşçelebi from Erciyes University, Turkey presents research competence as a component of research technology, statistics and evaluation and emphasizes that it is important to teach students research skills, problem solving, reflective thinking and critical thinking skills today within the framework of constructive education because the most important qualification of students who wish to continue postgraduate studies is research competence [7].

The Organization for Economic Co-operation and Development has identified a number of research competencies that are paramount for development in the twenty-first century and that will be key to solving the problems of reflective thinking, ethical and social impact, communication, adaptability and organization. Research competences as a component of University students' education are today's requirements in view of the modern society demands. Research competencies involve the contextualization of knowledge: the combination of educational experience with a realistic approach; development of thinking and problem solving; development of entrepreneurial inclinations by strengthening group work, creative thinking, effective communication, constant observation, experimentation, analysis of situations, development of innovative proposals. All these elements combined together with technological resources can provide higher education students with digital competence, verification and socialization of results as well as research competence [8].

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Today, the characteristics of research competence, which are generally recognized as common and mandatory for all specialists, have been quite clearly identified. The main characteristics of research competence include:

- Knowledge of research methods. Students must have basic knowledge about different research methods, their advantages and disadvantages. They should also know how to choose the most suitable method for a particular study and how to apply it correctly.
- Ability to think critically. Students must have the ability to think critically, analyze information, evaluate evidence, and reach objective conclusions. They should be able to ask questions, doubt and look for alternative solutions.
- Data collection and analysis skills. Students need data collection, organization and analysis skills; they should be able to find and evaluate sources of information, use different methods of data collection (surveys, observations, experiments, etc.) and be able to analyze these data using statistical tools.
- Planning and organizational skills. Students must have skills to organize and plan their work (to create a research plan, establish research goals and objectives, monitor their progress, etc.).
- Communication skills. Students must have the ability to communicate about the research results and conclusions clearly and comprehensibly, they should have skills in writing scientific articles, presenting results and conducting scientific reports.
- Ethical principles. Students must adhere to ethical norms and rules that are established for research activities. They must respect the rights of others, maintain confidentiality and ensure the safety of all research participants.

Research competence is the basis of the professional competence formation, the main task of a higher school is not only the training of target specialists for a certain field of activity, but also the development of the personality with the expansion of his/her professional and research competences.

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The level of research competence development is correlated with the variables of scientific competences, which are also known as scientific literacy and include logic, critical thinking and integration, changing symbols (for example, entering data into a table, converting a table into a diagram), creating a description and arguments, as well as communicating based on information, presenting the work results. Scientific literacy is a latent variable influencing research competence. Therefore, it is necessary to develop scientific literacy in parallel with the development of research competence, in order to use it more effectively in the development of scientific literacy of students. At the same time, students will also develop research competence through scientific literacy [9].

Research competence is considered as an indicator of the quality of education, it is worth talking about the mutually complementary personality qualities of a university graduate – the level of personality development and professional competence; it includes cognitive, communicative and creative readiness; mastery of different methods of analysis; conscious positive attitude towards future professional activity; understanding of development trends and regularities; stable and developing professionally significant personal qualities: responsibility, determination, etc. Research competence is characterized by future specialist's adaptation abilities to the conditions of multi-role research activity, including the ability to design and implement it, personal and professional self-realization, establishing interpersonal, business, professional, social connections and the ability to continue self-education. Thus, research competence includes three aspects: problematic and practical (adequate recognition and understanding of the situation, setting and implementation of goals, tasks and norms); semantic (understanding of the situation in a more general cultural context); value-based (the ability to adequately assess the situation, its goals, tasks and norms from the point of view of own and common values).

In conclusion, the analysis of scientific literature allows us to state that research competence is an integral personal quality, a complex personal formation that combines

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the knowledge, skills and experience of a researcher; it is characterized by motivation and valuable attitude to research activity; the formation of this competence is in the implementation and organization of research activities, a positive attitude towards it and an awareness of its significance, regardless of whether it is carried out individually or in a team.

The prospects for further scientific research are in the search for ways to increase the effectiveness of research skills formation, ways of integrating personal values, educational, research and professional qualities that determine the orientation of an individual to the implementation of pedagogical activities and professional tasks solution.

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