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## THE RESPONSIBILITY AS AN INDICATOR OF INFORMATION READINESS OF FUTURE ENGINEERS TO THEIR PROFESSION

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The article presents the results of theoretical rationale and experimental verification of the level of development of responsibility as an indicator of information readiness of future engineers to their profession. The responsibility is shown as a basic indicator of information readiness of a personality of future engineer implementing information searching activity. The level of development of responsibility is defined. The received result of the research in spite of the sex, age and chosen profession of future engineers is analyzed.

*Key words:* information readiness, future engineers, training, responsibility, information.

Modern information society, being characterized by growing volumes of information promptly, demands much to the formation of the personality of an engineer. First of all, to his readiness to carry out all range of information searching activity — from search of sources of information and methods of its extraction to the analysis, classification, ways of its converting and distribution.

While researching [11] it was defined that information readiness of future engineers is a complex of knowledge, skills, personal features and motives which provide aspiration to carry out information searching activity for solving their professional tasks.

It is important to emphasize that information searching activity means work with different sources of information, including the work with digital channels of got data. Free access to information source its use and further distribution demand from the identity of future engineer the ability to predict possible negative consequences of engineering work, and at the same time to take responsibility for these results.

The analysis of scientific literature showed that the problem of formation of responsibility as an indicator of information readiness of a personality of future engineers to their profession wasn't an object of special research. At the same time, in modern psychology there is theoretical and practical material on various aspects of responsibility of the personality (K. Muzdybaev [9], V.P. Pryadein [13], etc.).

Therefore, there is an objective need to research psychological features of formation of responsibility as an indicator of information readiness of future engineers to their profession in modern conditions, i.e. ability to analyze own actions in information searching work.

### **The main approaches to researching responsibilities as an indicator of information readiness of future engineers to their profession**

In modern psychology there are two main approaches to studying the responsibility: research of its separate aspects and its system research [13].

In this work some aspects of responsibility of the identity of a personality engineers are considered: responsibility as a moral category; freedom and responsibility ratio; social responsibility; responsibility as action and formation of responsibility.

The problem of professional responsibility of an engineer is very difficult and diverse indeed. The problem consists of many factors and is in direct dependence on more common problem of relationship of science, moral and ethics.

Today there is a number of versions of ethical codes which contain norms directed on responsible use of information and protection of information systems from viruses and mistakes that were artificially created. There is a certain sphere information ethics for professionals that is professional ethics for experts who deal in information sphere such as programmers, experts in IT technologies, librarians, etc. Information ethics can solve a number of problems — such as selection and information assessment, control of information use, information security and adequacy of information [10]. However, only observance of these norms isn't enough. The responsibility should be created in the structure of a personality of an engineer while making some solutions in information searching process.

Because the work of an engineer in any field of scientific-industrial complex has humanistic orienta-

tion. It means that the main criterion of activity of an engineer is welfare of people.

So, now regulation of activity of an engineer is carried out based on ethical standards and principles. One of such principles, according to K. Mitchem, is the principle of responsibility [8].

Different variants of interpretation of responsibility have been developed in philosophy of technology. In scientists opinion (X. Lenk, G. Roppol, etc.), for determining the responsibility group of fundamental values from different spheres of social existence should be accepted. They are the development of a personality, society, human welfare, health of people technical security, environmental quality, ecological efficiency of technology and its functional suitability of the equipment [7]. Responsibility, according to researcher A.V. Kanka, provides not only integration of these fundamental values with various applied ethics in the field of activity of an engineer, but also their continuous transformation for future development of society [5].

According to the philosopher E. Agazzi [1], responsibility assumes freedom existence as only for free beings it is possible to recognize a sense of responsibility. It is clear that, on the one hand, responsibility is inconceivable without freedom, but on the other hand — freedom without responsibility becomes an arbitrariness. Behind the solution of this dilemma there is freedom of choice of the person in society. So, the person always has a possibility of choice. At the same time he should have responsibility for the choice. According to psychology of existentialism [14] a person is admitted not only free, but also responsible for the choice.

In other words, the man has right to make decisions and do actions, but at the same time he has to be responsible personally for the consequences, instead of shift the blame for negative results of the decisions and actions on others. It belongs to so-called problem of «personal responsibility» in the ratio with a free choice of the personality.

At the same time within social responsibility where responsibility is considered as a certain ratio between the personality and society and it is directed on the benefit of the society. Decisions are made, which satisfy purposes and values of mankind. Social responsibility is the concept which integrates in itself general human values, ethical standards of behavior of workers of different level and forms of ownership. This concept is formed on the basis of the international standard of social responsibility of ISO 26000. At the beginning of 2003 ISO (The international organization of standardization) created a strategic con-

sultative group concerning social responsibility. There were representatives of different countries and various organizations. The main task is in definition of possible contribution of ISO to development of programs of social responsibility [6]. It should be added that a number of countries including Ukraine, joined working out of this standard. This standard clears up the interrelation between the principles of social responsibility and structures of organizational management.

Responsibility from the position of action or not the action, but conscious, we tend to consider through the deed as a personal form of behavior. The deed, according to M.M. Bakhtin [2], possesses such properties: as axiology, responsibility, eventfulness. In turn, the content of the deed defines moral behavior of a personality, his valuable attitude not only to the results of his work, but to the information itself as it is stated in our work.

An important indicator of formation of information readiness of future engineers is, in our opinion, the responsible relation to the information as to something valuable. The value of the information (according to E. Shpranger) is objective education, independent from the subject, resisting to it and it can influence it [15]. Thus information is considered especially valuable, when it helps to achieve the goal [4]. So value can be considered as information, the attitude to the information, anticipation of possible negative consequences for use of this information and at the same time readiness to take responsibility for these consequences. It is necessary to notice that by mastering the information volume does not always prove the level of responsibility for receiving results and its use.

In this regard it is possible to define the task in the system of professional training of future engineers at the present stage is a formation of responsibility. Today in the programs of training of future engineers in higher educational institutions attention isn't paid to the development of such special courses which could promote the formation of the responsible personality of a future engineer while performing information searching actions. Students are prepared narrowly moreover only according to their specialization. One of problems of modern education, in our opinion, is using of traditional forms and training methods which don't give the chance of responsibility formation as an indicator of information readiness of a personality of future engineers to their profession. At the same time application of active methods of training leads to the formation of future engineers, re-

sponsible attitude for possible negative consequences while conducting information searching activity.

### **Empirical research**

#### *Research objective*

Investigate experimentally the level of development of responsibility in the structure of information readiness of future engineers to their profession. Carry out the analysis of the received result of the investigation depending on a sex, age and the selected specialty.

#### *Selection*

For definition of the level of development of responsibility as an indicator of information readiness of future engineers to the profession the selection (N = 412) was formed from the students of two faculties of technical university: mining-and-geological and computer sciences and technologies of the highest technical educational institution. The distribution depending on a sex was as follows: 47,6 % — men, 52,4 % — women. By the age students were distributed accordingly into three age categories: 36 % — students of 17–18 years, 35 % — 19–20 years, 31 % — students of 21 and older.

#### *Method*

For this aim a diagnostic instrument was worked out «Responsibility for using of information», that allows to study attitudes toward the information as to the value and to define the level of development of responsibility for its usage in the structure of informative readiness of future engineer their profession [12].

Statistical analysis of the results of the research was carried out with the help of the software package SPSS 13.0 for Windows.

### **Discussion of the results**

According to the results of the empirical study an insufficient level (16,0 % at  $p < 0,05$ ) of the development of responsibility was identified.

The analysis of the results states that the polled does not realize the possible negative consequences of the use of information in the in diverse activity (in educational and in everyday life).

That is why it is possible they are not fully aware of their responsibility for the consequences of the use of this information. It can be assumed that the information is not valuable for the respondents. They do not understand that possession of information has already value.

Along with this the differences in the level of development of the responsibility in the structure of information readiness of future engineers of informa-

tion between faculties can be observed. So students of mining-and-geological faculty have the higher level of development of responsibility for the consequences of the use of the found information in their actions, exactly — 17,5 %, at the same time the students of computer sciences and technologies faculty the level of development of responsibility is less than — 14,6 %, at the statistical value of  $p < 0,05$ .

These differences can be explained by the fact that the students of different technical faculties of information technologies (computer system specialists, system programmers, telecommunication specialists), these were included to some extent could contribute to the formation of a particular subculture — cyber culture.

As any culture, cyber culture is determined primarily by its values, traditions, rules, way of life, language, forming a kind of environment. It is a kind of a regulator the process of thinking and behavior.

By the way, there is its own social stratification in these environments. So, the information for the representatives of this group is common heritage and, in their opinion, and everyone can use it for this own purpose.

On the other hand, it can be assumed that not all future engineers of computer sciences and technologies consider themselves being in this community for which has its own values and norms in the information activity. They are not aware of possible negative consequences of using information. Their actions are aimed to free dissemination and unrestricted access to diverse information only for educational purposes. We believe that this gives reasons to explain apparent difference in the levels of development of the responsibility depending on the specialization of future engineers.

The levels of development of the responsibility in the structure of the informative readiness of future engineers from the sex attract attention. So, future female engineers have higher level of responsibility (18,5 %) than future men engineers (13,5 %). It is worth mentioning that differences in the development of responsibility in the studied depending on the sex are consistent with the position of the gender perspective. On basis of this it is stated that a woman is a norm of moral qualities. She strives to positive development in social activity. She is more responsible for her actions, seeks to control external revealing of aggression [3].

Minor differences in the level of development of responsibility in the structure of information readiness of future engineers from age were found. Thus, the level of responsibility increases with age 19–20

years (approximately the third year) reaches its maximum — 16,9 %. At the age of 21 and older the level begins to fall to 14,8 %, with  $p < 0,05$ . It is agreed that the 3rd year in high school, first coincides with the beginning of specialization, which often leads to narrowing of the sphere of interests of future engineers, and secondly, to the third course under the influence of new environmental conditions priorities in life begin to change which are characterized by whole assimilation of values, self-determination, the beginning of the formation of cognitive and information requirements to new environment.

### Conclusion

The responsibility is a basic indicator of readiness information of a future engineer in the implementation of information searching activity.

Insufficient level of the development of the responsibility as an indicator of future engineers information readiness to professional work was found. The differences in the level of the development of the responsibility depending on sex, age, and selected specialty were identified.

Formation of responsible attitude to the information searching activity is one of components of the formation of information readiness of a future engineer.

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## ОТВЕТСТВЕННОСТЬ КАК ПОКАЗАТЕЛЬ ИНФОРМАЦИОННОЙ ГОТОВНОСТИ БУДУЩИХ ИНЖЕНЕРОВ К ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ

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В статье представлены результаты теоретического обоснования и экспериментальной проверки уровня развития ответственности как показателя информационной готовности будущих инженеров к профессиональной деятельности. Показано, что ответственность является базовым показателем информационной готовности личности будущего инженера при осуществлении информационно-поисковой деятельности. Определен уровень развития ответственности и проанализирован полученный результат исследования в зависимости от пола, возраста и выбранной специальности будущих инженеров.

*Ключевые слова:* информационная готовность, будущие инженеры, профессиональная подготовка, ответственность, информация.