Quality Management of the Polytechnic Education by the Methods of Knowledge Value Refinement Technology

T V Filippovskaya

1Ural state University of Economics, Department of Economics of the social sphere, str. 8 March Narodnaya Volya, 62/45, 620144, Ekaterinburg, Russia

E-mail: ftatyana@mail.ru

Abstract. The author states the problems in the organization of polytechnic education at the world and national levels and offers involvement of innovative approaches to the organization of students training. The author recalls the author's approach to the assessment of the essence of knowledge. The concept of «knowledge» is systematically used in problematic scientific publications, but the task of its semantic specification remains. This is predetermined by different assessments of the essence of knowledge not only in different scientific areas, but even within them. The author recalls the results of her previous studies where the activity essence of knowledge, principles of its realization, ontological structure of knowledge was specified. On this basis, the author describes the technology of refining the value of knowledge and provides data on the introduction of this technology. The effect of the introduction of technology to clarify the value of knowledge is presented and an invitation to discussion on the humanization of technological education on the basis of innovative assessment of the essence of knowledge and its value is given.

1. Introduction
Please note that The problem of improving the quality of Polytechnic education is constantly relevant. Approaches to its understanding are diverse and at the same time contradictory. On the one hand, the authors variously state the crisis of polytechnic education through the qualitative features of the subjects of the educational process and its infrastructure. On the other hand, the author describes the achievements of individual educational organizations in advanced technological training based on real production practice («engineering special forces» of the Institute of advanced industrial technologies of St. Petersburg Polytechnic University [1]).

At the same time, the understanding of a very important aspect of future specialists training is missing. This aspect concerns the methodology of initiating the development of multidisciplinary creative abilities of students. It is associated with the solution of the problem of an integrated approach: the advancement of high-tech development skills should be based on a broad erudition and civic responsibility. This requires innovation in the humanitarian component of the training of future technologists. The latter points to the need for innovation in understanding the essence of knowledge and technology to clarify its value.
2. Importance of innovations in improving the quality of polytechnic education

The relevance of the author's position is predetermined by a number of settings. The first installation is related to the quality of education. As part of the global approach, the quality of education is analyzed through the rating system. The Times Higher Education data allow us to conclude that the evaluation criteria are still relevant, the primary among which are teaching (return of higher values-critical thinking and humanitarian education), promotion of students, innovatively working teachers on the basis of their merits and the results of research, research itself, and only then follow in order of importance the citation of researchers, the income of the organization and its international prospects [2]. The positive side is the process of reducing the number of students per teacher and expanding the interdisciplinary approach to the development of the essence of disciplines (creating conditions for inter-department interaction for the process of updating initiatives focused on the global level). Students are involved in the development of these initiatives, primarily at the level of compulsory development in each semester of any humanitarian or social science, regardless of major specialization.

The Russian version is described through two components.

One component is related to the problem of inclusion 21 national universities in the project «5-100» with a planned budget of 45 billion rubles for the period from 2014 to 2020. P.G. Arefiev [3], analyzing the actual results of this project, states that no university, except MSU, «in the TOP 100 does not fall», but 10 of the universities elected at the level of the country’s leadership «can approach the normal level of scientific production and production of educational product». That is, the dominant assessment of the success of universities in the publication activity of its employees and the ratio of the number of trained Russian and foreign students is not very justified. The problems related to this approach have already been analyzed by the author in publications about scientific and pedagogical vassality [4]. Substitution of real innovativeness in the content of education by the struggle «for number and letter» makes the effectiveness of the educational process a very conditional category.

The second component concerns the quality of the level of readiness of modern students to the parameters of creativity expected at the level of the world community. Recall the statement of Y. I. Kuzminov that more than 25% of compatriots cannot count on a decent salary in the professional perspective because of the low level of development of «human capital» in preschoolers and schoolchildren [5]. The results of the USE (Russian Unified State Examination) in 2017 allow us to say that school graduates experienced great difficulties in cases when it was necessary to highlight the generalizing concept or reveal its essence, to analyze the data tables and graphs, to present their knowledge about the history of the country in the XXth century, individual cultural level. In the tasks of physics the main barrier was the problem of applying theoretical knowledge in practice [6]. The average score in mathematics (profile level) was 47.1 points out of 100 possible. I. V. Yashchenko, A.V. Semenov, I. R. Vyotsky [7] note that the success in performing tasks of the basic part of the exam tasks in more than 70% of examinees, indicates sufficient readiness of applicants to study at universities, but only in specialties that do not have high requirements for knowledge of mathematics. Thus, we see a contradiction: significant funds are invested in achieving high goals for positioning universities in the international educational environment, while inside the country, the qualitative potential of future students does not fully meet current requirements.

In this regard, we note that the second of the installations presented in the publication is connected with the global trend-the search for innovative forms of interaction of subjects of society for the formation of talented employees. This was quite clearly stated by the participants of the forum in Davos: «This will require breaking down old silos between education systems and labor markets, more agile approaches to regulation, new forms of public-private collaboration, and new norms and values» [8]. The reference to the concept of value is to be considered. In this regard, the third installation is associated with theoretical calculations in the evaluation of the value of the essence of knowledge.

In the author's monograph on the risks of reflexive modernization in the conditions of aggravation of antagonism of knowledge and ignorance [9], in previous and subsequent publications based on the analysis of the works of sociologists, economists, philosophers, teachers (G.E. Zborovsky [10], B.Z.
Kno\textsuperscript{w}ledge as an action is realized through the leading principles: the principle of continuity or continuum of experience-synthesis of past, present and future experience of interaction and the principle of interaction - in conditions of harmony of objective and subjective meanings of the value of knowledge. From this point of view, knowledge is reflected at the level of predisposition of subjects of interaction to one of the settings on the:

- Utilitarian approach to the value of knowledge;
- Rational and pragmatic approach to the value of knowledge;
- Reflexive approach to the value of knowledge;
- Creative approach to the value of knowledge.

Depending on the accepted setting, subjects of educational interactions implement different behavioral trajectories based on the internalized meanings of the value of knowledge. For example, the accepted approach to the reflexive approach to the value of knowledge focuses on the action aimed at analyzing the strategies of knowledge. The functions of the value of knowledge here are the acceptance of new knowledge or the denial of disapproved knowledge, the enhancement of procedural knowledge and the diminution of unnecessary knowledge, the retention or loss of unnecessary procedural knowledge in time. The social network is dynamic and conditionally closed on professional and leisure communities to which the right of expert knowledge is delegated. Unfortunately, the narrow scope of the given volume of the publication will not allow reflecting the author's theoretical findings in more detail. However, innovative author's approaches allowed to justify and realize within 5 years the technology of refining the value of knowledge.

3. Efficiency of realization of the technology of refining the value of knowledge

The main idea of innovative pedagogical technology - the technology of refining the value of knowledge is the idea that the value of knowledge - its characteristic, indicating the recognition of its importance. The technology of refining the value of knowledge is aimed at creating pedagogical conditions for:

1 – Minimization of negative externalities from the formal approach of all subjects of the educational process to its implementation. Under the formal approach we understand the situation when the teacher «pretends to teach» and the student «pretends to be studying». In this case, the main task of the teacher is to «give hours» - to perform the role of «hour-giver», and the student to perform the role of a person formally present in the audience and using academic time to solve private problems, usually lying outside the educational process;

2 – Changes in students' attitudes from a utilitarian approach to the value of knowledge to reflexive and creative;

3 – Changes in the algorithm of interaction (interaction) with trainees to improve the motivation of learning - as a way to deal with information - and self-development aimed at «education through life».

The novelty of the technology is not only innovative understanding of the nature of knowledge and the author's interpretation of the approaches to the learners internalization of the value of knowledge, but also in the elimination of the fundamental contradictions of pedagogy, when the broad use of the term «knowledge» the actual knowledge is considered as the amount of learned information and skills - as ways to work with it. In the author's approach the knowledge is considered as readiness and ability to actions of the analysis, synthesis and an assessment of information that is demanded by competence approach to educational process [16].

How is this effect achieved? First of all, saying goodbye to teachers who are not ready for innovation. Our research confirms that today, even at the master's level, more than 60% of teachers turn to traditional forms of work, dominated by teacher-centered technology.

The basic in the author's approach is the use of technologies of reciprocal learning and development of critical thinking. Organizational students receive a full package of tasks for each date of the
classroom for the entire period of development of the discipline no later than a week before the first meeting with the teacher. This is the practice of foreign universities, which, unfortunately, in the national higher school often ends with the presentation of work programs. Working programs cannot always be used as guidelines for preparing for each lesson. Classroom contact with learners is based on the dialogue. The role of the teacher is enhanced by referring only to those sides of the problems studied, which are difficult to master students on their own and / or lie outside the texts of textbooks. Excluded reading «recording» huge amounts of information available in an information environment based on the texts of textbooks, usually obsolete before their publication. Abstracts on the main issues of the perspective lesson are prepared in advance, and during the classes are only supplemented. This is not the only difference from the traditional practices of educational interaction for national universities [17].

Co-author of this article V. V. Bueva conducted pilot studies, analyzing 587 essays of students, undergraduates, postgraduates, included in the development of various disciplines on the technology of refining the value of knowledge submitted within 3 years. From the whole array of research we give excerpts from the reviews of future bachelors:

«I finally felt like I was studying at a higher education institution …»;
«I started to read a lot. My parents are just surprised …»;
«I began to look differently at the world around me …»;
«In the process of the test was excluded fear - after the test, I went out with a sense of joy that I learned something new, and not the desire to quickly forget all that memorized night before the test …».

4. Conclusion
The problem of improving the quality of polytechnic education in the author's interpretation is related to the problem of humanization of the educational process. Today it is especially significant. Recall the insights of N. Postman [18], formulated many years ago, about the danger of the evolutionary change of instrumental culture by its variations: technocracies and technopolies. If the interiorisation of instrumental culture by society did not interfere with traditional moral values, then in the conditions of technocracy tools (machines, technologies) begin to subdue the social and symbolic worlds. In these conditions, traditions and values are forced to «fight for their lives».

Technopolies is much more dangerous for the society and the future of mankind, as «it does not make culture immoral, but invisible, of no value». In these conditions, «everything rises on its head»: what was considered the norm, decent behavior, civic courage, becomes its opposite and acquires the status of the norm. In such circumstances, it remains only to be guided by the parting words of P. Sloterdijk: «With all his vigilance to prevent the penetration of divisions and the unconscious in the individual life, to comprehend and realize own own capabilities; and to participate in the fun-bringing work of Education, in which it is accepted to respect those desires that expand the prospects of the possible» [19].

The latter is possible with the increased attention of higher school teachers to innovative understanding of the humanitarian essence of the educational process of future technologists, whose ambitions are aimed at «high technology». In General, the pedagogical management will have a lot of work to do in order to develop the learners' skills of opposition to the «cynicism of the split consciousness» [20]. Great support in this regard can be provided by the use of the provided technology to clarify the value of knowledge.

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