

Россия в мировом контексте научной деятельности студентов

Russia in Global Context of Students' Research

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Аннотация В статье рассматривается проблема научной деятельности студентов в России и за рубежом. Анализируется литература, посвященная вопросам научной деятельности в разных странах. Выделяются проблемы в изучаемой сфере, среди которых: мотивация студентов, мотивация научных руководителей, создание соответствующей научной среды, проблема научных коммуникаций. Показано, что некоторые проблемы являются общими для России и мирового сообщества.

Ключевые слова экономика знаний, глобализация, высшее образование, научные исследования, стратегия устойчивого развития.

Summary In this article the attention is paid to the problem of students' research both worldwide and in Russia. At the first stage literature concerning the question of doing research in different countries is analyzed. Then problems existing in the sphere of students' research worldwide are identified. Among them are students' motivation, supervisors' motivation, developing friendly scientific environment at various levels, communication in science. It is shown, that some problems are common for Russia and global scientific society.

Key words knowledge economy, globalization, higher education, research, sustainable development strategy.

Students' research is one of the main aspects of higher education today. It is estimated that only four per cent of graduates in Russia become future researchers. Nevertheless, doing research is a great way to improve various skills, from research to communicative ones. We cannot but agree with Wieman who states that modern economics and global problems facing the world today require more technically and scientifically-literate people who have "complex problem solving skills" [19]. He suggests teaching students science as they are scientists and, what is the most relevant for the present research, to disseminate their results in scholarly manner.

Global processes in higher education. Global context of modern education is usually characterized in terms of globalization, knowledge society (knowledge economy) and technological revolutions.

The term *knowledge economy* was proposed by F. Fritz Machlup in 1962 [18] and then popularized by Peter Drucker as the title of Chapter 12 in his book “The Age of Discontinuity” [8]. Firstly, it was used to define economic sector, while now it refers to the highest level of innovative economy. Main factors of its development are knowledge and human resources. The following are basis of knowledge economy: innovative system, information society (with its highest level knowledge society), life-long learning, state innovative policy. It is obvious, that knowledge economy includes not only technologies but also the mechanism of “knowledge production”: universities, pure and applied science, communication, patent system, research and innovation. So, the shift to knowledge economy presupposes educational (including scientific education) system change.

Globalization. Being originally economic, today the term "globalization" means the process of not only the world's economic and political, but also cultural integration and unification. This is an objective, system process that covers all aspects of society [2, p. 9-12]. Among conditions of globalization experts in the field of economics name the development of modern communication systems, providing the infrastructure for rapid transition of knowledge, and relatively low cost of air travel which makes possible the existence of the whole united world community [4]. At the same time the central driving force of globalization is higher education. The system of higher education and science, in its turn, undergoes some changes, too.

Globalization in education provides equal rights to all countries for the use of educational services. In accordance with the World Trade Organization (WTO) recommendations, education relates to the service sector. Therefore, the educational market fiercer competition increasingly. In studies devoted to the impact of globalization on higher education system and its transforming [1, 3, p. 37-38, 4], the following main tendencies of this process are formulated:

1. Easy access to higher education.
2. Diversification of forms, levels and content.

3. Internationalization (globalization of education).
4. Increasing usage of ICT.

These tendencies are also reflected in the research processes: scientists are working in extended research groups, form networking and, as a result, create E-Science. The process of scientific communication also changes greatly: paper-only system of knowledge storage and transfer gives way to electronic facilities. Though, the need of peer review and face-to-face formal and informal communication grows and becomes more relevant [6; 7; 15, p. 1281-1282].

Problems of students research abroad. Although about 10-15 years ago foreign education and science were seen in terms of their differences from the Russian system, today, during Russia's entry into the world educational environment and the development of new higher education paradigm, particularly relevant is the use of advanced achievements of science and research development abroad. In studies devoted to the development of the world HE system, the issues of its objectivity, quality, relevance, sources of financing and internationalization are analyzed [14, p. 12]. Characterizing research abroad, the authors use such key concepts as research system, research environment, innovation, STEM (which stands for “Science, Technology, Engineering and Mathematics”), and HERI (which stands for Higher education, Research and Innovation). [14, pp. 7, 166]. Research activities in Europe and the United States are performed both at universities and enterprises. At the same time, universities occupy rather small share of this sector [14, p. 65]. Nevertheless, the role of universities in the implementation of the highest level of HE increases, aided by funding from the state and the private sectors. From here follow the main trends in the development of science abroad:

1. Consistent and adequate research funding.
2. Organization of research universities.
3. Open and supportive research environment.

Among the challenges and risks facing students’ research abroad could be mentioned:

1. Financial: increase in the cost of research; difficulties in obtaining grants, even though there is increase in funding ; threat of science underfunding by private sector.
2. Problem of combining scientific work and teaching activities.
3. Intercultural. Science today produces knowledge that is the basis of social development. Therefore, an unequal situation in education, unequal access to it is a very dangerous global problem which leads to a so-called "Research gap" – a gap that expresses the difference between those who produce knowledge and those who need it but cannot access it [14, pp. 11 , 43, 49].

Survey results. To find out current trends in students research, two surveys were held internationally. The first concerned general aspects of students' research such as when they start doing it, how they are motivated, what are the relations with their supervisors etc. The second included questions about general age of getting scientific degrees (bachelor, master, and PhD), and was divided into two parts: for international and Russian staff.

According to surveys and interviews with foreign colleagues from several European universities (Austria, Brazil, India, Germany, Poland, Finland), students are engaged in research either through a practical course or during preparation of the thesis. Temporary position of assistant professor or participation in sponsored project as well as scholarship (approximately €1,500 per month for a 30-hour week) is offered to them. Scientific research usually begins at the level of Master training while at the undergraduate level practical tasks and exercises dominate. Nevertheless, undergraduates can also do research.

Motivation depends largely on the professor's ability to make students interested in his subject or on his participation in research projects. For engineering specialties, a big role is played by the possibility of using well -equipped laboratories. Besides, a mark for the students' research paper affects the annual of final score, also, if the study is performed under a contract with a specific company, the student has a chance to get a position in this company after graduation. At some universities, contests for the best master's thesis with the main prize of

about €500 are held. One of the problems in this area is funding, which can only be obtained by performing projects, while in the pure sciences it is much more difficult than in applied ones.

In the U.S. research is considered to be the foundation of the educational process. The minimum requirement is the need for research methods in the educational process. There are two forms of doing research in the United States:

1. Students are involved in sponsored research projects on a competitive basis. For example, the University of California at Berkeley, the student may receive up to 4 credits for participation in such projects. Specifically to attract students in such projects some special programs are developed [5, p. 2-3].
2. If the initiator of research is the student himself, he has the right to perform an independent research project and use the results in the thesis. For this type of work a student may get a grant or credits. Some students work on their own research projects without any extra pay.

There are a number of studies dealing with matters of student motivation, including the motivation of research [17]. It is mentioned, that, doing their research students develop both universal and professional competence, motivation, cultural values, critical and creative thinking skills.

Some papers [13, 17] present the results of psychological research devoted to identifying links between students' research and their future professional activities. The study showed that:

1. Students are generally satisfied with the results of their study.
2. Students, who are interested in scientific activities as the beginning of their future profession, are attracted by a variety of internship programs. After performing the research students were convinced of the correctness of their career choice.
3. These results are the same for different social and ethnic groups of students.

In some works [5, 9, 11, 12, 13] it is emphasized that, despite the great support of science by the state in the developed countries, in the field of research students also face a number of unresolved problems:

- 1) difficulty in finding out the number of students engaged in scientific activities;
- 2) the problem of student motivation ,
- 3) the negative influence of engaging students, especially freshers, into research to completing their curriculum;
- 4) the problem of creating supportive scientific environment;
- 5) the issue of research culture;
- 6) the problem of scientific supervisory.

In summing up the analysis of article devoted to students' research abroad, as well as the surveys held the following conclusion concerning developing students' research in Russia can be drawn:

1. Effectiveness of internships and training courses, which includes research elements.
2. Importance of engaging students in scientific activities through participation in projects carried out by universities.
3. Significance of the supervisor personality in motivating students.
4. Flexibility of reward system: the possibility of financial support or obtaining extra credits for scientific research.

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