ROLE OF STUDENTS’ SCIENTIFIC RESEARCH IN IMPLEMENTATION OF COMPETENCY APPROACH IN TECHNICAL UNIVERSITY

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ABSTRACT
This article is devoted to considering the role of students’ scientific research in the educational process, aimed at preparing future engineers for professional activities on the basis of the competency-based approach. The authors define key pedagogical concepts taking into account the modern requirements of the Federal State Educational Standards of Higher Education (FSES HE) of the third generation. The article considers the experience of active use of students’ scientific research as an additional and effective means of forming the required competences by the example of students’ scientific conferences organized by State Institution of Higher Education “Surgut State University” of the Khanty-Mansiysk Autonomous Okrug – Yugra and a branch of Tyumen Industrial University in Surgut. The theoretical analysis of approaches to defining the competency-based approach, the validity of its implementation in higher education due to the requirements of the FSES HE of the third generation, and the description of difficulties while its implementation, make it possible to conclude that it is important to organize students’ research activities in educating future engineers to train competitive labor market specialists who are fluent in the necessary information, oriented in related fields, ready for professional growth.

Key words: Competence, Competency-based approach, Federal State Educational Standards of Higher Education, Student’s scientific research.

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1. INTRODUCTION
In pedagogical education, one of the key problems of development is the problem of organizing the content of professional training of future engineers, based on constantly updated federal state educational standards. As is known, in modern conditions the development of higher educational institutions is impossible without the use of new ideas, innovative approaches, systems and models, content and pedagogical technologies, without the interaction and collaboration of scientists, practicing teachers, teachers and students. Innovative processes in higher education in Russia are implemented in three directions: socio-economic, organizational, managerial, and psychological-pedagogical. The structure of innovation processes in education includes the following components: activity, subject, level, content, management. All of them are closely related to the professional training of future specialists. Creation of new experience, search for optimal solutions ensuring the quality of technical training requires competent development of the content of training future teachers, taking into account the requirements of the FSES HE of the third generation, combined with extracurricular work, also aimed at developing students' professional skills. According to clause 7.3. The Order of the Ministry of Education and Science of the Russian Federation of December 22, 2009 No. 788, the implementation of the competency-based approach should provide for the extensive use of active and interactive forms of conducting classes in conjunction with extracurricular work in the educational process in order to students' professional skills [1].

With the implementation of the competency-based approach in the educational process of a technical university, in our opinion, there are still problems that need to be solved primarily. This, above all, is the creation of the necessary conditions for the active involvement of students in practical and scientific activities. It is known that the solution of this problem is based on the integration of information and education, practice-oriented, research and experimental activities taking into account the existing theoretical concepts and educational practices aimed at creating conditions for the effective implementation of socio-professional initiatives to modernize educational institutions and their further quality development [2].

2. METHODS
When studying the role of student research in the educational process aimed at preparing future engineers for professional activities, the authors relied mainly on the competency-based approach, considering the relationship with other methodological approaches: humanistic, axiological, communicative, personality-oriented, system-activity, creative, technological. All of them, when solving a scientific problem, were used most often as a whole, due to the theme, purpose and focus of the research. As research methods, a retrospective analysis and review of the literature on the problem, observation, questioning, interviews, design, modeling, experiment are used.

3. LITERATURE REVIEW
Currently, the priority of education and its subjects is a focus on results: the formation of the necessary general cultural and professional competencies of future specialists, self-determination, the development of individuality implies the improvement of teaching and educational activities at universities [3]. In the work “The Basics of the competency-based approach in higher education,” S. Troyanskaya notes that an educated person is can and builds his own productive activities to enter various cultural and social communities. The competency-based approach in education is used to implement productive actions and achieve practical results [4].
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Vocational education, focused on the competency approach, is determined by socio-economic and pedagogical factors. Undoubtedly, that modern society is developing very fast, transformations and innovations are observed in all spheres of human activity, and this in turn influences the situation at the human resources market. The market makes new demands on specialists, which, due to continuous changes, are not sufficiently taken into account in the trainee training program.

It is known that the problem of updating the content of education of future specialists on the basis of the Federal State Educational Standards of Higher Education, taking into account methodological approaches, is actively studied by philosophers, educators, and psychologists. Conceptual ideas on the problem of improving the quality of education for future specialists, based on the competency-based approach, were developed and are being developed by such scientists as E.F. Zeer, V.I. Zagvyazinskiy, A.F. Zakirova, V.V. Kraevskiy, E.V. Korotaeva, T.A. Matveeva, A.P. Tryapitsina, G.K. Selevko, V.A. Slastenin etc. According to the concept of modernization of Russian education, the implementation of a competency-based approach in education includes the formation of key (basic, universal, etc.) competencies, i.e. the students' readiness to use the acquired knowledge, skills and abilities, as well as the ways of activity in life for solving practical and theoretical problems [5]. Key competencies are nothing but the result of education. For many years in our country there was a paradigm of "KS" (knowledge and skills), which is still accepted by a significant part of the pedagogical community. However, changes taking place in the field of education goals in the world and in Russia, correlated with the global task of man’s entering a social world and adapting to this world, necessitate raising the issue of providing a more complete, personally and socially integrated result.

The notion “competence” was the general definition of such an integral socio-personal-behavioral phenomenon as a result of education. Thus, the competency-based approach in education is focused on results, namely, the formation of the necessary general cultural and professional competences, self-determination, socialization, development of individuality and self-actualization [6].

Due to this approach, the education system is able to ensure the quality of training of future specialists in accordance with the needs of modern society. In other words, on the one hand, graduates are prepared for a specific social situation, for the specific needs of society to use the potential of the individual. But on the other hand, the teacher, objectively remaining the keeper and culture guide, directs his activities towards the development of the personality of the graduate, which is consistent with the need of the individual [7].

It should be noted that, in general, most scientists agree on the definition of the competency-based approach. So, Zagvyazinskiy V.I. and Zakirova A.F. interpret the competence approach as the orientation of education towards achieving a sufficiently high level of knowledge, experience, and awareness for carrying out activities and communicating in various areas and fields [8]. Researchers Tarasova N.V. and Khutorskoy A.V. define the competency approach as a priority orientation of education on its results: the formation of the necessary general cultural and professional competences, self-determination, socialization, the development of individuality and self-actualization [9, 10]. In the materials of the modernization of education, it is proclaimed the most important conceptual position of updating the content of vocational education.

In turn, scientists understand competence as theoretical and practical ability, potential ability to solve various kinds of problems, readiness to carry out any activity [11]. Competence, according to the researcher Kuzmina N.V., is an integrative personality trait that can only be tested in activity. This is the ability to act, competence in real activity [12].
most research papers, especially those related to business, a competence is interpreted as an integral characteristic of a student, reflecting his ability to use the entire set of available knowledge, skills, experience and personal qualities to solve problems.

4. RESULTS
The federal state educational standards of the 3rd and 4th generations are formulated in terms of competencies, their lists and types are given, such as general cultural competencies, professional, general cultural professional, professional by type of activity and areas of training. The competence structure includes activity, creative, motivational and emotional-volitional spheres. The important components of competence include experience that is integrated into a single whole of individual actions learned by a person, methods and techniques for solving problems [13]. It is believed that they should be implemented in practice as a set of competencies - generalized methods of actions ensuring the productive fulfillment of professional activities.

So, in the discipline work program "Foreign Language" (bachelor degree), developed in accordance with the Federal State Educational Standard of Higher Education in the area of training 03.03.02 (Order of the Ministry of Education and Science of Russia dated 07.08.2014), the following general cultural competences (GCC) and general professional competences (GPC) competences are included: GCC-5: the ability to communicate in oral and written forms in Russian and foreign languages for solving problems of interpersonal and intercultural interaction; GCC-6: ability to work in a team, tolerantly perceiving social, ethnic, religious and cultural differences; GCC-7: the ability to self-organization and self-education; GPC-7: the ability to use the knowledge of a foreign language in professional activities.

As a result of mastering the discipline, the student must know: the phonetic, lexical, grammatical, morphological, and syntactic aspects of the foreign language being studied as a system; rules of articulation of sounds, the specifics of intonation, accentuation and rhythm of neutral speech in the target language; grammatical structure and basic grammatical phenomena of the studied language; algorithm for compiling the reference of professionally-oriented texts; peculiarities of teamwork; techniques and methods of collective decision making; methods of self-development and self-education; rules of professional ethics characteristic of professional communication; basic terminology in the state and foreign languages within the specialty; requirements for the preparation of documents adopted in professional communication; basic requirements for the preparation of public speech in a foreign language (oral presentation, report). The student must be able to: use Russian and foreign languages in oral and written forms to solve problems in interpersonal communication and educational field; make a monological and dialogical statement using the most common lexical and grammatical means in communicative situations of informal and official communication in a foreign language; master independently the knowledge and skills of their application in professional activities; to work independently with special literature in a foreign language, foreign information resources, technologies and modern computer translation programs, in order to obtain professional information; to carry on business correspondence in a foreign language for the purposes of professional (business) communication; to understand and evaluate someone else's point of view, to seek cooperation, reaching agreement, developing a common position in case of differences of opinions and beliefs through a foreign language. The student must master: grammatical skills that ensure communication without distorting the meaning in written and oral communication; reading skills of the original literature in a foreign language on the subject of the corresponding field of study (introductory, exploratory, studying reading); preparation of the extracted information in the form of translation, summary, theses; ability to self-education and self-improvement, skills of

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reading the original literature in a foreign language on the subject of the relevant areas of training (specialty); reading, searching, and studying reading strategies; skills in understanding dialogic and monologue speech aurally; the basics of public speech: to make a report or a message in a foreign language on professional topics; foreign language to the extent necessary to obtain information from foreign sources; the basics of public speech: to make a report or a message in a foreign language on professional topics.

In the 21st century, more than ever before, teachers of higher educational institutions have a difficult task: organizing the educational process within the framework of the competency approach with a minimum number of classroom hours and a sufficient number of independent work hours. The organization of students’ scientific research, according to the teachers of State Institution of Higher Education “Surgut State University” in the Khanty-Mansiysk Autonomous Okrug-Yugra and a branch of Tyumen Industrial University in Surgut, is an effective way of forming and developing students’ motivation for creativity, responsibility and independence, individual approach in training and education of students. The development and improvement of students’ scientific research as an obligatory component of the system of training specialists is one of the important priorities in higher education [14]. This form of study organization at the university is closely related to the problem of optimizing the cognitive activity of students, with the formation of their creative thinking, research skills. Students’ scientific research is one of the most important means of improving the quality of training specialists obtaining higher education, who are able to apply creatively the achievements of scientific and technological progress in practical activities, and, therefore, quickly adapt to the modern conditions of economic development [15].

Students’ scientific research is aimed at increasing the level of scientific training and identifying talented youth for the further recruiting of highly qualified personnel in the University, other institutions and organizations. “Open Regional Student Scientific Conference named after G.I. Nazin”, All-Russian Conference of Young Scientists "Science and Innovation of the XXI Century", Intramural Youth Scientific and Technical Conference “Innovative Technologies of the Fuel and Energy Complex. Actual Issues of Science " and International Scientific and Practical Conference “Actual problems of Scientific Knowledge. New Technologies of Fuel and Energy Complex" are annually held at Surgut State University and a branch of Tyumen Industrial University in Surgut. The main objectives of the conferences are: the development of students' interest in scientific creativity, creative thinking and independence in solving scientific problems; developing students' skills in conducting research discussions; identifying the most talented and talented students of the Khanty-Mansiysk Autonomous Okrug - Yugra, using their creative and intellectual potential to solve actual problems of science; training the most capable and successful students for the reserve of scientific-pedagogical and scientific personnel of the Khanty-Mansiysk Autonomous Okrug - Yugra.

For the students of the Polytechnic Institute and the Institute of Natural and Technical Sciences, studying English, the section “ESP in Technology and Science” is organized, where students, under the guidance of scientific supervisors, prepare and present their scientific researches in English. SurSU has a lot of experience in organizing research work of students. Since the study of the discipline "Foreign Language" begins in the 1st course and lasts for several years, the teachers are engaged in research work with students of the 1-2 courses. Student conferences are held according to the plan of SurSU at the end of the year, so students have enough time to prepare successfully for participation in this event. Experience in being the chairmen of the scientific sections, members of the jury, as well as scientific supervisors allows the authors to conclude that students’ scientific research, carried out in addition to the educational programs of higher education, also contributes to the formation of general cultural
and general professional competencies of students. At the same time, as the students themselves note, participation in different conferences makes their attitude to the study of planned disciplines, and to the implementation of graduation projects or works more serious. The work on the preparation of a scientific report is carried out in several stages: 1) discussing and selecting the theme of the research; 2) making a plan; 3) defining the object, subject, methodological basis of the study; 4) special attention is paid to supporting the relevance of the chosen topic; 5) independent work of students with sources and the specification of the topic (if it is required); 6) preparing the report in English and discussing controversial issues with the supervisor. Undoubtedly, the participation of 1-2 year students in the conference with a topic that interests them as future specialists, but in English, is not a fully scientific work, which is carried out at senior university courses, nevertheless, it contributes to the quality training of future specialists.

5. CONCLUSIONS

Modern society in the 21st century requires competitive specialists in the labor market who are fluent in necessary information, oriented in related areas, ready for professional growth, and able to adapt to constantly changing conditions. Thus, the competency based approach in education emerged as an alternative to practice-oriented qualities of abstract theoretical knowledge. Knowledge, skills and abilities are units of culture and its values, and competences are units of a market economy and professional activity. Competency-based approach in education establishes a new type of educational results not reducible to a combination of information and skills, but focused on the ability and readiness of an individual to solve various kinds of problems. These educational results, called competences, are considered as the ability to solve complex real-world ideological, communicative, personal problems of professional and social activities. Competency-based approach is the prior orientation of education to its results: the formation of the necessary general cultural and professional competences, self-determination, socialization, development of individuality and self-actualization. However, the implementation of the competency approach in the educational process of the university is shaped by the limited time frame, namely the insufficient number of classroom hours.

The long-term experience of organizing students’ scientific research at Surgut State University and a branch of Tyumen Industrial University in Surgut shows that the development of a student’s personality as a future specialist of a higher technical institution depends largely on the creation of a modern higher education area with high quality standards, opening up great opportunities for students, first of all ensuring their competitiveness at the market of educational services, as well as from the teacher, his desire and ability to involve students in cooperation and interaction in extracurricular activities, to form his need for professional development and self-development. An important role in improving the quality of training in the direction of a decisive turn towards the development of the creative abilities of future specialists is to be played by students’ research work, as the educational process, merging with the scientific work of students, is becoming a real professional activity, which now forms the basis of the process of becoming a future specialist.

REFERENCES

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