

UDC [51:371.32]:378.147

O. A. Zhernovnykova, O. O. Nalyvaiko, N. A. Chornous

## INTELLECTUAL COMPETENCE: ESSENCE, COMPONENTS, LEVELS OF FORMATION

© Zhernovnykova O. A., 2017

<http://orcid.org/0000-0001-8905-6323>

© Nalyvaiko O. O., 2017

<http://orcid.org/0000-0002-7094-1047>

© Chornous N. A., 2017

<http://orcid.org/0000-0001-7622-0411>

*The article reveals the essence of the concept of «intelligence» and «intellectual competence», grounded components of formation of intellectual competence and determine the levels of its formation. The authors on the basis of the analysis of scientific literature, determined that intellectual competence covers all elements of the content of education: general educational skills, meta-knowledge, over-subject activities. Intellectual competence is the basis of the individual style of cognitive activity of students, which underlies their future professional functioning. Attention is focused on the fact that intellectual competence is the basic and fundamental for the formation of the rest of the competence, under which the authors understand the ability to master the methods of active cognitive processes in the comprehension, application, analysis, generalization, evaluation and synthesis of information. As a result of the work, carried out, the structure of intellectual competence, which consists of motivational-value, cognitive, met cognitive, self-educational, research, communicative and personal components. The described components of intellectual competence helped us determine the levels of the formation of intellectual competence of future specialists: high, average and low. High level of students intellectual competence provides the ability of a creative approach to solving intellectual problems and analysis of the results. Average level is characterized by students understanding the meaning, of importance of their intellectual activity, have the ability to understand the purpose of activity. The low level of intellectual competence of students is characterized by a lack of understanding of the importance and value of intellectual competence, demonstrate fickle interest in solving intellectual problems, impossibility of realizing the goal of their intellectual activity, have difficulties in analyzing own intellectual activity.*

**Key words:** intellect, intellectual competence, components, levels, student, university, educational process.

***Жерновникова О. А., Наливайко О. О., Чорноус Н. А. Интеллектуальная компетентность: суть, компоненты, уровни сформованості***

У статті розкрито суть поняття «інтелект» і «інтеллектуальна компетентність», обґрунтовані компоненти формування інтеллектуальної компетентності та визначено рівні її формування. Авторами на основі аналізу наукової літератури визначено, що інтеллектуальна компетентність охоплює всі елементи змісту освіти: загально-навчальних вмінь та навички, метазнання і надпредметні види діяльності. Интеллектуальна компетентність є основою індивідуального стилю пізнавальної діяльності студентів, що лежить в основі їх майбутнього професійного функціонування. В результаті проведеної роботи, обґрунтовано структуру інтеллектуальної компетентності, яка складається з мотиваційно-ціннісного, когнітивного, метакогнітивного, самоосвітнього, дослідницького, комунікативного та особистісного компонентів. На основі виокремлених компонентів визначено рівні сформованості інтеллектуальної компетентності майбутніх фахівців: високий, середній та низький. Високий рівень сформованої інтеллектуальної компетентності передбачає прояв здатності студента творчо підходити до вирішення інтеллектуальних завдань і аналізу отриманих результатів. Середній рівень характеризується розумінням студентами значення, важливості своєї інтеллектуальної діяльності, здатності усвідомлювати мету цієї діяльності. Низький рівень розвитку інтеллектуальної компетентності у студентів характеризується відсутністю розуміння значущості й цінності інтеллектуальної компетентності, при формуванні якої переважає невміння творчо підходити до вирішення поставлених завдань, відсутні необхідні вмінь або виникають труднощі з аналізом власної інтеллектуальної діяльності.

**Ключові слова:** інтелект, інтеллектуальна компетентність, компоненти, рівні, студент, ВНЗ, навчально-виховний процес.

***Жерновникова О. А., Наливайко А. А., Чорноус Н. А. Интеллектуальная компетентность: суть, компоненты, уровни сформированности***

В статье раскрыта суть понятия «интеллект» и «интеллектуальная компетентность», обоснованы компоненты формирования интеллектуальной компетентности и определены уровни ее формирования. Авторами на основе анализа научной литературы определено, что интеллектуальная компетентность охватывает все элементы содержания образования: общеучебных умения и навыки, метазнания и надпредметные виды деятельности. Интеллектуальная компетентность является основой индивидуального стиля познавательной деятельности студентов, лежит в основе их будущего профессионального функционирования. В результате проведенной работы, обоснована структура интеллектуальной компетентности, которая состоит из мотивационно-ценностного, когнитивного, метакогнитивного, самообразовательного, исследовательского, коммуникативного и личностного компонентов. На основе выделенных

*компонентов определены уровни сформированности интеллектуальной компетентности будущих специалистов: высокий, средний и низкий. Высокий уровень сложившейся интеллектуальной компетентности предполагает проявление способности студента творчески подходить к решению интеллектуальных задач и анализа полученных результатов. Средний уровень характеризуется пониманием студентами значения, важности своей интеллектуальной деятельности, способности осознавать цель этой деятельности. Низкий уровень развития интеллектуальной компетентности студентов характеризуется отсутствием понимания значимости и ценности интеллектуальной компетентности, при формировании которой преобладает неумение творчески подходить к решению поставленных задач, отсутствуют необходимые умения или возникают трудности с анализом собственной интеллектуальной деятельности.*

**Ключевые слова:** *интеллект, интеллектуальная компетентность, компоненты, уровне, студент, вузов, учебно-воспитательный процесс.*

## **Introduction**

In connection with the latest changes in the political, economic and social spheres, the importance of the professions that ensure the innovative development of our country has increased. There is a high demand for specialists, whose professional activity is actively demanded intellectual labor component. The intellectual competence of a specialist directly determines his competitiveness in the professional sphere, his willingness to use his intellectual potential for the benefit future of his country. The training of future specialists is carried out at different educational levels in the system of higher education. And the result of this training should be the person himself who has been trained in a certain educational system. Students also need the ability to work productively with the received information (to receive, understand, apply, evaluate, store, interpret, synthesize), to identify problems and find effective and reasonable ways to solve them.

**The analysis of recent researches and publications.** At present time the theory and practice of pedagogical education has accumulated significant scientific developments that may serve as the basis for the formation of intellectual competence: provisions developed in the field of general and educational psychology, psychology of intelligence (B. Anan'ev, A. Bine, D. Veksler, L. Vygotskij, I. Gavrish, Dzh. Gilford, V. Davydov, Dzh. Kelli, A. Leont'ev, A. Maslou, R. Nemov, Zh. Piazhe, S. Rubinshtejn, R. Sternberg, N. Talyzina); the ideas of development of students' intelligence (L. Vygotskij, M. Gromkova, A. Zak, G. Suhobskaja); research of the interdependence of intellectual and personal development of students in the

educational process (K. Abul'hanova-Slavskaja, B. Anan'ev, M. Holodnaja); competence approach (N. Almazova, V. Grineva, I. Zimnjaja, O. Lebedev, E. Pometun, A. Hutorskoj); studies on intellectual competence (O. Beresteneva, I. Zimnjaja, N. Kozlova, L. Sivickaja, D. Hapt, M. Holodnaja, A. Hutorskoj).

The study of the problem of the formation of intellectual competence of future specialists in the educational process of the higher educational institution continues has been going on for a long time, but the question of substantiating the components and levels of the formation of intellectual competence remains in our opinion insufficiently disclosed with respect to the concepts «intellect» and «intellectual competence».

**The aim of the article** is to determine the essence of the concepts «intellect» and «intellectual competence», to justify the components of the formation of intellectual competence and determine the levels of their formation.

**Presenting the main study material.** The question of intellectual development and intellect for a long time are relevant in the scientific community. The theoretical foundations of the problem of intellect and intellectual development of personality were revealed in the fundamental works of foreign researchers A. Bine, Dzh. Gilforda, Zh. Godfrua, Zh. Piazhe, Ch. Spirmena and others. Researchers have considerable difficulties, when they are trying to interpret the concept of «intellect». The journal «Psychology of Learning» in 1921, organized the discussion by offering to attend the eminent American researchers in the field of psychology. Each of them was asked to explain the term «intelligence» and describe the way in which they think will be more accurate and correct measurement of intelligence. The best way to measure intelligence by almost all scientists was recognized as a method of testing, and their definitions of intelligence were absolutely contradictory. The lack of a common opinion in the definitions of intelligence can be related with the variety of manifestations of this phenomenon.

However, for all these opinions, one is characteristic, which makes it possible to distinguish between manifestations of the intellect and other features of behavior, or rather activate in every intellectual act of imagination, thinking or memory –all the mental functions that contribute to the knowledge of the surrounding world [1, p. 73].

We, in turn, share the point of view of D. Veksler, who argued that intelligence is a global ability to act within the framework of reasonable, thoughtful thinking and deliberately resisting life's difficulties [12, p. 375].

The paradigm of education based on competences is the result of overcoming the contradiction between academic knowledge acquired in universities and the effectiveness of their application in practice. In other words, there was a real need for continuous evaluation of the results of the educational process and the professional training of future specialists [5, p. 229].

Prerequisites for studies of intellectual competence experts believe insufficient transparency of tests of psychometric intelligence in relation to professional achievements of students; new data on the significance of met cognitive abilities and strategies in cognitive activity and learning; as well as the processes of democratization of education, which are necessary for continuing education and at the same time reducing the role of psychometric intelligence through the introduction of new technologies for the assimilation of knowledge [5, p. 230].

In addition, recent changes in the political, economic and social spheres contributed to the increase in the importance of professions that ensure the innovative development of our country. This explains the fact that the need for the person that owns the intellectual competence increases every year. Now modern society have capabilities to improve their knowledge, skills and abilities and rise the quality of life with all new technologies that have the necessary information and characterized by integrity, rapid development in time and active interaction with the external environment.

All this contributes to the fact that the share of intellectual activity in the professional and social life of the individual acquires a more pronounced form and plays a significant role in human activity. Many researchers turn to the definition of intellectual competence. Among them I. Zimnjaja and O. Yarygin, who highlight intellectual competence as a special kind of competence. M. Holodnaja defines this competence as "a special type of knowledge organization that ensures the possibility of making effective decisions in a specific subject area of activity" [10, p. 53]. In the works of A. Lobanov, intellectual competence is opposed to individual intellectual activity of a person. The author believes that this is a narrow area of research that directly ensures the effectiveness of the individual in the sphere of his professional achievements. Intellectual competence implies reflection, awareness of the possibilities of one's own intellect and that part of it that ensures the solution of professional problems [5, p. 231].



Under intellectual competence V. Ivanova, D. Korzinkova, N. Shumskaja understand meta-ability, which determines the extent to which a subject learns a particular subject area, and which is characterized by a special type of organization of subject knowledge and effective strategies used to make decisions in the given subject area.

Intellectual competence, in the opinion of these authors, consists of intellect itself and perceptive-analytical abilities. These abilities are divided into: general level of erudition and ability to collect information, process information; verbal-logical thinking, it includes the ability to abstract and find patterns; visual-active thinking, implying the ability to find a solution to practical problems and conceptual flexibility.

In her definition of intellectual competence, Ju. Kostrova emphasizes not only on intellectual abilities, but also on creativity and abilities for self-education and upbringing. The author sees the manifestations of intellectual competence «in the ability to act and think systematically, carry out qualitative analysis and quickly respond to changing conditions, make responsible decisions, conduct self-analysis, abilities for self-education and self-improvement» [4, p. 175].

G. Sagdeeva considers intellectual competence as a meta-quality [9, p. 6].

After analyzing the presented definitions, we propose to consider intellectual competence as the basic and fundamental for other competencies, under which we mean the ability to master the methods of active cognitive processes in understanding, applying, analyzing, generalizing, evaluating and synthesizing information, which makes it possible to effectively solve professional problems of different levels of complexity, using personal qualities on the basis of individual experience with the goal of achieving a result in a specific subject area.

The proposed definition allows us to conclude that intellectual competence covers all elements of the content of education: general educational skills, knowledge, and over-subject activities. This competence is basis on the individual style of cognitive activity of students, which underlies their future professional functioning [2; 3; 8; 13].

Various researchers of the phenomenon of «intellectual competence» suggest to designate this term a set of some complex and integrative skills that determine the structure of the described competence.

Thus, in the study of G. Sagdeeva, we find the following components of intellectual competence:

- motivational (readiness for development, motives for training in a university);
  - cognitive (totality of knowledge necessary for the student in the process of personal and professional development);
  - meta-cognitive (abilities and skills of self-organization and self-management)
- [9, p. 41].

O. Jarygin offers a different interpretation of the components of intellectual competence. As part of intellectual competence, this researcher identifies: language component – it means the building of productive communication and the transfer of knowledge, the ordering of thought processes, the production of new concepts and the self-development of the language; inductive component – it refers searching activity in solving problems; deductive component – the search for evidence in order to confirm the hypothesis put forward; algorithmic component – the classification of knowledge of their modeling, the creation of algorithmic constructs, the implementation of algorithmic analysis [11, p. 382].

According to E. Marchuk, the component composition of intellectual competence is a combination of such components as: motivational, including awareness of the purpose of intellectual activity; operational - the ability to analyze and creatively solve intellectual problems; appraisal - the ability to recognize, control and correct their intellectual activity [6, p. 15].

We are close to the position of N. Goncharuka and E. Hromova in the definition of the components that constitute the basis of intellectual competence. They argue, that intellectual competence includes along with operational and procedural components, as well as motivational-value and motivational-target components.

Thus, according to the authors, the structure of intellectual competence includes the following components: motivational-value, cognitive, meta-cognitive, communicative, self-educational and research [7, p. 300].

The described components of intellectual competence helped us determine the levels of the formation of intellectual competence. We will distinguish three levels: high, average and low. We will characterize the proposed levels.

High level provides a conscious understanding of the student's significance, value, and intellectual activity; awareness of its purpose. Students demonstrate an increased interest in solving intellectual problems. They are characterized by expression of the ability of a creative approach to solving intellectual problems and

analysis of the results. Students are able to independently monitor, understand and adjust their intellectual activities.

Average level is characterized by students understanding the meaning, of importance of their intellectual activity, have the ability to understand the purpose of activity. Learners demonstrate the existence of interest in solving intellectual problems; they are able to approach creatively to the solution and analysis of intellectual tasks; students demonstrate the ability to control, understand and adjust their intellectual activities.

The low level of intellectual competence of students is characterized by a lack of understanding of the importance and value of intellectual competence. Learners demonstrate fickle interest in solving intellectual problems, for them most often characterized by the impossibility of realizing the goal of his intellectual activity, there is an inability to creatively approach the solution of tasks, there are no necessary skills or difficulties arise in analyzing own intellectual activity.

**Conclusions.** To identify the phenomenon of intellectual competence, we considered such concepts as «intellect» and «intellectual competence». Intellectual competence - basic and fundamental for the other competence, under which we mean the ability to master the methods of active cognitive processes in understanding, applying, analyzing, generalizing, evaluating and synthesizing information, which makes it possible to effectively solve professional problems of different levels of complexity, using personal qualities on the basis of individual experience with the goal of achieving a result in a specific subject area.

Structurally intellectual competence is represented by motivational-value, cognitive, meta-cognitive, self-educational, research, communicative and personal components. The described components of intellectual competence helped us to determine the levels of the formation of intellectual competence: high, average and low.

In the future, we plan to implement in the educational process the technology of forming intellectual competence of students when they study the discipline «Pedagogy» and «Statistical methods of pedagogical research», as well carry out a comparative analysis of the formation of intellectual skills in students in the study of these disciplines.



### Литература

1. Бирюкова А. Интеллект как основа развития личности: понятия и определения интеллекта. Аналитика культурологи. М., 2009. № 14. С. 73–75.
2. Гриньова В. М. Професійна компетентність учителя: суть, структура, умови формування: навчальний посібник. Харків, 2011. 109 с.
3. Жерновникова О. А. Особенности подготовки студентов педагогических ВУЗ до профессиональной деятельности в гимназиях и лицеях. Педагогика формирования творческой личности в высшей и общеобразовательной школах: сб. науч. работ. Запорожжя, 2014. Вип. 36 (89). С. 549–555.
4. Кострова Ю. С. Формирование интеллектуальной компетентности студентов. *European Social Science: Европейский журнал Европейских наук*. 2011. № 6.
5. Лобанов А. П. Интеллектуальная компетентность в структуре профессиональной подготовки психологов. *Журнал ГрГМУ*. 2009. № 2 (26). С. 227–232.
6. Марчук Е. Г. К вопросу о педагогических подходах к понятию «Интеллектуальная компетентность» *Изв. Саратов. ун-та. Нов. сер. Сер. Акмеология образования. Психология развития*. Саратов, 2012. № 3.
7. Морозова Т. Ю. Анализ дефиниций компетентностного подхода щодо освіти. *Освіта Донбасу: сб. науч. работ*. 2005. № 3. С. 5–11.
8. Пометун О. Компетентнісний підхід – найважливіший орієнтир сучасної освіти. *Рідна школа*. 2005. № 1. С. 65–69.
9. Сагдеева Г. С. Развитие интеллектуальной компетентности будущих специалистов: автореф. дис. ... канд. пед. наук: 13.00.08. Казань, 2013. 20 с.
10. Холодная М. А. Психология интеллекта. Парадоксы исследования. 2-е изд., перераб. и доп. СПб, 2002. 272 с.
11. Ярыгин О. Н. Модель интеллектуальной компетентности как обобщение модели творческой деятельности. *Вектор науки ТГУ: сб. науч. трудов*. 2013. № 1 (23) С. 382–387.
12. Wechsler J. D., Matarazzo, J. D. Wechsler's Measurement and Appraisal of Adult Intelligence. Williams & Wilkins, 1972. 572 p.
13. Zhernovnykova O.A. Peculiarities of preparing students-mathematicians for working in new types of educational establishments. *Nauka i studia. Przemysl*, 2014. NR 15 (125). P. 103–110.

## References

1. Biryukova A. Intellect kak osnova razvitiya lichnosti: ponyatiya i opredeleniya intellekta. Analitika kulturologi. Moskva, 2009. № 14. pp. 73–75.
2. Hrynova V.M. Profesiina kompetentnist uchytelia: sut, struktura, umovy formuvannia: Navchalnyi posibnyk. Kharkiv, 2011. 109 p.
3. Zhernovnykova O.A. Osoblyvosti pidhotovky studentiv pedahohichnykh VNZ do profesiinoi diialnosti u himnaziakh ta litseiakh. Pedahohika formuvannia tvorchoi osobystosti u vyshchii i zahalnoosvitnii shkolakh: zb. nauk. prats. Zaporizhzhia 2014. Vyp. 36 (89). pp. 549–555.
4. Kostrova Yu.S. Formirovanie intellektualnoy kompetentnosti studentov. European Social Science: Evropeyskiy zhurnal Evropeyskih nauk. 2011. № 6.
5. Lobanov A. P. Intellektualnaya kompetentnost v strukture professionalnoy podgotovki psihologov. Zhurnal GrGMU. 2009. № 2 (26). pp. 227–232.
6. Marchuk E. G. K voprosu o pedagogicheskikh podhodah k ponyatiyu «Intellektualnaya kompetentnost» Izv. Sarat. un-ta Nov. ser. Ser. Akmeologiya obrazovaniya. Psihologiya razvitiya. Saratov, 2012. № 3.
7. Morozova T. Yu. Analiz definitsii kompetentnissnoho pidkhodu shchodo osvity. Osvita Donbasu: zb. nauk. prats. 2005. № 3. p. 5–11.
8. Pometun O. Kompetentnisnyi pidkhid – naivazhlyvishyi oriientyr suchasnoi osvity. Ridna shkola. 2005. № 1. p. 65–69.
9. Sagdeeva G. S. Razvitie intellektualnoy kompetentnosti buduschih spetsialistov: avtoref. dis. ... kand. ped. nauk: 13.00.08. Kazan, 2013. 20 p.
10. Holodnaya M. A. Psihologiya intellekta. Paradoksyi issledovaniya. 2-e izd., pererab. i dop. SPb, 2002. 272 p.
11. Yaryigin O. N. Model intellektualnoy kompetentnosti kak obobschenie modeli tvorcheskoy deyatel'nosti. Vektor nauki TGU: sb. nauch. trudov. 2013. № 1 (23) pp. 382–387.
12. Wechsler J. D., Matarazzo, J. D. Wechsler's Measurement and Appraisal of Adult Intelligence. Williams & Wilkins, 1972. 572 p.
13. Zhernovnykova O.A. Peculiarities of preparing students-mathematicians for working in new types of educational establishments. Nauka i studia. Przemysl, 2014. NR 15 (125). P. 103–110.