

Peculiarities of Innovative Processes in Higher Education System in Russia under Conditions of Reforming it

¹Irina Drozdova and ²Genadij Drozdov

¹Department of Management, Faculty of Economics and Management,
St. Petersburg State University of Architecture and Civil Engineering,
Vtoraja Krasnoarmejskaja ul. 4, St. Petersburg, 190005, Russia

²St. Petersburg State University of Service and Economics,
Kavalergardkaja ul. 7, St. Petersburg, 191015, Russia

Submitted: Jun 19, 2013; **Accepted:** Jul 16, 2013; **Published:** Jul 22, 2013

Abstract: One of the possibilities of essential acceleration of the country's social and economic development is connected with the re-orientation of the Russian economy to manufacture of the hi-tech science-intensive produce. The President of Russia has declared a policy of change-over from the "pipeline-dependent economic life" to the innovative development. The innovative approach only will help attain the ambitious goals in the field of economy and defensive capacity of the country. The innovative economy is not a destiny of only rich and happy countries to take such a luxury as financing the long-term and risky projects and organization of challenging investigations. This is the basic trend of the world economy. The examples may be given, when the development and implementation of the national innovative strategy by many countries stood out as the reaction to a significant rise of prices for energy supplies in the world market ("oil shocks" of 1970s). The main characteristic of educational innovation consists in the new consumer appeals of its subject as compared with its previous analog. The subject of this article implies in this context a detail analysis of the stages of innovative process development. It includes the following structural points: determining a demand for changes; acquisition of information and analysis of situation; pre-selection or independent development of innovation; taking decision on incorporation (implementation); the incorporation itself with a pilot use of the novelty; institutionalization or durable utilization of the novelty, whereby it becomes an element of every-day practice. A combination of all these stages forms a single innovative cycle.

Key words: Innovative economy • Modernization • Educational innovations • Competitive environment
• Innovative mechanism

INTRODUCTION

According to the experts a share of the "new economy" in the gross domestic product (GDP) of Russia amounts to 3 to 7%, when up to 50% of GDP is produced in this sector in the developed countries. In this case, about 1% of GDP is spent in Russia for the research and development activities (R&D), while the state finances more than 50% of these expenses in this or the other way. The developed European countries (e.g., Germany) spend about 4% of GDP for R&D, in Japan this percentage is essentially higher.

The conducted studies have shown that the economy of recent industrially-advanced countries (IAC) becomes more and more based on the awareness under globalization conditions [1-2]. It is oriented on the innovations and shapes such a system of interrelations between science, industry and society, when the innovations are used as the basis for the industry and society development, while the latter, in turn, promotes the development of innovations and determines the trends thereof and by the same, the most significant directions of scientific activity, in many respects [3-4].

Corresponding Author: Irina Drozdova, Department of Management, Faculty of Economics and Management, St. Petersburg State University of Architecture and Civil Engineering, Vtoraja Krasnoarmejskaja ul. 4, St. Petersburg, 190005, Russia. Tel: +7(911)9408115, Tel: +7(921)3286323.

The modernization of economy shall be enhanced due to innovative component of the state as well as entrepreneurial activity and optimization of the scientific environment and society [5]. A national development pattern shall be built particularly at these promising trends, including [6]:

- Entrepreneurial competition environment with the legal entities featuring strategic thinking (motivation for innovations), capability for education, adsorption and adaptation of knowledge;
- Mechanism (with the required institutional superstructures and feedbacks) of interaction between these two environments implying a transfer of knowledge, its distribution and transformation into pre-competitive technologies for the entrepreneurial environment, which is organizational, on one side and orientation of the research environment to the satisfaction of the emerging innovative demands for production development, on the other side;
- Educational and research environment in the universities and research and development institutes featuring high expertise, drivers of cooperation with the entrepreneurial environment, which will be dwelt upon hereinafter [7].

MATERIALS AND METHODS

The study of innovation process modernization for higher educational institutions necessitates using the following methodological editorial classification:

- Studying the demand, need for educational innovations.
- Development and research of the educational novelties.
- Organization of production of educational novelties.
- Testing educational novelties.
- Establishing extended production.
- Consumption of educational novelties.
- Correction and disposal of educational novelties.

The Main Part: The impact of the innovative process in the sphere of higher education and in the production sphere as well gets only partially embodied in the new educational products or technologies. It gets manifested to a much higher extent in the increase of educational, economic, market, technological, methodological, logistic and scientific potential of the higher educational institution, i.e. a level of educational institution as the

innovative system and its components raises, susceptibility of the educational institution to innovations increases. In this case, the innovative process in the higher education is a method of qualitative change regulating a change of the educational system from one state to another.

A negative “background” of innovative changes in the higher education of Russia shall be taken into account in the course of modernization processes:

- Acute stratification of the Russian community, disproportions in distribution of earnings;
- Current confusion and absence of a systematic approach to innovations;
- Diversity of concepts;
- Low financial support of innovations;
- Non-commercial character of the educational innovations and a durable period of their payback;
- Absence of certainty regarding effect of the innovation;
- Absence of unanimous criteria of innovations success [8].

A number of basic trends can be distinguished among those innovative processes taking place in the higher education:

Informatization and increase of technological component of educational cycle: Not only improving position with computerization of the academic activity takes place. The present-day education in Russia is based on the technological innovations and technologies. An important peculiarity of the modern education is the fact that the use of these technologies is accompanied by radical changes in the pedagogical methods and techniques, in organization of work of teachers and students and even in the theory and methodology of the contemporary education. Though, it is definitely insufficient.

A problem of selecting technologies for the modern education, e.g., in England, as one of the advanced industrially developed countries, appears not as the technological issue but as a problem of innovative management in the field of education. In order to efficiently solve it, it is necessary to regulate the relations between all the subsystems and elements of the education system [9].

Kidwell J.J., Vander-Linde, K.M. and L.S. Johnson emphasize that the main benefit from incorporation of the Knowledge Management Toolkit in the institutions is:

- Increasing competitiveness;
- Reducing time expenditures for investigations;
- Improving quality of educational services and efficiency of the educational institutions;
- Reducing administrative expenditures. The knowledge management within the framework of educational process increases quality of the education programs by means of revealing and involving the best of them and monitoring the results;
- Improving administrative services related to teaching and educating with the use of modern technologies;
- Ensuring high level of promptness in the course of accounting experience of teaching by means of monitoring and incorporating situational classes;
- It gives a possibility of introduction of interdisciplinary approach to the development and implementation of curricula with overcoming the organizational boundaries between departments [10].

Training specialists in several directions simultaneously: The experience of training according to several educational programs put into practice is available at Saint Petersburg State University. The students of SPSU are able to be taught after completing the third year at two departments simultaneously: economical and any other selectively [11]. A possibility of trade training with a simultaneous mastering of the interpreter's profession in the field of professional communication is viewed as particularly challenging.

Transition to organizing curriculum on the basis of concluded agreements according to Bologna process: This is, first of all, a transition to the three-stage education system:

- 1-st level – 7 terms – bachelor-economist;
- 2-nd level – 3 terms – certified professional;
- 3-rd level – from 2 to 4 terms – master of economy.

The first two levels have existed in the domestic higher education system. However, the problems have appeared not infrequently in the course of curriculum implementation with certification of the incomplete higher education. The suggested three-stage education helps solve this problem [12].

Internationalization of education and intensification of cooperation: The joint programs with conferment of joint

degrees, predominantly the master degrees, are presented in the Russian higher education, though they are relatively sparse. It resembles a situation with education in Denmark [13]. The following programs can be mentioned:

- Programs of mutual accreditation in the field of engineering training, where Tomsk Polytechnical University takes part from the Russian side [14];
- Programs “Ecologization of Education in Commercial Fishing in Russia for Steady Development” (TUNA) and “CENEAST: Reformation of the Curricula on Built Environment in the Eastern Neighbouring Area” of Kaliningrad State University [15];
- Program of investigation of polar regions (SPSU and Bielefeld University and other German universities) and programs of European sociological investigations (SPSU and a number of German universities) [16];
- Programs implemented by Peoples' Friendship University of Russia in cooperation with a number of universities (Bordeaux IV, etc) [17];
- Programs implemented by Ural Federal University together with Italian and other HEIs [18].

A diverse degree of integration is achieved in the enumerated and other joint programs. Different requirements are demanded to the language of teaching and graduate qualification works [19]. It can be noticed that the situation in Russia is more favourable to some extent as compared with many countries of Western Europe [20]: implementation of joint programs and conferment of joint degrees in Russia does not have a clear legal regulation so far; provided such a regulation is developed since it is highly demanded, the Western experience can and must be used in every possible way, including any negative experience [21, 22].

Utilization of such new technologies as modular education system for the development of Bologna process: Module is a combination of educational tasks to be solved either through several types of work, or through several close, though, different subjects. A module, e.g. on political historiography can consist of a course of lectures, of learning activities for writing the historiographical reviews, otherwise it can include the dedicated workshops, special courses for different directions of political thought. The departments of high-speed computers, protection of information, center

of nanotechnologies development at Moscow Bauman State Technical University [23].

Transition to liberal vector of education development, which is expressed in orientation to the market demand for higher educational disciplines: A satisfaction of the market demand shall be solved on the basis of high-level fundamentalization of higher education content and satisfaction of short-term market demands due to different professionalization at the last courses of teaching. The evolving tendencies for abridging a cycle of the principal higher education in Western Europe in the framework of “Bologne Movement” up to 3 years are highly questionable from the positions of solving problems of steady humanity development in XXI century. The waiving of one-cycle form of higher education is unreasonably hasty (this is especially questionable with regard to training engineers and doctors).

The excessive pragmatization of higher school and ever-increasing commercialization of education, commitment to self-sufficiency of HEIs is fraught with much danger [24]. An efficient system of monitoring and evaluation of innovations is necessary for successful incorporation of educational innovations.

Transition to a policy of active incorporation of quality management system (further referred to as QMS): The work aimed at improving quality of education is certainly carried out at this or the other level in every educational institution [25]. It is expressed in the influx of new pedagogical staff, improving their skills, development and incorporation of new educational programs, technologies, products [26]. Such a level could be defined as evolutionary [27]. Sooner or later a collective body and its administration arrive at a necessity of organizing these processes with the aim of increasing efficiency thereof [28].

A characteristic feature for this stage is the establishment of a new organizational structure (e.g., sector, department, laboratory or center of ensuring quality of education) or introduction of a new organizational function in the existing structure (e.g., monitoring or providing quality in the learning and teaching administration or department). It is important that this organizational level of improving quality of training comes under the auspices of public organizations and, finally, under protection of the state in order to protect the education process from an excessive and detrimental commercialization [29].

The development of activity of the specified organizational structure brings about the establishment of a system of ensuring quality of teaching (specialists training), which can be defined as an achievement of the system level for improving quality of education. One of the conditions of the market competition of any institution activity results is the availability of quality system with it, which meets the universally acknowledged requirements.

A generally-recognized guarantee of the stable quality of organization activity quality results today is the presence of the quality management system with it, which meets the requirements of ISO standards. Influenced by the changes taking place in the world the “quality revolution” or the “revolution of quality” has broken out as part of the Synthetic Civilization Revolution [30]. The category of quality changes the subject matter of administration (management) in all life-support systems by transforming any management into the “quality management”. The establishment of life quality management as the form of management of the social-nature harmony takes place on the basis of mechanisms of public intellect and educational community. This establishment acquires simultaneously a form of establishment of social quality rotation management in the social context [31].

CONCLUSIONS

In view of high expenses of conducting the up-to-date research and development activities, which have at the same time a tendency to further growth, considerable risks when selecting the priority directions, necessity of adapting activity of many innovation process participants, support tasks, national participants of international competition, a multi-sided mechanism of state support and promotion of the innovative processes is required, including:

- Development of strategic program of scientific and technical development of the country, which shall clearly outline the guidelines for intellectual potential concentration. The specialization will help determine the country’s advantages, how can the technological policy improve them, what is the market allowing to get the highest effect from the innovations;
- Establishment of the developed infrastructures contributing to the dynamic and extended development of the innovative process, retention of

various forms of communication between scientific centers and production companies, including “research clubs”, “technological and scientific centers”, etc. corresponding to a form of cooperation between private and state capital on a long-term basis;

- Consistent taxation and depreciation policy, including provision of taxation, customs and other privileges promoting invitation of investments into the scientific and technical sphere, conducting R&D activities, technological and production innovations in the private sector (exemption from value-added tax of priority trends of the scientific and technical development, etc);
- Provision of state guarantees by the investor at financing the most risk-laden stages of innovation projects;
- Introduction of the competition basis at assignment of the state financing and support, which will allow developing the most efficient projects;
- State financing and, first of all, fundamental investigations;
- Governmental regulation of the large-scale programs at the international level, motivation of the international cooperation in implementing big innovation projects;
- Development and implementation of a complex program of motivating establishment and support of the beginning small innovation companies in the hi-tech industries as the sources of future economic growth;
- Setting up environment for the national business, where an investment into innovations is the basic method of getting high and steadily growing incomes, establishment of the integrated national market of venture capital (dedicated banks of development, risk-related funds, security exchanges of venture enterprises, etc);
- Development of systems of distribution and exchange of scientific and technical information, submission of results of investigations conducted by the state centers and institutes to the private companies free of charge or on privileged conditions for their future commercialization;
- Motivation of active procurement of licenses abroad as well as financial support of patenting abroad subjects of industrial property obtained in Russia.

REFERENCES

1. Nonaka, I., G. Von Krogh and S. Voelpel, 2006. Organizational knowledge creation theory: Evolutionary paths and future advances. *Organization Studies*, 27(8): 1179-1208.
2. Nonaka, I. and H. Takeuchi, 1995. *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. New York, US: Oxford University Press, pp: 284.
3. Enberg, C., L. Lindkvist and F. Tell. 2006. Exploring the dynamics of knowledge integration. *Management Learning*, 37(2): 143-165.
4. Von Krogh, G., K. Ichijo and I. Nonaka, 2000. *Enabling knowledge creation: How to unlock the mystery of tacit knowledge and release the power of innovation*. New York, US: Oxford University Press, pp: 304.
5. Nellis, J.G. and S. Regan, 2002. The economics of the learning organization and the role of economics in the organization of learning. *Educational Innovation in Economics and Business*, 5: 57-68.
6. Scardamalia, M., J. Bransford, B. Kozma and E. Quellmalz, 2012. New assessments and environments for knowledge building. In *Assessment and teaching of 21st century skills*, Eds. P. Griffin, B. McGaw, E. Care. Dordrecht, New York, US: Springer, pp: 231-300.
7. Trends and objective laws of shaping the innovation economy under conditions of globalization. Ed. by V.A. Baburin. Vol. 1. 2012. St. Petersburg, RU: St. Petersburg State University of Service and Economics Publish., pp: 183.
8. Kljachko, T.L., 2009. Modernization of education and the economic crisis. *Russian Education: Trends and challenges*. Collection of articles and research reports. Moscow, RU: Publishing House “Business”, Academy of National Economy, pp: 383-395.
9. Cranfield, D. and J. Taylor, 2008. Knowledge management and higher education: A UK case study. *Journal of Knowledge Management*, 6: 1-116.
10. Kidwell, J.J., K.M. Vander Linde and L.S. Johnson, 2000. Applying corporate knowledge management practices in higher education. Colleges and universities have significant opportunities to apply knowledge management practices to support every part of their mission. *Educause Quarterly*, 23(4): 28-33.

11. The second higher education professional retraining. St. Petersburg State University. Faculty of Economics. Date views 31.06.2013 <https://sites.google.com/site/econpuru/main/sf/prof/programs/>.
12. On implementation of provisions of Bologna declaration in the system of higher vocational education and training of the Russian Federation. Official documents of the Ministry of Education and Science of the Russian Federation. Works of methodological workshop. Date views 30.06.2013 http://www.apu.fsin.su/territory/Apu/declaration/2/rosina_VI.pdf/.
13. Bertramsen, R.B., 2002. Knowledge management in education and learning – a Danish perspective. Copenhagen Business School and Learning Lab Denmark. Paris: Organization for Economic Cooperation and Development (OECD). Date views 31.06.2013 <http://www.oecd.org/dataoecd/46/20/2074934.pdf/>.
14. Effective joint programs. Double-degree programs. Tomsk Polytechnical University. Date views 02.07.2013 <http://portal.tpu.ru/ciap/student/master/prog/>.
15. KSTU in international programs. Kaliningrad State Technical University. Date views 02.07.2013 <http://www.klgtu.ru/interact/projects/>.
16. International partnerships. Materials for the meeting of the Academic Council 07.11.2011. The activities of the St. Petersburg State University in 2010/2011 academic year. Date views 30.06.2013 <http://spbgunews.ru/wp-content/uploads/2011/11/unt1.doc/>.
17. RUFП cooperation with international organizations. Russian University of Friendship of Peoples. Date views 30.06.2013 <http://www.rudn.ru/?pagec=3755/>.
18. Cooperation agreement with Milan Polytechnic University (Italy). Ural Federal University. Date views 30.06.2013 http://urfu.ru/fileadmin/user_upload/units/oms/Milan.pdf/.
19. Pohlkov, Ju.P., A.I. Chuchalin and O.V. Boev, 2004. Guarantees of quality of engineers training: Accreditation of educational programs and certification of experts. Questions of Education, 4: 125-141.
20. Sjomin, N.V., Ju.D. Artamonova, A.L. Demchuk, *et al.*, 2007. Academic mobility in Russia: Regulatory and methodological support. Moscow, RU: Moscow State University Press, pp: 208.
21. Problems and trends in the field of development and implementation of joint programs of three cycles of higher education. Information on the results of analytical report prepared by the Center of studying problems of vocational training. Date views 28.06.2013 http://inpro.msu.ru/PDF/joint_program.pdf/.
22. Concept of Federal target program “Scientific and scientific-and-pedagogical staff of innovational Russia” for 2009-2013 approved by edict of the Government of the Russian Federation of April 7, 2008 No. 440-r, 2008. The Administrator of Education, 11: 7-20.
23. Report on Contract No. 14.741.36.0010 on financing the program of development of the state educational institution of higher vocational training “Moscow Bauman State Technical University”. Date views 04.07.2013 <http://www.bmstu.ru/mstu/works/science/research-institute/>.
24. Subetto, A.I., 2008. Criticism of “economic human brains”. Saint Petersburg, Kostroma, RU: State University of Kostroma Publishing, pp: 232.
25. Vlasova, M.S. and O.V. Suhanov, 2012. Technical aid for opposing plagiarism with the aim of increasing quality of teaching situation. Bulletin of Civil Engineers, 6(35): 187-193.
26. Meadow, C.T., B.R. Boyce, D.H. Kraft and C.L. Barry, 2007. Text information retrieval systems. Burlington, US: Elsevier Academic Press, pp: 371.
27. Mitchell, K.D., 2000. Knowledge management: The next big thing. Public Manager, 29(2): 57-60.
28. Senge, P.M., 2006. The fifth discipline: The art and practice of the learning organization. London, New York, US: Currency-Doubleday, pp: 445.
29. Edge, K., 2005. Powerful public sector knowledge management: A School district example. Journal of Knowledge Management, 9(5): 42-52.
30. Hackett, B., 2000. Beyond knowledge management: New ways to work and learn. New York, US: The Conference Board, pp: 70.
31. Stewart, T.A., 1997. Intellectual capital. The new wealth of organizations. London, New York, US: Doubleday-Currency, pp: 278.