

Humanitarian Medium in an Engineering University: Is the Implementation of World-Leading Experience into Domestic Engineering Education Possible or not?

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MORAL QUALITIES OF AN OUTSTANDING PERSONALITY ARE PROBABLY MORE IMPORTANT FOR THIS GENERATION AND THE WHOLE COURSE OF HISTORY THAN PURELY INTELLECTUAL ACCOMPLISHMENTS. THE LATTER DEPENDS MORE ON THE GREATNESS OF A PERSON'S CHARACTER THAN WHAT REALLY IS.
(ALBERT EINSTEIN)



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The society contemplates on the fact that the humanistic principles of an engineer-student's professional mentality will be formed within the framework of the higher engineering education itself. The national security and civilization sustainable development depend on future student career. One more fact is that the application of scientific-technical activity results is within the range of human preferences.

However, this target is rather difficult to achieve. It is the opinion of most engineering students that humanitarian subjects are not only secondary (minor), but also optional ones. This was promoted through the Soviet higher education experience by teachers of the older generation. The ideological dogmatism of such humanitarian courses as CPSU (Communist Party of the Soviet Union) History and Scientific Communism entirely discouraged many generations of future engineers to be flexible to "changes", which, in its turn, should not be considered.

However, in the past Soviet reality, the Soviet engineer profession, including the increasing difficulties in the domestic production sphere, formed a stable medium of technocratic mentality - short-sightedness and narrow-professionalism. This fact excludes such items as conscience and humanity, and further understanding of the consequences of the destructive human intelligence forces in terms of the civilization development itself.

Lack of humanitarian guidelines, including all the modern society demands, is a serious pedagogical and management problem in the education of the future engineer. Most educators consider that humanization of the learning process [1, 2], introduction of more sophisticated teaching methods in existing humanitarian courses [3, 4] would exempt the engineering education from the above-mentioned technocracy.

The humanitarian medium of an engineering university could be the specific target application of new management strategies. Humanitarian medium structure, based on traditional and historical experience, is a system of sustained relationships and associations, determining the unique university professional-education and cultural space. The humanitarian medium, developing the socialization process of student, post-graduate or academic teacher

personality, includes an integrated combination of social, humanitarian, scientific and specific knowledge and skills, emotions and feelings, opinions and behavior. Being within the humanitarian medium of one's university for some time, a person is involved in a definite communication intercourse, acquires orientation skills in life and a set of priorities in practical activities, and distinguishes specific corporate culture characteristics [5, 6].

Adequate humanitarian medium is the required component of any professional education. The humanitarian constituent helps to overcome one-dimensional highly-specialized training through the learning process, social-cultural activities and everyday communication. It is also the basis for the further development of the humanitarian outlook for harmonious adaption of a professional in the society.

The described research indicated that the leading higher engineering education systems provide a well-developed humanitarian medium, where in each particular case there is a unique set of different characteristics.

For example, Ecole Polytechnique has developed such a humanitarian medium that can be noted in their traditions of military training. Formal discipline structure does not entirely hinder the viewpoint of graduates in social life and industrial sphere, open and transparent implementation of innovations [7].

The freedom and urge for creativity of the students, irrespective of their social characteristics, is stimulated in the distinct humanitarian medium at MIT. Negligence of social conditions, proneness of conflict development, priority of new ideas, and unestablished

teaching methods has not prevented MIT of becoming the leading world university in education grade-rating system and the university intellectual empire, with all possible and impossible achievements in different fields of knowledge.

Aachen Engineering University promotes its humanitarian medium as a business-like type, open to collaboration and innovation, which, in its turn, includes extensive integrated experimental disciplinary system, forming future science [8].

Despite the distinct differences of the above-mentioned humanitarian media there are existing similar features between them:

- a wide selection list of humanitarian disciplines, which are compulsory for future engineers;
- university policy and its departments involves a "humanitarian concept", reflecting the dependence concept of social and technical progress to personal traits and human creative qualities, as well as, readiness to struggle for the safe development of anthropogenic civilization;
- integrated - based education programmes are designed;
- scientific-engineering problem-solving on the boundary of technical and social spheres;
- personal-oriented learning;
- students of engineering professions can receive a second university degree (humanitarian) within the same university, focus-oriented support and development of the humanitarian medium within the university itself.

The article describes the management problem of the humanitarian medium in an engineering institute. Based on the humanitarian medium experience analysis of three world-wide engineering universities – Ecole Polytechnique, MIT, and Aachen Engineering University, guidelines in improving the education medium of Russian engineering universities were developed.

The overall result analysis shows that the education medium in most RF engineering universities is developing in a technocratic way.

The turning point in the development of this humanitarian medium could be the versatile thematic humanitarian component which exists in Russian engineering education. However, social-science curriculums are fragmented and do not include the "ideological" humanitarian concept, which, in its turn, could exclude student's inclination to technocracy and contribute to the students understanding that the future planet and human civilization depends only on their profile professional activities. This situation can be adjusted by the authorities of humanitarian and socio-economic departments, as well as, the introduction of tailored courses reinforcing social responsibility motivation to the engineering profession, for example such a course as "Ethics of Engineering Profession".

The explicit disadvantage is the lack of an integrated academic and research relationship and collaboration between engineering and humanitarian departments. Based on the experience of world-leading engineering universities, this collaboration could include teaching individualization and project management. Moreover, this is extremely important, as the compulsory part of all accredited engineering programmes, unified by Bologna process, is a corresponding criterion for the principles in the development of a stable society.

Stable society development – a regulating development, involving target control over existing changes; forecasting and adjustment of the most dangerous development instability and disproportions; oriented and coordinated activities, directed to negative social, economic and ecological disproportions, accumulated in the society and surroundings; establishment of conditions excluding the occurrence of such disproportions; extensive government investments in "human assets".

The observation of these principles promotes the implementation of project management, oriented on the society's

specific demands and executed through engineering and humanitarian departments. The experience of European engineering universities in this sphere can be imported, leading to further formation of creative interdisciplinary staff, capable of solving not only academic and research, but also commercial tasks. These economic and humanitarian departments could offer such items as marketing and sociological research, retrospective historical- analytical reviews, etc.

To establish a contemporary education medium, i.e. humanitarian one, oriented on the demands of human and society development, the education policy itself should be changed. The establishment and development of a humanitarian medium for technical students includes the design and introduction of modern compulsory and elective courses, forming a cultural basis and demand in creativity. The following items should be involved: new aesthetic and moral behavior models, extensive social, concert and exhibition activities; creation, support and development of university and department traditions; organization skills in cultural and informative community entertainment; organization of special decorative interiors in institutes and different aesthetic theme visuals of different professional backgrounds [10]. Of course, in this case, high-qualified professionals should be involved in organizing such social activities, which, in its turn, gives rise to the development of the so-called humanitarian medium.

The backbone in the above-mentioned programme could be a set of recommendations in altering the policy and strategies of the university itself, its departments and programmes, and where the humanitarian concept is the platform for the future development in this sphere. In spite of the inflexible framework of the RF education standards, the main targets include individualization of the education system, student motivation in intellectual autonomy, development of interdisciplinary projects, within which different professional teams work, i.e. engineering, natural science and humanitarian.

To meet the world standard requirements, every engineering university, should develop its own independent education-humanitarian –medium. It is the only way to achieve high performance in the development and activities of this or that university.

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