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# Structural-functional analysis of future mining engineers readiness for professional activity

**Bondarenko Olha**

*Candidate of pedagogic sciences, associate professor  
State Higher Educational Institution  
Kryvyi Rih National University*

**Mantulenko Svitlana**

*Candidate of pedagogic sciences, senior teacher  
State Higher Educational Institution  
Kryvyi Rih National University*

### Abstract

In the article, components of readiness of future mining engineers for professional activity are characterized; their contents and functions are investigated on the basis of theoretical generalization of scientific literature.

Key words: MINING ENGINEER, READINESS, READINESS OF FUTURE MINING ENGINEERS FOR PROFESSIONAL ACTIVITY, READINESS STRUCTURE

Relevance of research is defined by a wide problem field, which can be presented in the form of contradictions between public requirements to training quality of mining engineers and the actual level of technical HEI graduates readiness for performance of socially induced professional functions.

The certain aspects of the investigated problem were covered in scientific works with technical training of mining engineers. For example, the role of natural sciences in technical training of future miners is covered by N. Komarova, formation of communicative competence is investigated by Z. Bakum,

O. Goroshkina, S. Khotskina [1]; the use of geoinformation technologies during formation of ecological competence of future mining experts is reflected in S. Grishchenko's works [3].

The purpose of this article consists in implementation of the structural-functional analysis of readiness of future mining engineers for professional activity.

Considering the specifics of mining engineer activity and the requirements to the personality of technical HEI graduate, we consider readiness of future mining engineers for professional activity from the position of system approach. Within this approach, by readiness is meant a state of personality, which is constantly transformed in the course of transition from one stage of formation to another one, and can turn into readiness-quality when providing the corresponding conditions; complex quality of personality, which formation is predetermined by external and internal factors; and also complex personal education, which consists of a professional orientation, necessary professional qualities of personality, set of knowledge, abilities, skills, and also an evaluation, self-evaluation and a reflection of labour results. Besides that, the investigated phenomenon is a system with complex structure, which characterizes readiness from a semantic standpoint, and reflects the process of its formation [2].

From our standpoint, the structural-functional analysis, which provides the opportunity to investigate the social phenomena and processes as complete structure where each component has a certain functional purpose, is the most reasonable for identification of components of investigated readiness structure.

The structure of personal education consists of the following components: purpose-motivational, which carries out motivation function; semantic and operational, that carries out information and translator functions; emotional-volitional, which carries out orientation and regulatory functions; evaluative-reflexive, which carries out expert function.

The leading component of the investigated readiness is the purpose-motivational component, which is based on professional direction and predetermines formation of all other components.

This component includes motives, interests, requirements, that are all the internal motivations of the personality; this provides introduction of future mining engineer to the professional activity. Therefore, future mining engineer, who is ready to professional activity, must have positive attitude to the implementation of professional activity, realize the social importance of the profession, be positive-minded to

functions fulfillment, have developed professional direction. The semantic and operational component, which displays the available level of theoretical knowledge, skills necessary for effective implementation of professional activity by future miner is not less significant in structure of readiness of future mining engineers for professional activity.

Future mining engineer, who is ready for professional activity, must know the following: fundamental principles of adjusting and regulatory documents, which define the content of mining operations; rules of documentation maintenance; mining technology and service instructions of the corresponding equipment; principles of industrial production and national labor legislation; safety instructions and so forth.

It is well-known that professionally important knowledge is the cornerstone of professional abilities. The students, who have good theoretical background, are not able to put it into practice very often. The mastering level of professional knowledge system can be high; however, it is not a sign of professional qualification itself [2]. Such signs are the following: abilities to compare knowledge with the purposes, conditions and ways of professional activity, to implement the available system of knowledge in practical professional activity.

Operational compound of the considered component of readiness provides for ability to develop and improve technological passports on carrying out of mining operations and to prepare necessary engineering and design documentation; to participate in drawing-up of development plans of mining operations, introduction of new equipment and advanced technology, and to make suggestions concerning improvement of the production technology; to carry out experimental and industrial tests of new equipment and technology; to control the mining operations according to the approved technological schemes and projects; to check existence and correspondence of technical documentation to the actual mining-and-geological conditions, requirements of rules and norms of labor protection; to keep the documents, records and so forth.

The emotional-volitional component is not less important in structure of the investigated readiness. It provides the formation of certain professionally important qualities of the personality at future mining engineers; by important qualities is meant those traits, which influence the efficiency of professional activity and success of its implementation. This component carries out orientation and regulatory function, reflecting potential opportunities of the personality of future mining engineer and his psychological read-

iness for professional activity. G. Tsibul'ko after V. Shadrikov [4] notes that "professionally important qualities and their systems are as internal conditions, through which external effects and requirements of activity are reflected" [4, p. 74].

Having determined the set of traits necessary for successful implementation of professional activity for future mining engineers, we do not consider that they are not necessary to engineers of other specialties. However, considering the specifics of the course 6.050301 "Miner" and public demands to future mining engineer, the most significant are the following qualities: accuracy of performing operations, high resistance to stress, ability to make the decision quickly, the developed thinking (spatial, logical, concrete and figurative, quick). Life and health of people depends on quality of engineer work; therefore, a mining engineer must be responsible, physically and intellectually hardy, and organizing skills and ability to make decisions quickly and effectively will help in case of emergency situations.

Formation of readiness cannot be limited only to acquisition of theoretical knowledge and practical skills, as in practical activities of the mining engineer, the ability to estimate the level of own readiness for professional activity adequately and to control the own actions is of great importance. Therefore, the evaluative-reflexive component of this readiness is its important component. It carries out expert function, as it covers systematic obtaining and evaluating of the return information on technological process on the basis of comparison of results with its purpose and tasks. The purpose of this component functioning is maintenance of the critical attitude of future mining engineer to process and result of the work. Conscious regulation by the engineer of the work according to purposes, norms and requirements is conducive to prevention from wrong actions and operations and

their correction.

Consequently, the readiness of future mining engineers for professional activity is complex personal education, which is in unity of purpose-motivational, semantic and operational, emotional-volitional and evaluative-reflexive components, which emphasizing is conditional in a certain degree.

We find the prospect of further investigations in determination of pedagogical conditions and techniques of readiness formation.

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