Strategic priorities of teaching Humanities at the technical university

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Abstract. This paper is devoted to the consideration and analysis of integral humanitarian knowledge influence on training of competitive engineering personnel for work and successful adaptation in extremely uncomfortable climatic conditions of the Arctic. The paper analyzes the forms and methods of consolidated participation of humanitarian and specialized departments of St. Petersburg Mining University in the preparation and adjustment of training programs, professionally focused on the formation and development of general cultural and professional competencies. The authors focus on promising ways of forming personal qualities and social communication skills of oil and gas industry specialists with a high level of motivation for career success, satisfaction with the process of obtaining knowledge. The paper describes such qualities of a future specialist as self-efficacy, associated with the presence of confidence in achieving the desired result due to the necessary competencies; self-esteem, contributing to the creation of a favorable psychological climate in the team, the growth of the level of criticism and demands on oneself, a rational attitude to success and failure. Special attention is paid to the consideration of professional competence as the main quality that provides competitive advantages of a graduate of a technical university. The formation of such qualities as initiative, mobility, ability to make independent decisions, ability to quickly adapt to the professional environment and habitat, is considered in the paper as a necessary condition for the systemic development of personality.

1. Introduction
As you know, the Northern territories of Russia adjacent to the Arctic zone have a significant natural and resource potential, which guarantees the preservation of economic security of the country, and plays a key role in the national economy. The Russian North as an insurance reserve for sustainable development contains about 80% of all minerals reserves, including significant deposits of oil and gas. The fields discovered several decades ago are being actively exploited, and the commissioning of new fields of significant capacity is predicted. National oil and gas companies are engaged in the implementation of large-scale projects in dozens of countries at the same time, focusing primarily on the accelerated development of the Russian economy. Currently, Russia has several dozen integrated large oil and gas companies specializing in transportation, storage and partial processing of petroleum products. Considerable efforts and funds are being attracted today in order to ensure decent living conditions and production activities in the Far North.

It should be noted that the Arctic regions of Russia are very heterogeneous in terms of development, also economic, which is explained by a number of reasons — from the extremely uncomfortable living conditions of the population and economic activity to the almost complete lack...
of transport and industrial infrastructure, which greatly complicates their development. It is urgent to develop a comprehensive strategy for the development of the Northern regions of the country, which would take into account the climatic, socio-economic and psychological factors of adaptation to the harsh working and living conditions in the areas adjacent to the waters of the Arctic ocean.

As a part of development and implementation of this strategy, along with numerous factors of material, financial and social character, high-quality training of competitive personnel in the oil and gas industry is of particular importance [1]. More than ever, the Russian economy needs highly qualified engineering personnel, able to quickly adapt to the conditions of work and residence in the Arctic, to be ready for the effective implementation of professional communications. It is no coincidence that the "Oil and Gas Business" direction of education has become a priority in many technical universities in Russia, including St. Petersburg Mining University, which trains specialists for the mineral complex of the country. Today about 50 Russian universities prepare specialists of this profile. However, there is a shortage of personnel in oil and gas companies, their turnover is high, especially among young professionals working directly in the fields of the Far North.

What can help to eliminate the shortage of qualified personnel in hard-to-reach areas, so that work in the far North would become attractive for professionally trained professionals, comfortable for living and activities of people motivated to realize themselves in difficult climatic conditions? This problem is already being actively studied and discussed by Russian scientists. It is noted that, theoretically, adaptation to working conditions in the Arctic is facilitated by high wages, an effective social protection system, developed infrastructure, as well as certain romance that accompanies life in the North [2]. And it is quite obvious. However, as evidenced by sociological surveys, the paramount importance in adaptation is played by the factor of interpersonal relations in the surrounding social environment (in particular, the family, the circle of professional communication) as well as good interesting, creative work. Thus, the ability to create favorable interpersonal relationships and get satisfaction from work can predict the success of adaptation to working and living conditions in the Arctic. How can the Humanities studied by students within their university course contribute to this? This study aims at the analysis and study of these problems.

2. Material and methods

The theoretical and methodological basis of the study was the scientific works of modern specialists in the field of education quality. The paper proposes the use of general scientific methods — system and structural analysis, comparison, generalization, analysis and synthesis. The authors also conducted sociological research. The method of questioning was used. Students of St. Petersburg Mining University and other Russian universities were interviewed. The respondents were asked questions taking into account the general concept of socio-cultural self-identification.

The social function of education is determined by the ability to purposefully influence the moral qualities of a person, to form his or her professional skills. The implementation of this function can contribute to a reasonable, balanced, comprehensive program on improving the educational process in higher technical school. A major role is played by new specialized educational programs created by the specialized departments and specialized faculty who are professionally focused on developing competences aimed at solving scientific and applied problems, revealing the creative potential and analytical skills of future specialists, which gives an idea about introduction of innovative technologies of hydrocarbons’ extraction and processing. It is also interesting that the changes in the priorities of training young specialists in "Oil and Gas Business" sphere have required adjustments to the curricula in sociology, psychology, pedagogy, culture of speech, business communication, the basics of professional ethics and other humanitarian disciplines that form general cultural competence, demonstrating the strengthening of interdisciplinary ties.

It is obvious that in the conditions of training highly qualified engineering personnel, competitive in the international labor market, the development of social and general cultural competencies, the quality of the educational environment that provides the ability to learn, the ability to self-esteem, self-development and self-improvement, which are designed to form disciplines of the social and
humanitarian cycle, is of great importance. Over the past decade, technical universities of Russia have been demonstrating a tendency to meet the modern requirements of the profession and to effectively adapt to rapidly changing living conditions and industrial activity. The development of the intellectual potential of the workforce determines new conditions for professional mobility. Of particular importance are the skills of social and business communication, the development of the need for self-assertion, the ability to overcome emerging difficulties, including communication difficulties associated with emotional instability, timidity, excessive dependence on the group, low self-control, which is also the subject area of humanitarian profile disciplines.

The role and importance of humanitarization of education is seen primarily in the formation of a culture of student’s thinking, creative abilities on the basis of a deep understanding of the meaning and essence of how the world works in its various manifestations, from the scientific picture of the world to social, cultural, individual psychological characteristics and diversity of everyday life. It is also seen in formation of the development mechanism which would guarantee improvement of intellectual and creative potential of the student’s personality ready for self-realization and highly productive activity in any, even the most severe conditions. High level of culture, education, professional competence — these are the main qualities that provide competitive advantages of a modern university graduate. The formation of such qualities necessitates the systematic development of personality in the university through training and active participation in student life.

The list of such qualities in demand today as initiative, mobility, constructiveness, the ability to make independent decisions, the ability to adapt in a professional environment and work in a team is significantly expanding due to the introduction of competencies in the educational standards of higher education of the new generation.

The modern higher technical school faces a difficult task to teach students to think independently, to make qualified decisions, to build official contacts on a partnership basis, to proceed from mutual requests and needs, interests of business. The role of a ready knowledge repeater irrevocably leaves the content of educational professional pedagogical activity. All definitions of "competence" concept share the understanding of it as a person’s ability to cope with a variety of tasks encountered in his/her life. Competences are dynamic, mobile by their nature and are manifested in the process of a specialist’s practical activity. Currently, there are several approaches to the description of competencies that can be equally used in the educational process. In the sociological approach, competence is associated with the effective solution of life tasks and is considered as a special type of subject-specific knowledge organization, as a personal way of solving emerging problems that ensure success in work. In the functional approach, competencies are associated with a specific way of solving specialized professional tasks and achieving expected results. It should be noted that general cultural and general professional competencies complement each other and provide communicative effectiveness, focus on establishing and maintaining appropriate contacts in the professional environment. They also allow demonstrating professional suitability in difficult working conditions.

The basis for the development of professional competence as a holistic matter is the motivational and value attitude of the individual to the assigned task, while the completeness of its implementation is determined by the presence of theoretical and practical knowledge, skills and experience, the level of communicative culture, ensuring the establishment and maintenance of appropriate contacts in the professional and business environment. It is expedient to include issues of professional and ethical character, culture of communication, business communications into educational programs of humanitarian disciplines in order to form students’ integral and system perception of the world around and humanization of educational process. As a result, a graduate studying in "Oil and Gas Business" of any profile must have competencies that determine the ability to think abstractly, analyze and synthesize; the ability to use the foundations of philosophical knowledge to form a worldview. The graduate is called to follow the humanistic ideals of the society, being realized in his/her professional activity.

In the new results-oriented educational paradigm, the goals of training competitive engineering personnel are formed as a projection of professional requirements imposed by employers. The
technical university is faced with the task of forming new competencies for graduates, corresponding to the various challenges of today, including the mobility of the labor market. Modern employers express their wishes that universities train specialists who are able to see emerging problems and look for ways and means of solving them, taking into account various circumstances, including emergencies. We are, of course, primarily talking about work in the remote Arctic regions of Russia. Graduates should practically master the ability to easily adapt to changes in the social and natural environment, quickly and creatively work with a variety of information flows, competently formulate their thoughts, think critically, demonstrate the skills of productive interaction with colleagues, creative activity and stress resistance.

One of the employers’ most common wishes is associated with a young specialist’s ability to effectively interact in a group, team. These competencies are acquired through systematic and properly delivered training. In this, a special role belongs to the disciplines of "Business communication" and "Psychology and pedagogy". Joint life and activity (in contrast to the individual) has fairly strict restrictions of any individuals’ activity-passivity manifestations. It is not by chance that in the course of real interaction, adequate representations of a person about him/herself, other people and groups organized by them are formed. The role of the teacher as a mentor and educator is to give the student an idea of the forms of behavior appropriate to the situation in relation to the interaction partners. The scenario of cooperation (partnership), as the desired type of interaction, on the one hand, and rivalry (confrontation), as a possible type of interaction, on the other, should prepare the student for such a level of interaction as mutual understanding, an essential characteristic of which is its adequacy. Familiarization with the content and style of this type of interaction lays the foundations for positive development and other related competencies.

Currently existing professionally composed educational programs, developed within the framework of Federal educational standards, provide for various and diverse methods and ways of forming a fairly wide range of general cultural and professional competencies among students of technical universities. The coordinated and concerted efforts of the Humanities departments at the universities, designed to help develop skills of self-realization and self-development, create favorable conditions for the positive comprehension of educational material and as a result — for satisfaction with the educational process, i.e. undoubtedly contribute to the solution of this fundamental and responsible task. We assume that satisfaction with the educational process forms a priori causal representations and causal expectations of obtaining satisfaction from the results of professional activity, even in severe climatic conditions. It prepares the future specialist for the reasonable use of skills, abilities and intellectual capital in situations of increased activity intensity and aggressiveness of the external environment.

Satisfaction with the educational process depends on many factors, to which some researchers attribute the result of ideas about the chosen educational institution, the future specialty and its social status corresponding to the students’ expectations [3]. The student needs to see and understand the value and significance of his studies for society and for him/herself, to feel confidence in the future and hope for a positive perception and recognition of his achievements at the social level. Such recognition can be expressed in the level of wages, in a dynamic professional career, in positive public opinion about his future profession. Attention is drawn to the socio-psychological background of this phenomenon. In particular, the socio-psychological factors that increase satisfaction with learning should include meaningful life goals, low level of aggressiveness, a stable positive attitude to the surrounding reality, a subjective sense of satisfaction with social communications, labor relations, living conditions.

The data obtained in the course of empirical research allow us to judge about the students’ attitude to the study of Humanities at the university. The information was obtained at the Department of Sociology and Psychology of St. Petersburg Mining University in 2019 during a sociological survey, which was attended by 150 students. Of these, 15% were representatives of senior years, about 85% of respondents represented the 1-2 year of study. About 80% of respondents were young men, only 20% - girls, which is quite typical for the first technical university of Russia [4], [5].
The results were discussed at the XIII St. Petersburg Congress "Professional education, science and innovation in the XXI century" on November 20-22, 2019 [6]. The respondents were asked about the place of Humanities in educational programs.

**Table 1: The need to study Humanities at a technical university**

| Do you consider it necessary to study Humanities at the University? | Number of respondents |
|---------------------------------------------------------------|-----------------------|
| Yes                                                           | 112                   |
| No                                                            | 32                    |

Among those, who answered affirmatively about the necessity of studying the humanitarian disciplines, the greater part – 63 students – consider that the number of hours expected by the programme in the Humanities is optimal. At the same time 20 students marked the lack of the humanitarian studies at the university and 45 students think that the humanitarian studies are unnecessary. Thus, only 35 % of those who consider that humanitarian studies should exist at the university, assume the reduce of the humanitarian disciplines in favour of special ones which are useful in the professional activity. The students’ answers about their preferences in the sphere of humanitarian sciences also seem to be interesting.

**Table 2: Humanities cycle subjects most popular with students**

| What Humanities subjects would you be interested in within a university education course? | Number of respondents |
|---------------------------------------------------------------------------------------|-----------------------|
| Economy                                                                               | 80                    |
| History                                                                               | 69                    |
| Philosophy                                                                            | 63                    |
| Sociology                                                                             | 51                    |
| Political science                                                                     | 48                    |
| Culturology                                                                           | 40                    |
| Literature                                                                           | 34                    |
| Russian language                                                                      | 32                    |

The study suggests that the surveyed representatives of students formed socio-cultural identity of different types: professional, social, behavioral, communicative. Many of them realize that humanitarian knowledge is an important factor in the development of professional thinking.

**Table 3: The students’ interest in the electives**

| How would you feel about the opportunity to attend additional classes in humanitarian subjects? | Number of respondents |
|-----------------------------------------------------------------------------------------------|-----------------------|
| Yes, I would visit them for general development                                               | 81                    |
| No, I wouldn’t                                                                              | 67                    |
| I already attend such classes outside the university                                           | 2                     |

Thus, the results indicate a certain social maturity of students.

One of the obvious indicators of successful socio-psychological adaptation and satisfaction with the educational process are stable positive interpersonal relationships and interaction between students and
teachers. The formation of a stable stereotype of effective interpersonal communications is associated with the correct application and use of their own role potential, socially developed and fixed in the process of joint activity of intra-group ideas, generalizations.

A special role is assigned here to the teacher and the curator, contributing to the implementation of at least three models of communication in the educational process: cognitive, persuasive and expressive. They should fill the educational environment with several important qualities for students' satisfaction with their position and place in the group, satisfaction with the educational process. These are respect for students, reasonable demands, depth of professional knowledge, goodwill, understanding (empathy) and a sense of humor. Consolidation of positive samples of interpersonal communication within the student group, among themselves, teachers, curators in the students' behavioral model creates favorable opportunities for the implementation of the personal growth concept, actually contributing to the improvement of self-management. To clarify the role of interpersonal relationships in the satisfaction with the educational process and socio-psychological adaptation of students of St. Petersburg Mining University, the Department of Sociology and Psychology conducted an empirical study. The object of the study was students of all courses of the University with a total number of about 100 people. As a result of the survey, it was found that, in the opinion of respondents, the following factors contribute to their socio-psychological adaptation: effective and rationally built communication with teachers and within the group, joint university activities, undergraduates’ assistance, university atmosphere, personal qualities, operational and sufficient information for constructive interaction.

The respondents identified the following factors as those hindering adaptation: stiffness, timidity, low self-esteem, preventing the establishment of normal relationships, novelty of requirements and organizational tasks. The comparative analysis showed that students with a high level of adaptation are more satisfied with their studies at the university, their study group, the amount of information received from the curator of the group, feel confident and free with the teachers and employees of the Dean's office. In addition, the following trend was revealed: students with a high rate of adaptation are more likely to expect a quality education and a successful professional career from studying at the university. They are more likely to note emotional support and understanding in their study group as a factor contributing to adaptation. Thus, it becomes obvious that the low adaptation of students is closely associated with frustration in the field of interpersonal relations.

Problems in interpersonal communication are a serious obstacle to successful adaptation, because they create emotional stress and can distract from studying or even form a negative attitude to it. Students who do not experience frustration in the field of interpersonal relations demonstrate an interested approach to learning; they are purposeful and show high results. Thus, the main factor of students’ adaptation to educational process, is the factor of interpersonal communication: the understanding of the situation and of others’ motives, the desire to avoid conflict, great aspiration to establish an equal, horizontal interaction, satisfaction with one’s environment and emotional acceptance of others, one’s current status in the group. Complex and effective consolidation of skills of positive interpersonal communication in students’ consciousness in the course of training is naturally projected on perception of conditions of their future professional activity, formation of social and psychological qualities, readiness to work in the Arctic and adaptation to difficult working conditions in the Arctic zone. Satisfaction with the educational process, the quality of the educational environment ensure the development of abilities for self-assessment, self-development and self-improvement.

"Self-assessment is, first of all, a person's assessment of him/herself, his/her qualities, abilities, real opportunities, as well as his/her place in the group and in the educational process. This is the most significant characteristics of the process of the person’s self-learning" [7].

What can be the object of a student's self-assessment? First, it is the student's relationship with fellow students and teachers; secondly, the student's educational activity and its practical results; thirdly, the student's individual attitude to his future profession and related career opportunities; and fourth, it is leisure both inside and outside the university [8]. The effectiveness of the learning process
largely depends on the student’s self-esteem and confidence that his/her contribution will be properly evaluated and positively noted. The student should know the answer to the question: how valuable and necessary is his/her personal contribution to the final result of group communication, what does he/she gain from his/her participation in the group and what does the group gain from his/her contribution to the common task? In other words, what makes him/her unique? As D. Morgenstern rightly notes, "the better you reveal your talents, increase self-esteem, gain experience and find time for personal life, the happier you become" [9]. Based on the results of the self-assessment, you can get answers to questions of interest: Which of the established strengths of the student should be supported and developed? How to prioritize interpersonal communication in a group? What are his/her properties and traits can become a new object for self-assessment? Self-assessment activates the process of intellectual development of the student, increases his/her cognitive activity and personal interest in the results.

According to the Federal Educational Standard, one of the key tasks of the higher education system is the formation of universal skills that provide the ability to learn, the ability for self-development and self-improvement [10]. At present, two complementary factors should be taken into account in the development of working programs for the Humanities. First of all, it is the acceleration of the information growth available in the world. The impact of this factor is amplified and reinforced by another modern achievement — new means and ways of business communication between people. At the same time, the educational and pedagogical process at a technical university is most often focused on the formation of a person capable of self-development and professional self-improvement, and, as a planned result and professional competence. With high probability, it can be considered that an integral component of a specialist’s competence is self-educational competence, they must be taught to learn, to organize appropriately professionally-oriented training, taking into account the individual psychological predisposition to a particular process of thinking and creativity. It is obvious that the effectiveness of educational activities depends not only on individual abilities, but also on the rational ways of its implementation. The development of skills and abilities of independent cognitive activity in the classroom in sociology, political science, psychology and pedagogy, business communication and the basics of professional activity is extremely important, due to the specifics of these disciplines. Self-development and self-improvement both in the process of training and in the performance of their future professional duties involves the ability to manage their activities: independently set adequate goals and objectives, be able to form and argue their own point of view, be responsible for decision-making and their implementation, to find the necessary funds and resources, properly assess the results. Learning such skills can be considered developmental. Developmental learning involves the assimilation and generalization of ready-made knowledge, the formation and improvement of new skills and becomes one of the means of intellectual and spiritual development. It is possible to state that students are able to learn only if they correctly plan the time, carry out the teacher’s tasks in the shortest possible time and in the most rational way.

Time planning is a prerequisite for successful business. People who are able to allocate their time, as a rule, succeed, work well, and make the rest interesting and eventful. Effective use of time as a factor of self-development involves the ability to quickly analyze and revise preferences and consistency in the implementation of commitments, to develop a system to minimize irrational actions, regularly assess the productivity of their work and make adjustments to their schedule, to determine the real time to accomplish the tasks.

3. Conclusion

For the humanitarian methods of education at the technical university, the close connection of training and control of acquired knowledge and skills, their compliance with specific goals and settings of state policy in the field of education is relevant. The learning function of control is largely determined by its psychological properties, contributing to a deeper assimilation of the material. The attitude to control entails the students’ active attitude to the subject of assimilation, rationalization of efforts to develop professional competencies and self-management, the art of developing their own abilities, self-esteem, self-development and self-improvement. A positive attitude to learning, knowledge acquisition,
gradual formation of skills and competencies is a determining factor in the impact of humanitarian knowledge on the creation of a special microclimate-partnership and cooperation.

The strategy of integration of all directions of humanitarian knowledge in inseparable connection with the profile and graduating departments contributes to the creation of an adequate mood, personal attitude of adaptation to new conditions of life, the formation of a strategy of professional and career growth in the training of engineers. Synergetic effect of such cooperation allows to equip trainees with rational methods of educational activity, to provide ideological and scientific content of educational material, its connection with practical activities, problematic and emotional nature of presentation, contributing to intellectual development.

Thus, the new scientific and educational paradigm should correspond to a new type of training, focused directly on the training of specialists with a creative style of thinking and professional activity, able to independently determine the vector and direction of their development, easily adapt to environmental conditions.

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