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## THE CONCEPTUAL AND TERMINOLOGICAL CHARACTERISTICS OF RESEARCH COMPETENCE

*In this article the conceptual and terminological characteristics of research competence are studied. Nowadays the reformation processes in New Ukrainian School focus on the formation of key competences to bring up a school graduator who is an integrated personality, patriot and innovator. With the appearance of competence approach in studying much interest is paid to the concept of competence.*

*The relevance of the study is caused by the Ukrainian interest to the process of development of education to bring up a school graduator who is willing to develop social ties and make progress in science and technology. It can be achieved both by gaining knowledge and through the development of analytical, creative and educational skills.*

*The aim of the study is to explore the conceptual and theoretical characteristics of research competence for better understanding of the activities teachers should provide in the lessons to develop skills needed to carry out scientific, innovative and research work in problem-solving approach. The object of research is the term "research competence". The subject of research is the conceptual and theoretical characteristics of research competence.*

*In the conducted research, the study of the conceptual and terminological characteristics of research competence is reflected. An analysis of previous research has been carried out, and the peculiarities of the use of the concept of research competence have been clarified in accordance with the field of application. According to the conducted analysis, the issues of conceptual and terminological use of the term "research competence" are underexplored and require further investigation. Concerning the development of research competence, special attention should be paid to its implementation in various educational institutions and establishments. Additionally, an algorithm for introducing research activities into school lessons should be developed. The outlined tasks involve implementing research activities in the school's educational process, not only in specially created educational institutions.*

**Key words:** *research work, research competence, research skills, the conceptual and terminological characteristics.*

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## КОНЦЕПТУАЛЬНІ ТА ТЕРМІНОЛОГІЧНІ ХАРАКТЕРИСТИКИ ДОСЛІДНИЦЬКОЇ КОМПЕТЕНТНОСТІ

*У цій статті вивчаються концептуальні та термінологічні характеристики дослідницької компетентності. На сучасному етапі реформування в Новій Українській Школі акцентується увага на формуванні ключових компетентностей для виховання випускника школи, який є інтегрованою особистістю, патріотом і інноватором. З появою підходу до навчання на основі компетентностей значна увага приділяється вивченню власне концепції компетентності.*

*Актуальність дослідження викликана українським інтересом до процесу розвитку освіти з метою виховання випускника школи, який готовий розвивати соціальні зв'язки і прогресувати в науці та техніці. Це може бути досягнуто як шляхом отримання знань, так і розвитком аналітичних, творчих та освітніх навичок.*

*Мета дослідження – вивчення концептуальних і теоретичних характеристик дослідницької компетентності для кращого розуміння діяльності, яку вчителі повинні забезпечувати на уроках для розвитку навичок, необхідних для проведення наукової, інноваційної та дослідницької роботи в підході до вирішення проблем. Об'єкт дослідження – термін «дослідницька компетентність». Предмет дослідження – концептуальні і теоретичні характеристики дослідницької компетентності.*

*У проведеному дослідженні відображено вивчення концептуальних і термінологічних характеристик дослідницької компетентності. Проведено аналіз попередніх досліджень, виявлено особливості використання концепції дослідницької компетентності відповідно до сфери застосування. Згідно з проведеним аналізом, питання концептуального та термінологічного використання терміну «дослідницька компетентність» є малодослідженим і вимагає подальших наукових пошуків. Щодо розвитку дослідницької компетентності, варто приділити*

особливу увагу її впровадженню в різноманітні освітні заклади. Додатково рекомендовано розробити алгоритм впровадження дослідницької діяльності на уроках в закладах загальної середньої освіти. Сформульовані завдання передбачають впровадження дослідницької діяльності в освітній процес школи, а не лише в позашкільних освітніх закладах.

**Ключові слова:** наукова робота, дослідницька компетентність, дослідницькі навички, концептуальні та термінологічні характеристики.

**Formulation of the problem.** Science and technology are steadily developing nowadays. Even in the time of war, we can observe the battles between steal machines and technological devices. All have changed due to the technological development and education is not an exception. We used to distinguish scientific and research work according to the school curricular, which means lessons last until the afternoon and post-school research activities organized after. There are many investigations in the field of research work, but the problem of formulation of one common definition is still looking for.

According to Cambridge Dictionary a word “research” is a noun which means “a detailed study of a subject, especially in order to discover (new) information or reach a (new) understanding” (Cambridge Dictionary).

In Merriam-Webster Dictionary the definition of the word “research” is given as: 1) studious inquiry or examination *especially*: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws;

2) the collecting of information about a particular subject;

3) careful or diligent search (Merriam-Webster Dictionary).

Collins dictionary gives the definition to the word “research” as “systematic investigation to establish facts or principles or to collect information on a subject” (Collins dictionary).

Having analyzed the definitions given in the dictionaries, we can make a conclusion that the word «research» means collecting information on a subject, revision and analysis of facts and theories, putting forward the hypothesis and their practical implementation.

Nowadays the reformation processes in New Ukrainian School focus on the formation of key competences to bring up a school graduator who is an integrated personality, patriot and innovator. With the appearance of competence approach in studying much interest is paid to the concept of competence. Cambridge Dictionary gives a narrow definition to the word “competence” such as “the ability to do something well”. In Merriam-Webster Dictionary we find wider meaning of the “competence”:

1. The quality or state of being competent such as:

a) the quality or state of having sufficient knowledge, judgment, skill, or strength (as for a particular duty or in a particular respect);

b) the knowledge that enables a person to speak and understand a language.

2. A sufficiency of means for the necessities and conveniences of life (Merriam-Webster Dictionary).

The main synonyms to the concept of competence that are defined in both dictionaries are ability, competency, capacity and capability.

Dictionaries give us the terminological characteristics of terms “research” and “competence” in general, while the conceptual meaning has to be explained more detailed according to the sphere of activity.

**Analysis of recent researches.** The concept of competence was investigated by many foreign scientists among whom are: R. Bader, D. Mertence, B. Oskarson, A. Shelten, F. Vainert. Among the Ukrainian scientists are: I. Bekh, O. Pometun, L. Vashchenko V. Verbitskiy, and others.

Frants Vainert, a German pedagogical psychologist, at the beginning of his investigations referred to the Noam’s Chomski’s model of competence, which was defined as “competence – action”. In this case, competence is understood as a common ability to use language. Vainert confirmed that action depends on the concept and individual experience and studying. He found the Noam’s Chomski’s model of competence isn’t applicable for education. Frants identifies the following characteristics of action as: universal problem-solving ability; critical thinking skills; mainly common and mainly specific knowledge; realistic and positive attitude towards one’s abilities; social competencies. Frants Vainert gave such definition: “Competencies manifested in actual behavior include cognitive abilities and skills of an individual to solve specific types of problems, abilities and skills that an individual can acquire or master through learning, as well as related motivational, volitional, and social abilities that enable their use for successful and responsible problem-solving in variable situations” (Petrenko, 2013: 67).

Hutsan L. A. in his article “Competency-Based Approach in Modern Education” investigated the approach to competency in such countries as Germany, Austria, Netherlands, Belgium, Finland and

Scotland. He came to the conclusion that certain skills are considered common for all countries. These include abilities necessary for real-life activities such as professional skills, the application of knowledge, information searching, knowledge renewal, and permanent learning. Other essential skills include self-education, social and communicative abilities, effective communication, problem-solving, conflict resolution, teamwork, and a sense of responsibility, among others. Hutsan emphasizes that the development and improvement of creative thinking will enable students to cultivate skills in finding effective solutions to any problems, achieve desired outcomes and self-realization (Hutsan, 2013: 54).

Verbytskyi V. V. considers that research activity serves as a form of organizing the educational process, being motivated, self-organized in scientific investigation and personal engagement, aimed at acquiring new knowledge. Simultaneously, the purpose of research activity is not only the final result but also the process itself, during which students' research abilities develop, and research competence is formed (Verbytskyi, 2012: 45).

Holovan M. S. emphasizes that the research competence involves proficiency in understanding the most relevant research directions in theoretical and experimental sciences; knowledge of a foreign language (mainly English) in the field of professional and interpersonal communication; understanding philosophical concepts in the chosen field of scientific activity; mastery of the methodology of the scientific discipline (field), knowledge of its regularities, and readiness to apply this knowledge in practical activities; the ability to set up the researched problem, purpose, object, subject, working hypothesis, research tasks, and to plan experiments; understanding of the fundamental methodological principles of scientific research and their practical application; proficiency in research methods (surveying, testing, modeling, observation, etc.); the ability to theoretically justify and experimentally test a formulated idea within the scope of the investigated problem; the ability to analyze the results of one's scientific research, draw necessary conclusions (conduct methodological reflection); activity, responsibility, and personal involvement in organizing of any experiment; the ability to engage in scientific discussion, articulate and defend one's point of view coherently; the ability to analyze scientific experiment data using methods of mathematical statistics and computer technologies; the ability to prepare a publication or presentation based on the results of one's scientific work (Holovan, 2012: 60).

Speaking about research competence it's very important to distinguish such concept as "research skills". Almost all scientists tell about the special ability of students who can provide research work. Lykhodieieva H. V. separates "educational research skills". She says that educational research skills are developed through relevant activities organized by the teacher in the context of developmental learning as a holistic system. The scientist considers "developmental learning" as the educational process in which, alongside the formation of specific knowledge, a special attention is given to the process of intellectual development of individuals and it is aimed at forming their knowledge and skills as a holistic system (Lykhodieieva: 2007: 93).

Svitlana Budnik undestends "research skills" as a set of intellectual and practical actions that defines the readiness of an individual to perform cognitive and practical activities corresponding to research, using knowledge and life experience, understanding the purpose, conditions, and means of activity in studying processes, facts, and phenomena (Budnik, 2013: 131).

Vashulenko M. and Dubovyk S. in their article "The formation of research competence at the lessons of Ukrainian language" determine "research skills" as a set of intellectual and practical actions that ensures the individual's ability for independent observation, generalization, and analysis of processes and phenomena in reality; for acquiring new knowledge and applying it in accordance with the goals of research activities (Vashulenko, 2019: 3)

Having analyzed the recent researches on the conceptual and terminological characteristics of research competence, we came to the conclusion that the term "research competence" includes the abilities and skills people need to conduct an action of investigation.

**Goal setting.** The relevance of the study is caused by the Ukrainian interest to the process of development of education to bring up a school graduator who is willing to develop social ties and make progress in science and technology. It can be achieved both by gaining knowledge and through the development of analytical, creative and educational skills.

The aim of the study is to explore the conceptual and theoretical characteristics of research competence for better understanding of the activities teachers should provide in the lessons to develop skills needed to carry out scientific, innovative and research work in problem-solving approach. The object of research is the term "research competence". The subject of research is the conceptual and theoretical characteristics of research competence.

**The main material of the article.** In the time of modern challenges such as Covid 19 and Russian – Ukrainian War the wide interest is paid to the development of science and technology to renew Ukrainian economy and build new public institutions. All these might be provided by the new approaches to the school curriculum and studying processes at school. The implementation of research activities is mainly realized in professional colleges, private or state after-school institution, but less attention is drawn to the providing of research activities at schools. School is used to be presented as a place where students can gain their knowledge for further using in professional or high educational institutions. With the reformation of New Ukrainian School we still don't pay enough attention to the necessary changes teachers should do to the school activities and lesson procedure. On the other side, there are a lot of activities organized by teachers in the lesson that is not considered as such due which the research competence is developed. Students are asked to look for and find information, analyze, distinguish, compare, find conclusions, etc. In our opinion, the main problem of little attention to the development of research competence at school is in misunderstanding of its conceptual and theoretical meanings. The definitions to the term aren't too complicated in one hand, but they do not give the ways of realization in the lesson in the other hand. The research competence should be considered according to the next features: educational institutions, the sphere of development, place, skills and resources needed. For instance:

Looking at the table it can be concluded that there are not many differences in the conceptual meaning of research competence according to the sphere of its implementation. However, more detailed analysis show that:

In the after-school educational institution "research competence" is considered as the set of activities applied in socio-humanitarian, natural-mathematical, technical-technological science branches. Research work is conducted in after-school meetings and classes or at special places such as laboratories or libraries. It requires using more complicated research skills and resources.

In school "research competence" can be considered as such that is developed during the lesson. It is extended on school subjects, so it varies according to the activities in the lesson. Here "research competence" requires the formation of definite skills for further science work. School is limited in using special equipment or labs, which makes the research work restricted.

Speaking about the conceptual and terminological meaning of research work, we understand "research competence" as some varied individual, pair or group activities in the lesson aimed to problem solving, searching for and analyzing information with using a creative approach for an educational product submission in the end.

**Conclusions and prospects for further research.** In the conducted research, the study of the conceptual and terminological characteristics of research compe-

Table 1

**The research competence in after-school educational institution and school**

<b>Educational institutions</b>	<b>The sphere of development</b>	<b>Place</b>	<b>Skills</b>	<b>Resources</b>
After-school educational institution	socio-humanitarian, natural-mathematical, technical-technological	after-school meetings or classes, libraries	the skills of searching information, setting aims, tasks, objects and subjects, analysis, comparison, systematization, conducting of the empirical studies; the skills of using special equipment in the labs; the skills of planning and organization of work; the skills of critical and creative thinking	laboratories, internet-resources, special machines and gadgets for calculating information and experiments
School	School subjects	lesson, additional individual meetings	the skills of searching information, setting aims, tasks, objects and subjects, analysis, comparison, systematization; the skills of using special lab-equipment during the experiment in the classroom; the skills of working in pairs and groups; the skills of critical and creative thinking	books, text-books, internet-resources, gadgets, lab-equipment

tence is reflected. An analysis of previous research has been carried out, and the peculiarities of the use of the concept of research competence have been clarified in accordance with the field of application. According to the conducted analysis, the issues of conceptual and terminological use of the term “research competence” are underexplored and require further investigation. Concerning the development of research competence, special attention should be paid to its implementation in various educational institutions and establishments. Additionally, an algorithm for introducing research

activities into school lessons should be developed. The outlined tasks involve implementing research activities in the school’s educational process, not only in specially created educational institutions. This will provide students with necessary research skills, preparing innovative professionals for the advancement of the country’s scientific sphere.

The perspective of further research we see in a detailed studying, focusing on the exploration of the issue of developing research competence in school lessons.

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