

Аннотации статей на английском языке

THE MISSION OF THE INNOVATION (ENTREPRENEURIAL) UNIVERSITY

Yu.P. Pokholkov, B.L. Agranovich.

The paper deals with the generalized poly-modal mission of the innovation (entrepreneurial) university. The mission is based on the analysis of foreign and domestic experience concerning the formation and development of the innovation university.

PROBLEMS OF TRANSFORMATION OF THE TECHNICAL UNIVERSITY INTO AN ENTREPRENEURIAL UNIVERSITY (AN INSIDER'S VIEW)

A.M. Ilyshev, N.N. Ilysheva, I.N. Voropanov, Ural State Technical University, Chelyabinsk Institute of Russian State University of Economics and Commerce.

This paper examines different problems of transformation: economic, organizational, and structural. It has been found that 70% of university innovative activity is 'shady' (due to low salaries of university staff). It has been revealed that the time consumed for 'ideas generation' is three times as much as the time spent on innovative activity. The suggestion is made to grant innovative-active departments with special status; the criteria for attributing to such departments are stated. The recommendation is made to introduce the system of interuniversity registration of innovative proposals as the means of capitalization of partially completed innovative projects and copyright protection.

INNOVATION UNIVERSITY ORGANIZATIONAL STRUCTURE

Yu.P. Pokholkov, B.L. Agranovich,

V.N. Chudinov, A.I. Chuchalin.

The paper deals with the basic principles of the innovation university organizational structure as a goal- and value-oriented system. Its organizational structure is designed on the basis of the aforesaid standard.

THE ROLE OF CORPORATIVE CULTURE IN THE CHANGE MANAGEMENT OF AN ORGANIZATION

V.A. Pushnykh, Director of the International Center for MBA Programs. Tomsk Polytechnic University

Functioning under conditions of turbulent environment is a distinctive feature of all modern organizations and enterprises. Such an environment requires the enterprises to permanently be ready to changes, to implement the changes, to manage the changes. To perform these activities properly an enterprise should become a "learning" organization. Organizational culture of an enterprise is another feature providing its successful movement on the way of changes. If the corporative culture is not a key point for the top managers of an enterprise any changes, even good planned and timely started, are implemented with great difficulties or fail. A method of study of an organizational culture allowing to do it in a quick and simple way as well as to trace the dynamics of this culture is described in the article. The method has been used for study of organizational culture and for planning change strategy of Tomsk Polytechnic University.

CREATING INNOVATIVE ENVIRONMENT AT THE TECHNICAL UNIVERSITY

Yampolsky Vladimir Zakharovich

This paper deals with the issue of development of technical university innovative environment. The suggestions concerning the creation of new infrastructural elements are made. These elements are as follows: Venture Fund, Fund of guarantee obligations, subject-oriented clusters of innovative enterprises. The key role of forming the competitive environment and searching the answer to the "Who will teach innovative culture to tutors?" - question is emphasized.

PHILOSOPHY AND STRATEGY OF TECHNICAL ENGINEERING EDUCATION

*A. D. Moskovchenko. Tomsk University of Control Systems and Radioelectronics.
E-mail: office @tasur.edu.ru*

The problem of interaction between the society and university innovation engineering education is viewed in the article. A special attention is paid to the cosmological aspect of the present-day engineering training. The major emphasis is placed on three issues: the quality of knowledge of engineering graduates; their practical performance in a contemporary society, and their expectations in the course of career development.

STRATEGY PRINCIPLES OF SCIENTIFIC-INNOVATION DEVELOPMENT OF REGIONAL TECHNICAL UNIVERSITY

*Evstigneev V.V., Maximenko A.A.,
Goncharov V. D., Novoselov S.V.,
Evstigneev A. N.*

Knowledge-based economic development strategy considers investigations aimed at innovation process mechanism in basis of their cycling. In the framework of higher schools regional policy were considered strategy principles of scientific-innovation development of regional technical university, the significance of it, available research and educational base, domestic and foreign experience, planned development ways in solving regional tasks.

Technical university development in contemporary economic situation, in case of higher educational institution transformation into research and educational innovation complex (REIC) intended to solve organizational economic integration between REIC and external environment, to develop and extend it taking into consideration regional priorities aimed at solving social economic tasks branches of society activities were showed.

SYNERGETIC APPROACH TO INNOVATIVE (ENGINEERING AND ENGINEERING-ECONOMICAL) EDUCATION

*L. L. Ergunov, Moscow State University of Electronic Engineering (Technical University)
egurnov@freemail.ru*

The paper deals with the synergetic approach to innovative (engineering and engineering-economical) education. Education should involve scientific knowledge and educational technologies that are based on the use of achievements in cybernetics and synergetics thus enabling teachers to apply mechanisms of self-organization. The educational reform implies cardinal expansion of the educational fundamentality concept which provides integral vision of the nature and the society within the context of the interdisciplinary approach.

HERIOT-WATT CENTRE AT TOMSK POLYTECHNIC UNIVERSITY: AN EXPERIENCE OF TRAINING ELITE PETROLEUM ENGINEERS

Yu. P. Pokholkov, V. P. Mangazeev, A. I. Chuchalin, Brian G. D. Smart, I. N. Koshovkin

Abstract. For the first time in Russia, it became possible to train experts in petroleum technologies, conferring worldwide recognized MSc Diplomas. A year-long course consists of four semesters: during the first two students obtain academic knowledge of oil and gas field development; the third semester is devoted to individual research projects, and during the fourth semester students, associated in teams, work on complex integrated field development projects.

PREDICTABLE DEVELOPMENT ASPECTS OF EDUCATION QUALITY MANAGEMENT

*A.G. Velichkov, G.S. Pirogov, V.P. Ivachenko, A. G. Yasev
National Metallurgical Academy of the Ukraine*

The paper examines prerequisites for improvement of education quality management and relevant new aspects of such management. The paper focuses on the suggestion to introduce and use the category of development quality (this concerns both the individual and the specialist during his\her training at the university). Some indicators for quality assessment and their management mechanisms have been proposed and proven. The article is addressed to teachers and administrators of educational institutions.

FLEXIBLE LEARNING: ENTREPRENEURSHIP BY UNIVERSITIES FOR STUDENTS

*B.K. Temple, Glasgow Caledonian University, bkte@gcal.ac.uk
I.A. Cheremisina, Tomsk Polytechnic University, cheremisina@lci.tpu.edu.ru
A. Smith, Glasgow Caledonian University, Anne.Smith@gcal.ac.uk*

This paper shows how Glasgow Caledonian University, UK, has been driven by economic necessity, as well as the interests of the teaching staff, to search for new ways to deliver teaching material in an effort to increase funding over and above a governmental contribution that is dwindling year on year. In effect, the university has had to innovate. The second part of the paper examines the teaching of entrepreneurship claiming that teaching is really a form of knowledge transfer. By viewing our profession in this different way, one can think of new ways to implement strategy. Lastly, one of the authors, a Head of English Department from Tomsk Polytechnic University, Russia, on secondment to Glasgow Caledonian University, discusses the new teaching methods employed by the university and comments on how they help to stimulate entrepreneurial thinking and promote cross-disciplinary understanding.

PROBLEM-ORIENTED STUDY - A NECESSARY ELEMENT OF INNOVATION ENGINEERING EDUCATION

*Chuchalin A.I., Kryuchkov Yu.Yu., Soloviev M.A., Tyurin Yu.I., Chernov I.P.
Tomsk Polytechnic University, Tomsk, Russia*

Abstract
Innovation processes spreading in our country require a new generation of specialists. It is necessary to instruct such specialists at universities widely practicing new technologies and teaching methods and capable of changing the system of education with the requirements of information society taken into account. We offer to introduce a new kind of academic activity into the educational process at a technical university - problem-oriented education that enables students to develop creative abilities, the skills of effective teamwork and the ability to create competitive products and advance them on the market.

The basic principle of such an approach is to create small teams of students belonging to one and the same group and educational course or students of different educational courses and one and the same year of study. Each group is given a task - a problem to be solved within 4 terms followed by a team defense of a final paper going through an idea to the pilot sample, working out the policy of advancement the products to the market as well as providing competitiveness of the products.

FUNDAMENTAL EDUCATION AS THE BASIS OF ELITE TRAINING AT THE TECHNICAL UNIVERSITY

G.V. Erofeeva, Yu. Yu Kryuchkov, V.V. Larionov, L.I. Semkina, Yu., I. Tyurin, I.P. Chernov
Tomsk Polytechnic University, Tomsk, Russia

The paper deals with the concept of elite specialist training in the system of fundamental education. The educational constituent of the concept includes integration of disciplines of the educational cycle; context education; teaching materials for intensive courses (textbooks and problem books for technical universities, interactive teaching system on physics), program teaching complex "Concepts of the contemporary natural science", teaching materials for holders of a master's degree in physics compiled on the basis of research works carried out at the department for natural sciences and mathematics.

Innovative activity in the system of engineering education

V. Salnikov, A. Koukine
State Siberian Automobile and Highway Engineering Academy (SibADI)

In this paper some directions of innovation activity in the system of engineering education are analyzed, some approaches based on the personal peculiarities of students are suggested. The scheme of innovative engineering education is suggested which takes into account different technologies and directions of specialist training.

SYSTEM DESIGNING OF NUCLEAR-TECHNICAL EDUCATION

A. N. Zhiganov, S.A. Karpov, B.M. Kerbel, Medvedev O.P.
Seversk State Technological Institute (SSTI)
E-mail: secretary@ssti.ru; karpov@ssti.ru
Administration of closed town Seversk

The paper describes the system approach to designing multi-level permanent education. The current approach was worked out by Seversk State Technological Institute (SSTI) in 2002-2003 for enterprises of atomic industry. The paper presents the new theoretical-methodical bases of the system of multi-level permanent education, as well as the first results of its implementation in a closed town of Seversk. The conclusions made in the paper may be used to solve similar educational tasks not only in the MINATOM centres but in other small cities of Russia.

PROSPECTS OF POST-GRADUATE TRAINING OF ELITE SPECIALISTS AT TECHNICAL UNIVERSITIES WITH RESPECT TO INNOVATIVE DEVELOPMENT TRENDS IN RUSSIAN EDUCATION

A. Galinovski
Bauman State Technical University, Moscow
E-mail: Korshunov@bmstu.ru, gal-computer@mtu-net.ru

The paper states the results of the analysis of problems and prospects of elite specialists' training at technical universities. It provides some recommendations concerning the content and informational-analytical support of post-graduate vocational education during its transition to all-European market of educational services. The work deals with basic stages of research development and methodical basis of postgraduate vocational education.

Formation of university multi-language environment as the key factor of successful joining the world academic community.

A. I. Chuchalin, S. B. Veledinskaya, S. S. Roiz

The appearance of Tomsk Polytechnic University on the international academic scene is concerned with a number of factors, where the specialists' language competence becomes increasingly topical urging the University to place great emphasis on this issue. For the time being, TPU has created a number of learning and technical facilities including fourteen language training centers thus allowing for intensive language training. Besides, TPU is piloting a program on native speakers' attachment to University's departments; the project of multi-level teachers' language competence improvement is currently being implemented.

The multi-language environment is aimed at the formation of the innovation university within a traditional one.

ON THE ISSUE OF INNOVATIVE TECHNOLOGIES FOR FOREIGN LANGUAGES TEACHING (IN THE ASPECT OF INDEPENDENT WORK ACTIVITZATION)

*Fritsler Alexander Alexandrovich,
Prochorez Elena Konstantinovna,
Mayer Arthur Karlovich, Polytechnic
University, Tomsk.
E-mail: rdz@tpu.ru*

The paper presents the case method and educational course packs for effective learning English, German and Russian as foreign languages. This method involves minimum participation of the teacher and enables to reach the level of knowledge corresponding to that of international certificates. The course packs also allow to begin learning a foreign language from the alphabet and to master the second foreign language. The case method is efficient for studying not only foreign languages, but also any other subject at university.

VIRTUAL LABORATORY PRACTICAL WORK ON PHYSICS WITHIN THE FRAMEWORK OF FLASH-TECHNOLOGIES

V.V Larionov, D.V. Pichugin

Tomsk Polytechnic University
The paper deals with the basic scientific and methodical principles for carrying out and application of the virtual laboratory experiment with the use of FLASH-technologies. This experiment is to be used for both practical training and delivering demonstration lectures on physics. The suggested methodology of laboratory works can be useful for the system of open and engineering education as a whole.

INNOVATION ACTIVITY- THE MAJOR DEVELOPMENT DIRECTION OF A CONTEMPORARY UNIVERSITY.

A.L. Shestakov, S.D. Vaulin, V.B. Fyodorov, A.S. Pantileev

Abstract

The article deals with the present state of the art in innovation activity of South- Ural State University in particular and higher educational institutions as a whole.

The concept viewed in the paper concerns expansion of cooperation of the academic university with external environment based on the development of its innovation activity, and the experience of establishing innovation structures in South- Ural State University.

The concept of 'elite' engineering training as the main constituent of the innovation activity of the technological sector of the university education is suggested.

The major financial resources supplied to the university within the transition towards the innovative academic university are discussed.

New forms of cooperation between Siberian Transport University, Siberian Branch of RAS, transport technical universities and Siberian and Far East Railroads within the framework of elite technical education.

*Komarov K.L., Gerasimov S.I.,
Kutovoi V.P.
Siberian Transport University,
Novosibirsk, Russia
E-mail: Gerasimov@stu.ru*

Summary. The article submits some results of cooperation between transport technical universities of Asian part of Russia and research institutes of the Siberian Branch of the Russian Academy of Sciences, which may be useful to deal with some relevant problems of Russian Railroads. It also suggests ways of training elite engineers for assistance in scientific work in the area.

THE EXPERIENCE OF IMPLEMENTATION OF INTEGRATED EDUCATIONAL SYSTEM "FACTORY- HIGHER TECHNICAL EDUCATIONAL INSTITUTION" AT TOMSK POLYTECHNIC UNIVERSITY

*V.T. Fedko, Dolgun B.G.
Yurga Technological Institute of TPU*

The paper deals with the organization of modern systems for integrated training in Russian institutions of higher professional education. Besides, the achieved objectives and the solution to certain problems are viewed. The experience of Yurga Technological Institute of Tomsk Polytechnic University is summarized, concerning engineering and production training of highly qualified specialists within the integrated education system "factory-higher technical educational institution".

OXFORD DEVELOPMENT MODEL FOR EDUCATION-SCIENTIFIC-INNOVATION COMPLEX OF TOMSK STATE UNIVERSITY OF CONTROL SYSTEMS AND RADIOELECTRONICS (TUSUR)

*Anatoly V. Kobzev, Rector
Tomsk State University of Control
Systems and Radioelectronics
office@tusur.ru
Alexandr F. Uvarov
Vice-Rector on Economics
Tomsk State University of Control
Systems and Radioelectronics
au@tusur.ru*

The worldwide practice of economy transition into innovation way of development is entirely based on giving universities the central meaning and the leading role in these processes.

TUSUR sets aims high in developing its own education-science-innovation complex (ESIC) based on the Oxford model for innovation structure.

Basic principles, on which ISIC at TUSUR is based while working with small hi-tech enterprises, are as follows: partnership, "Double citizenship," decreased internal "taxation," additional guaranties. ISIC at TUSUR at the present time includes 15 private companies united by the mutual interests for all the participants. Among other benefits, spin-out companies may use all the services of the university innovation infrastructure including, but not limited to: School of Innovation Management, Agency for Intellectual Property, Technopark, Security foundation, Management Unit, Commercialization Office, Marketing Division.

Practice of establishing ESIC at TUSUR shows that hi-tech business is open for cooperation with universities, private companies are rather flexible and active in the innovation process, with their participation it is possible to conduct some bigger projects, to achieve some higher scientific, technical and economical results.

Engineering education at the multi-discipline regional university

*Makarkin N. P., Tomilin O.B., Fedosin C.A.
Mordovian State University,
Saransk, Russia*

The paper deals with the various aspects of engineering education organization at the multi-discipline regional university. The special attention is paid to the issue of cooperation between the university and back-up organizations.

Training of engineering and technology specialists orientated towards innovative engineering activity

*I. O. Muravlev, Tomsk Polytechnic University
O.V. Bleiher, Tomsk Polytechnic University*

One of the priority directions in modern social development is the improvement of population living standards. Nowadays education may become one of the main social institutions which can influence forming the specialist group able to establish and realize progressive concepts of society development. This tendency imposes certain demands on the content of educational programs and the quality of educational process.

Potentially these problems can be solved with the help of educational traditions of Russian contemporary technical education. The most topical issues are as follows: development of training methods where the student plays an active part in the process of designing of individual educational trajectory; creation and simultaneous usage of the best educational programs; interdisciplinary monitoring of knowledge application in practical activity.

BASES OF ORGANISATION AND PROSPECTS OF DEVELOPMENT OF UNIVERSITY INNOVATION COMPLEX (ON THE EXAMPLE OF SRSTU (NPI))

*E.A. Nyrkov
South-Russia State Technical University
(Novocherkassk Polytechnic Institute),
e-mail: nauka@novoch.ru*

The paper states that university innovation complex comprises elements of innovation infrastructure and their correlation. The concept of innovation complex development and concept of Donskoi Technopark - the key link of innovation infrastructure in innovation process - is generated in SRSTU (NPI). Stepwise integration of innovation complex in the whole education-scientific-innovation complex of a higher school (ESIC) is carried out.

**Establishment of Tomsk branch
and students department of
Electrical Engineering and
Electronics Institute**

*O.V. Stukach
Tomsk Polytechnic University,
Department of Computerized
Measurement Systems and Metrology*

The paper deals with the issue of improvement of engineering education quality in radio electronics by means of cooperation of scientists and students with Electrical Engineering and Electronics Institute. It has been shown that membership in international societies is necessary for specialists since it facilitates efficient information exchange, attracts international funds into educational activity and most fully reveals the creative potential of university students and staff.