

# Integration of Basic Sciences and Engineering

(on the example of UNESCO and the Ministry of Education of the Russian Federation project “World Technological University”)

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**Abstract:** Reasons, served as the basis of the necessity of the creation of the educational establishment of this kind:

The current situation in the world is to a great extent dependent upon the development and use of state-of-the-art technologies and qualification of the skilled workers in each country.

The gap in technological development between the rich and the poor countries creates the negative potential in the world, which leads to millions of refugees, uncontrolled migration of people, conflicts and wars, hunger and diseases.

It is precisely the national highly qualified personnel that is able to ensure raising the level of technological development of their countries, production of goods and services, international cooperation and, finally, insure the implementation of the sustainable development strategy.

World Technological University, as one of the UNESCO projects, is to become the organization, which ensures the integration of the efforts of the best technical colleges in the world for the dissemination of engineering knowledge and high technologies and creating the conditions for the citizens of developing countries and those of transit economies to share such knowledge.

A person, being at any place of the Earth, and wishing to receive the education through the WTU, has to have the opportunity to study virtually simultaneously in several universities-members of the WTU, and use in the studying process the knowledge and methods of education, developed by the best teachers of the world in the sphere of the chosen subject.

Specially stressing out the mixed way of education, we, first of all, pay the attention on the maximum possible informatization of the educational process with the usage of the distance education methods through the Internet.

According to our opinion, the WTU project has to sufficiently extend the number of services, providing through the Internet at the expense of the international integration of the national educational systems and creation of the global International Educational Network – InterEduNet.

**Keywords:** engineering knowledge, high-level engineering systems, multi-level technical education, unified information environment, study plans, informatization of education process.

Ladies and gentlemen! First of all I would like to express my gratitude to the organizers of this conference for the invitation and the opportunity to make the speech at this tribune to tell about the new project of UNESCO and the Ministry of Education of the Russian Federation – “World Technological University”.

The World Technological University is created in accordance with the resolution <sup>1</sup> 235, adopted at the 28<sup>th</sup> session of the UNESCO General Conference and with the Memorandum about mutual understanding between UNESCO and the World Technological University from February 10, 1999.

Let me for the beginning say some words about the reasons, served as the basis of the necessity of the creation of the educational establishment of this kind.

The current situation in the world is to a great extent dependent upon the development and use of state-of-the-art technologies and qualification of the skilled workers in each country.

We see a rather motley picture resembling a mountainous landscape while comparing the levels of technological development of such countries as the USA and Canada, EU, Japan, South Korea and some others with numbers of countries of Asia, Africa, Latin America, Southern Europe and many of the CIS countries.

The highest peaks and the deepest depressions comprise the “technological landmass” of our planet. These peaks and depressions are absolutely adequate to the level of economic development of the countries and that of economic well-being of people inhabiting them, as well as the level of qualification of engineering personnel working on the enterprises of those countries.

In other words, the gap in technological development between the rich and the poor countries creates the negative potential in the world, which leads to millions of refugees, uncontrolled migration of people, conflicts and wars, hunger and diseases.

It is precisely the national highly qualified personnel that is able to ensure raising the level of technological development of their countries, production of goods and services, international cooperation and, finally, insure the implementation of the sustainable development strategy.

World Technological University, as one of the UNESCO projects, is to become the organization, which ensures the integration of the efforts of the best technical colleges in the world for the dissemination of engineering knowledge and high technologies and creating the conditions for the citizens of developing countries and those of transit economies to share such knowledge.

At the current moment we are intended to create the international net of the educational establishments and the scientific centers, aimed to provide all interested the educational services and scientific knowledge in the field of the high technologies and modern engineering knowledge.

So, the WTU, being in its existence an association of the universities and science research centers, will represent a new type of the science-educational formation – virtual university of the distributing type with the mixed way of studying.

The basic integrating elements for all organizations, included into WTU, have to be:

- united (agreed) curriculum on the main directions of preparation process;
- united requirements to the quality of the specialists and methodological providing of the studying process;
- united informational database and knowledge, and the free access to them through the Internet;
- agreed strategy of the development of the engineering education, methods and ways of the preparations of specialists.

As it said in the statute papers of the WTU, the main aims of the World Technological University have to be the following:

- integration of the systems of high-level engineering education of different countries (on the basis of highly professional personnel, methodologies, educational and informational technologies, scientific and industrial experience);
- raising the level of technical literacy and the quality of technological education in the developing countries;
- improving the level of teaching foreign languages, taking into account its engineering trend;
- assistance in expansion of humanitarian and ecological training of engineering personnel;
- integration of programs and providing engineering personnel with unified requirements in the field of economics, finance, management, marketing and international law;
- intensification of the development and adoption of transfer technologies as well as conversion processes;
- expansion of the sphere of professional employment of specialists and teachers in the field of technical education;
- promotion and exchange of new pedagogical ideas and technologies;
- development of the concept of the technical university of the XXI century aimed at raising the role of engineering education in the world;
- satisfaction of the needs in multi-level technical education;
- perfecting the structure and the system of management of a high -level global educational system with a compound scheme of organization of study;
- expansion of academic exchanges;
- creation of a unified information environment of the world community in the field of high multi-profile technologies and the network of telecommunication links for its formation, accumulation of data and dissemination.

From the other side, one of the most important aims and tasks of the WTU is the preparations of the curriculum (professors and tutors) and the scientists of the international level for the institutes and scientific centers of the developing countries and the countries with the transitional type of economy. It will permit thorough some period of time to integrate many universities of the CIS and other developing countries into the world educational system, actively assist to the process of the stable development of many world regions, whose technological level still is not able to compete with the world level of the products' quality.

Persons engaged in these activities may quite definitely count upon growth of their prestige as personalities who manage to contribute practicably to interaction between the East and the West, between developed countries and the third world. All their investments in their qualification level and in promoting the WTU Project may be regarded as personal capital that will facilitate considerably further development of the project.

Doctors, professors and readers of the World Technological University who received training and education within the framework of its teaching plans and curricula will constitute the engineering elite and the staff of XXIst Century University that by its structure, international network and education level will become a prototype (pilot project) of a new type of University based on a well-structured network of educational and scientific centers, powerful integrated training and scientific base, universal strategy of teaching and modern information technologies and telecommunication means.

Starting the WTU project, we derived from the principal that the WTU programs have to create for each Association Member the equal opportunities for the free access to the regional markets of the educational services, to provide the mutual interest of the universities – residents and non-residents in attracting to study in the WTU larger amount of the students than they could do it, having not been the Association member. The WTU has to create the conditions and give the possibilities for the scientists and professors from the different universities to create jointly new courses and conduct the scientific activity, use the achievements of each other on the mutually beneficial basis.

So, a person, being at any place of the Earth, and wishing to receive the education through the WTU, has to have the opportunity to study virtually simultaneously in several universities-members of the WTU, and use in the studying process the knowledge and methods of education, developed by the best teachers of the world in the sphere of the chosen subject.

The future belongs to this method of education, and we could bring it nearer and implement it into the real life, if we try harder..

I would also like say some words about the structure of our university.

The WTU President and the providing his activity Executive Board are not the managing structure, as, for example, the rector, or the rector staff of the traditional university. More likely, the President of the WTU could be compared in his activity with the Parliament speaker. In this turn, the aims, ways and methods of the joint activity of each WTU member gain the special importance.

We want to joint the efforts of the members of our Association to resolve the following problems:

- creation the unite WTU studying plan for the major directions of the modern engineering training system, which permits to integrate the different systems of the engineering education;
- elaboration of the requirements to the quality of the engineering training within the frames of the different spheres of knowledge;
- organizing the process of the international certification of the educational program, studying and methodological basis, software products, knowledge testing systems and intellectual property;
- creation of the WTU database on the modern high technologies and providing the access of all interested ;
- joint development and implementation of the modern informational technologies for the distance education and Internet testing;
- organization of the joint activity for the acknowledgement the educational certificates issued by the universities – WTU members.

These and other types of activity are planned to conduct in the different Committees of the WTU Academic Board.

In the text of the Memorandum on collaboration and cooperation between the WTU members, which for a moment is signed by the representatives of more than 60 Russian and foreign universities, we propose to create a number of Institutes, covering, from our point of view, practically all the spheres of the modern engineering knowledge. The Institute, responsible for any of the chosen directions, is in its existence, the studying and methodological association of the Universities and scientific centers, called to implement the main aims and tasks of the WTU. Included into the Institute WTU members form its Departments, which could be in forms of departments, faculties, scientific laboratories

Departments are the main scientific branches of the WTU. The Departments employees will conduct the educational and scientific activity on the precise directions and studying disciplines within the frames of the studying plan of the WTU Institute.

It is necessary to mention that the WTU Studying plans do not have to abolish or substitute the studying plans of the national universities. They have to try to supplement them with the best courses of the most advanced Universities of the world.

So, the main aim of the each WTU Institute and its constituting departments is the development of the world best studying plans, teaching methods and methodological basis for the educational process.

Undoubtedly, the most important moment of the educational process in the WTU is the process of estimation and passing the knowledge.

Specially stressing out the mixed way of education, we, first of all, pay the attention on the maximum possible informatization of the educational process with the usage of the distance education methods through the Internet.

We also would like to mention that at the first stage the WTU will provide the educational services to the people having already had the higher education certificate (diploma), or graduating the university.

So, we are talking about the additional higher education and getting the second higher education.

We will definitely provide all the interested the possibility to improve their qualification in the specific sphere of knowledge and technologies and will certificate the level of their knowledge.

Students of WTU and its Departments can be citizens of any country of the world, who put in application and presented the documents, confirming primary level of their qualification (certificate of secondary school, lyceum or college, higher education diploma, post graduate degree diploma etc).

Another important factor is the price of education. We have to create the conditions when the citizen's expenses for the getting the high quality knowledge are not exceedingly high. The WTU has to propose the differential levels of education to be accessible to all the social groups. But it has to be the focused economic strategy of the shaping at this moment association.

To reach this aim is possible only through the creating the massive demand for the high-qualitative services for the collective usage of our databases in Internet.

Taking the decision about organizing this project, we understood perfectly well that it could not be done badly. It could not be only the national or regional project.

The WTU project could be only the global one, like, for example, the Internet project, which also only 10 years ago seemed to be improbable.

Internet project developed by the way of the global integration of the national communication nets and telecommunication mean, by standardizing and unification of the software, informatization of the different spheres of the people's activity. Internet became the transcontinental mean of the delivering of the information to the users the way of the informational exchange.

According to our opinion, the WTU project has to sufficiently extend the number of services, providing through the Internet at the expense of the international integration of the national educational systems and creation of the global International Educational Network – InterEduNet.

Mr. Federico Mayor, former UNESCO General Director and the WTU Honored Chancellor, having spoken about the World University, specially stressed out that UNESCO, prompting this project, lays the foundation of the University of the XXI century, uniting the best human resources – the technological elite of the world, called to

improve the life in our planet through the free access of all the people to the engineering knowledge and technologies.

In the end of my speech I would like to call the participants of this honored meeting to consider the possibility of the cooperation within the frameworks of the World Technological University project for creation those important aims, which called upon by its founders.

Thank you very much for your attention.