Specific Aspects of the System of Development of Technological Knowledge in Students of Higher Technical Education Institutions

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Annotation: The article describes the pedagogical process aimed at the formation of techno-cultural culture in students of higher technical education institutions, as well as specific aspects of the system of development of technical and technological knowledge.

Key Words: technoetics, technoethical knowledge, human civilization, engineer, technical phenomenon, technical theories, technical device.

INTRODUCTION

Before the development of techno-cultural culture in students of higher technical education institutions, they study the specifics of the system of technical knowledge, the main areas of technology, the relationship between science, art, economics, the emergence of new principles between man and nature, new technological processes, new humanities. need to know. Only then will the learning process aimed at developing a techno-cultural culture in students be effective. It is also important to take a rational approach to issues such as technical education and training, the formation of a system of technical values, the harmonization of intellectual and moral activities, increasing the role and responsibility of man in the development of technology, the rational use of technology.

Today's engineer not only ensures the normal operation of technical systems, but also designs and invents them; uses scientific methods, scientific achievements, introduces technical innovations. Engineering thinking is universal in nature, permeates all areas of human life, and is characterized by the breadth of technical possibilities. Thus, the formation of students' knowledge and outlook on technological activity is the basis for the practical benefit of their techno-consciousness.

Technoetics has the potential to change the whole existence of modern civilization, the cultural system within it. Technoetic approaches also change the social structure of society. Inorganic nature, such as construction engineering, electrical engineering, thermal engineering, physicochemical engineering, energy engineering, while in organic nature, such fields as agricultural engineering, biotechnology cover the entire field of biology. Thus, the term "thinking technique" is used in the field of memory, the fine arts, painting techniques, musical instrument techniques, management techniques and technology, production, public administration techniques.

Although the pedagogical process aimed at the formation of techno-cultural culture in students of higher technical education institutions is aimed at a deeper understanding of the essence of techniques and technologies, its assessment is based on the needs and interests of

mankind. Today, the worldview of humanity's dominance over nature has changed. Now it is necessary not to go down the path of domination over technology, to work without disturbing the state of nature, to cooperate with it, to go on the basis of coevolution, to rely on high ethical standards in the improvement of technique and technology.

The pedagogical approach to the development of techno-cultural culture in the training of future specialists in the field of technology should be aimed at raising their techno-worldview and thinking. That is, future personnel must understand that the improvement of equipment and technology is a requirement of the times, but do not use it to cause evil, genocidal wars, global environmental and man-made crises, and always keep in mind the responsibility for the fate of mankind. Today, the development of modern technology and its successes have two different social consequences. On the one hand, it is difficult to imagine human progress without technology, on the other hand, technology as a powerful force leads to negative consequences, to the destruction of the world, to tragic consequences. The reckless development of technology poses complex social problems. In fact, techniques aimed at alleviating human suffering are creating unemployment, making it harder to find employment. The increase in private transport is, on the one hand, good and, on the other hand, has a negative impact on the ecological condition of the city. Noise has a negative effect on the human nervous system. On the threshold of the new century, humanity is faced with the problem of solving enormous technical problems. It is difficult to imagine the future of humanity without addressing issues such as pollution of the environment with industrial waste, depletion of natural resources, disruption of the demographic balance, the extreme danger of a radioactive tragedy. All of this requires a deep and comprehensive reflection on how and for what purposes the technique should be used.

In the previous system of thinking, a person engaged in technology is considered to be impartial, so he is morally impartial, and his creativity and technical invention do not imply any evil. The issue of responsibility, moral responsibility of a technical researcher or engineer was also not raised sharply. Today, when we think about the future, the activities of scientists and engineers cannot be clearly imagined without their spiritual image.

MATERIALS AND METHODS

The engineer of today must realize his responsibility to human civilization. Today's engineer must be a spiritually mature human being who serves humanity. As long as the fate of mankind depends on the consequences of technology, it is not only the profession of an engineer, but also a topical (or priority) moral issue in managing technical progress, treating it calmly, evaluating its results, and managing it. .

One does not even know to what extent one has been affected by technology. Technology has penetrated into all spheres of life, doing precise work and improving. This process is making people's lives connected to technology. In turn, human freedom and dignity are being restricted on the basis of technicalization. With penetration into all spheres of human life, there are also phenomena such as the domination of technology, the "invasion" of all human activities.

The problem of having a complete picture of a decent lifestyle for people's lives in the future is an important philosophical issue. That is why people want to have a clear idea of their life, their future. This is related to the question of the future of technology, which cannot be solved without the social responsibility of the people. In this case, it is not about the responsibility of this or that person or about the social consequences of certain types of techniques. It is about a global solution to this problem within the framework of technical philosophy. It is about the spirituality of humanity, about the moral principles, the values that

underlie all of humanity.

RESULTS AND DISCUSSION

The main features that determine the essence of the technical phenomenon are:

- The technique is an artificial structure, it is specially created, created by. It uses specific ideas, knowledge and experience. From this feature of the technique comes the organization of activity. The creation of technical devices, in addition to ideas and symbolic means, also implies the separate organization of activities. At first it was an individual activity of the master, then the organization of collective activity became a complex process.

- Technology is always used as a tool, a weapon to meet a specific human need. The function of technology as a tool allows it to incorporate both simple labor tools or mechanisms, as well as a complex technical environment;

- Technology is an independent world, a being. Technology is opposed to nature, art, language, all life, and finally man. But technology is also associated with a certain way of human existence, in the present era - the fate of civilization.

- Technology represents a separate engineering method of using the forces and energies of nature [161; 87]. Of course, any technique is based on the use of the forces of nature in all historical periods. But it was only in the New Age that man began to look at nature as a separate, almost infinite source of natural materials, forces, energies, and processes, learning to describe all natural phenomena in science and put them at the service of man. Although calculations have been made in part and sometimes scientific knowledge has been used in the creation of ancient technical devices, in practice experience has been given priority. In the new era, technical creativity has become a factor in the conscious calculation of the forces of nature, their conscious adaptation to human needs and activities.

The fact that 2020 is the Year of Science and Enlightenment in our country confirms the need to fulfill important tasks for the development of the social sphere, including higher education, ie the national system of training on an innovative basis [206]. It should be noted that this process requires the achievement of indicators that determine the development of the country, increase the production and export of competitive goods to world markets, the organization of higher education, which is a separate indicator of social growth. the educational process in higher education institutions, the need to improve research at the level of the requirements of the new era economy, social systems.

"The rationalization of technical activity could now only develop through scientific generalization. Although the engineers relied on the scientific landscape of the world, in technical practice a world of 'probability' prevailed. Scientists have demonstrated the power of human thinking and produced perfect samples of equipment. However, this equipment was introduced into production practice much later. The relationship between science and technology during this period was largely determined by random factors - for example, the personal relationships of scientists and practitioners "[161; 82].

The next stage in the rational generalization of technology was reflected in the emergence of technical theories. The purpose of such a separate theoretical generalization of technical knowledge in various fields of technology was, first of all, to educate engineers by directing them to the natural-scientific landscape of the world.

The last two stages of the scientific generalization of technology are of particular interest for pedagogical analysis, because it is at these stages that the global impact of technology on the

development of modern society can be seen. Today, scientific technology is with us every step of the way, and we only feel it when we are briefly deprived of its help. Although opinions against technical progress are still being voiced, the individuals who express them themselves continue to take advantage of all the achievements of technical progress and are unable to stop its movement.

Technology is a tool of human activity. The form and essence of technology as a means of activity is largely determined by the context of this very activity. However, the user of the technique performs the specific purposeful functions of the activity in the technique, not by the person himself, but by the machine [196; 35].

It goes without saying that technology also implies the discovery of natural processes that enable the user of the technique to perform the specific goal-oriented functions that a person needs. In other words, technology is not only the activity itself and natural processes that use technology, but also the creation of conditions that allow a person to perform certain activities at the expense of natural forces and processes. In turn, another activity is needed to create such conditions; we call it 'technique-creating activity', in culture the same activity is often referred to as technical activity. Technical devices live in the place where the creator and user of the equipment operate. But technical devices are not only the products of technical activity and means of technical use, but also the cultural conditions of human life: in essence, they affect all aspects of human life - lifestyle, needs, living environment, and so on. Thus, the essence of the technique is described in four coordinate fields: the first coordinate with the category "technical activity", the second coordinate with the category "creative activity", the third coordinate with the category "technical device" and finally the fourth coordinate with the technical environment is defined by the category "[161; 94].

Here it is important to pay special attention to the element of "technical device". It acts as a kind of mediator. On the one hand, the technical device lives in accordance with the laws of activity and is the product of the activity that creates the technique, on the other hand, it lives in accordance with the laws of nature and is the means or factor of the activity of using technology. The existence of such a two-sided nature of the technique is one of the factors that determine the complexity of its study. Some researchers focus only on the nature of the activity of the technique, some also focus on the study of its natural foundations, some prioritize the creative activity of the technique, some consider the activity of using the technique to be of paramount importance; at the same time, there are also researchers who introduce only technical devices into the technique.

The main problem of studying the essence of the technique is, on the one hand, to describe the above four coordinates of the technique as a category, and, on the other hand, to combine these coordinates in a way that corresponds to the nature of the technique. The first rule that can be described in the process of solving this problem is as follows: technical action exists only at the point where the activities of creating and using technology intersect. The second rule confirms the connection between the two aspects of the activity of using the technique: one of these connections is artificial - related to the activity, and the other - natural. The third rule complements the first rule: technical action is a phenomenon that is perceived as a technical being, that is, as a reality with characteristics that are consistent with the activities of creating and using technology. The fourth rule: the activity of creating technology is organized on the basis of special knowledge and worldviews, which are indirectly determined by the same symbolic means and imaginations [196; 54]. Finally, the fifth rule sounds like this: the impact of technology on nature, the human environment, and man himself is an integral feature of this phenomenon.

CONCLUSION

In short, by the end of the nineteenth century, humanity was confronted with the fact that it was undergoing a regressive process that was completely destroying the biosphere, the noosphere, and human life, following techno-cultural ignorance. The negative effects of science and the technologies on which it is based have been widely publicized, and environmental problems have become the most pressing. This, in turn, has led to a serious focus on the issue of human culture, its inner world, psyche, the promotion of the idea that man must eliminate his imperfections and build a harmonious society.

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