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### Professional Culture of the Specialist of the Future

#### PROFESSIONAL CULTURE OF THE FUTURE SPECIALIST IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

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#### *Abstract*

The response time of modern vocational education, poor considerations about the trends and tendencies of the changes in the modern world conflict with the dynamism of the processes and phenomena of human activities and the need to focus on the strategy of sustainable development as the only way of civilization development. One of the possible ways out of the crisis is building an educational system for sustainable development, focused on the training of the specialists who are able to carry out professional cultural and creative activities based on the developed professional culture. Future specialists who are culturally aware and have a concern for ethical issues that synthesize the norms and standards of professional life in accordance with the strategy of sustainable development are more flexible and mobile, capable to set and solve new problems, and able to work collaboratively and think and design creatively. The article suggests some changes in the pedagogical system, its content, and technologies to meet new goals and achieve new values in education in the context of sustainable development. The professional culture formation of the future specialist in the context of advanced education is demonstrated by the educational program “Metallurgy” implemented in the CDIO approach at the Siberian Federal University. The content of the research can be interesting and useful for the specialists and educators dealing with the problems of improving the quality of vocational education, developing professional culture under the challenges of a rapidly changing world.

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**Keywords:** Advanced education, cultural practices, ethical issues, professional culture, values.



## 1. Introduction

Nowadays, professionalism of a modern specialist is determined not only by the formation of professional skills and competencies but also by the level of the development of general and professional culture. Professional culture is a significant component that determines the productivity of professional life and the study of its changes in accordance with the general dynamism of socio-economic processes, as well as the processes of globalization, is a topical scientific challenge.

## 2. Problem Statement

The analysis of the publications concerning the problem of professional culture made it possible to identify the trends for studying this phenomenon. Firstly, the definition of the structure of professional competences is found to be varying among the researches. In particular, Kholopova (2012), describing the structure of the professional culture of the specialists of mining industry distinguishes its natural components: the culture of speech, behavior and general culture and ethics, that are considered to be related quite weakly to the specific character of the professional life of mining engineers and are attributed more to general culture. Zakharova and Gunina (2016) also include the component of business communication culture in the structure of professional culture. The second group of scientists identifies the basic component of the professional culture of the specialist according to a particular professional sphere. For an environmental engineer the essential component is ecological culture (Zelinskaya, 2014), and graphic culture is included in the basis of the professional competence for the specialists in technical fields (Musalimov et al., 2017), the professional culture of a teacher is built without the use of authoritarian methods of teaching (Meirbekova et al., 2017). According to the studies of Muzalev (2000) professional culture is associated with the professional qualities of a specialist in vocational schools and considered from the perspective of a competence approach (Petrova, 2016). Researchers Krylova (2000), Chernova (2000) focus on the dynamic nature of professional culture in accordance with the accelerating changing of technologies, socio-economic situation and globalization processes. These changes define new requirements for a person and his or her professional culture.

Culture is always associated with a certain level of social development. Consequently, the professional culture of the future specialist is directly related to his or her vision of the future. This can be determined through the identification of its strategic focus and analysis of the possibilities of prolonging the current trends for the future development of civilization.

Trends that have a significant impact on the development of the society and education nowadays are:

- The high rate of the uncertainty of the world, characterized by the rapid updating and upgrading of scientific knowledge and technologies;
- Informatization of all aspects of the life of society, the formation of the digital society and the person in it;
- Globalization processes that require harmonization of diversity in the world, deeper engagement with different countries and cultures.

The world is under the influence of the above-stated trends, and at the same time the strategic target of the development of civilization is defined today as Sustainable Development. Despite the fact that the paradigm of sustainable development has been formed in the context of environmental problems, the evolution of its ideas has led to the fact that sustainable development is currently associated not only and not so much with economic and environmental problems, but also with many other problems that are connected straightly with neither economy nor ecology. To provide sustainable development as a systemic unity of wildlife, economics, and man the implementation of a specially built education – education for sustainable development is required. The purpose of such kind of education is to train a specialist who is ready for constantly changing conditions and able to design professional life perceiving and accepting the realities of the socio-economic development of the society, taking responsibility for professional decisions within the framework of personal and cultural responsibility, foreseeing their consequences (Arinichev, 2016; Kasimov, 2008).

The response time of modern vocational education, poor considerations about the trends and tendencies of the changes in the modern world conflict with the dynamism of the processes and phenomena of human activities and the need to focus on the strategy of sustainable development as a non-alternative way of the development of civilization. It is resource intensive to train and educate the future specialist focused on solving new professional tasks in new constantly changing conditions being involved in the old traditional educational model. The presented contradiction states the problem of forming the professional culture of the future specialist by the realization of the problems of sustainable development with the aim of organizing his professional life and behavior in balance with various subsystems of social development and the environment.

### **3. Research Questions**

- To reveal the goals and values of the future education for sustainable development.
- To substantiate advanced education and project-based technologies as a condition for preparing the future specialist to be in advance and to prevent critical situations or even crisis.
- To specify the changes in the educational process for the professional culture formation of the future specialist.

### **4. Purpose of the Study**

Set the requirements for the educational process organization (content, methods, tools, technologies) for the formation of the professional culture of the future specialist in the context of the concept of sustainable development.

### **5. Research Methods**

The methodology of the research has been based on the following approaches: systemic approach, which makes it possible to characterize professional culture as a system in the structure of the professional competence; personality-oriented approach, considering personal characteristics in the process of formation of professional culture on the basis of the level of development of general culture of the individual; an

activity approach that determines the priority of applying active educational technologies in the process of professional culture formation.

The following methods have been used in the study:

- general theoretical methods: a comparative analysis of scientific findings to estimate the degree of the problem development, determine the problems, tasks and research objectives;
- empirical methods: pedagogical observation of the process of students' project activities, a reflection on the products of the project activities during the round-table group discussions and panels, expert evaluation of the results of the project activities by the stakeholders;
- formative methods associated with the implementation of the educational process and such pedagogical conditions which work upon enriching the content of education in the new disciplines that develop professional culture.

## 6. Findings

In the scope of the proposed research the terms Sustainable Development, Education for Sustainable Development, and Professional Culture were clarified.

Sustainable development defines the way of development of civilization which is characterized by such human actions that are both comply with the present needs and cause no risk for the future generations by means of lean usage and preservation of natural resources (Blewitt, 2017; Sachs & Jeffrey, 2015; Tadaki & Allen, 2015).

Culture is always connected with a certain level of development of society. A subject of education demonstrates the culture throughout the level of personal development including the utilization of knowledge and societal experience gathered by humanity, thus defining one's ability to enhance this experience further.

Sustainable development for education, as stated by Ursul (2012), aims for the new goals and overall meaning for the preservation of this process as non-alternative for the humankind. The author addresses the changes in education as Futurization and such an education as Advanced Education. The study of the professional culture of future specialist is directly concerned with the visualization of the future and the question: 'For what future do we need to educate ourselves?' It is crucial to observe which of the trends defining present reality will endure in the future, and how can education address these trends today, and whether they need to be relied upon in the future.

Professional culture represents personal education involving the values and moral framework of professional activity based on expert knowledge and skills complying with cultural norms and standards. Professional culture of a specialist characterizes his or her moral values, which forms the basis of professional ethics required for undertaking the professional activity.

The studies also define the requirements for the provision of sustainable development. The requirements are concerned with the intellectual and moral development of the person able to anticipate the outcomes of his or her actions and foresee its consequences through evaluation of cultural, societal, and economic influence. The important quality of character of a person acting in the context of sustainable development is his or her ability to commence preventive and preemptive actions when necessary. Thus, professional culture of the future specialist aimed for the sustainable development should synthesize

professional standards and moral values, and provide the ability to define and solve problems unique to the current state of civilization development. The strategy of sustainable development, being the only opportunity for the humankind survival, states the problem of rationalizing the requirements for the future specialist and his professional culture as well as identifying the ways and mechanisms of their facilitation in the educational process (Ursul, 2016).

The problem of future professional culture facilitation starts with the actualization of the issues of sustainable development among learners aiming to guide their professional behavior for establishing a safe relationship with various levels of societal development and environment. Acquiring the objective scientific knowledge and moral values in the learning process allow students to develop their cognitive aspects as well as the ability to foresee and act under cultural norms.

Advancing education orientates learners for immutable fundamental values and creative cultural activity encompassing the preparation for preemptive actions towards prevention and avoidance of crisis state (Efremov, 2012).

Authors share the view of Tarasova (2012) concerning the educational role of cultural ideals. Mainly, a person presents itself throughout crafted products of his or her activity.

According to the opinion of Tarasova (2012), the technological ideal of Eiffel Tower characterizes its creator as 'a strong, intelligent, acting person who values societal unity and support.' The researcher notes that the Eiffel Tower 'in the educational scope represents a standard, an ideal of aspiration towards super-human' able to overcome the limits of self-capability.

Any act of cultural creation is based on personal mastery as a result of acquired knowledge and cultural awareness. It can be stated then, that sustainable development throughout the products of human activity represents the human himself including his education and personal qualities. The reverse is as just: in order to maintain sustainable development of civilization, described as a systemic unity of wildlife, humankind, and economy providing the needs for the present and future generations, the human with certain qualities is necessary.

The essential quality of the subject of advanced education is the ability to change and develop innovatively advanced ways of acting (Novikov and Zuyev, 2000; Solov'ev, 2010; Aladyshkin, Kulik, Michurin, & Anosova, 2017; Bylieva, Lobatyuk, & Rubtsova, 2018; Gashkova, Berezovskaya, & Shipunova, 2017). In this case, the professional culture of specialist allows expanding the professional behaviour to act under new conditions. Such acts incorporate advanced intelligence of the specialist allowing him or her to identify cause-effect relationships between various events, and to produce a forecast of their course based on the trends' analysis.

The importance of the intelligence for the professional culture of the future is emphasized in the work of Petrova (2016). According to her research, the professional culture serves a criterion of constructiveness of actions relating to practical activities, followed by the reflection of the consequences complied with the requirements for sustainable development.

The general views on a strategy of advancement of professional education are described by Osipova (2014). Considering the authors' views the advanced education in the context of professional culture development could be defined using the CDIO-based undergraduate program of Metallurgy Engineering at Siberian Federal University as an example.

According to the CDIO Syllabus (Crawley et al., 2011), the importance of personal and professional skills development is addressed through the implementation of specialty courses on professional ethics, responsibility, and professional behavior. The Introduction to Engineering course includes classes on the current problems of metallurgy led by industry experts. Students work on environmental issues of metallurgical production proposing strategies for sustainable development of the industry. The professional culture of the future metallurgy engineer is forming in the framework of project-based learning with the content based on the actual needs and challenges of metallurgical facilities.

The ambiguity of the world sets new conditions, under which, as stated by Lektorsky (1997), it is mainly characterized by uncertainty, the lack of out-of-the-box solutions, and the necessity for responsible decision-making. Therefore, the essential importance of problem-based teaching and learning activities is stressed in the professional education.

Students demonstrate social aspects of the professional culture of metallurgy engineer in such courses as Introduction to Engineering, Personal Development, and Theory of Inventive Thinking. The learning activities are highlighted with such issues as the responsibility of engineers, the societal influence of engineering, and values of engineering activity.

Additional aspects of the professional engineering culture were demonstrated by students during the 'project weeks,' which organized as a public exhibition of student projects. The expert committee includes industrial authorities and faculty members. The presentations allow experts to assess students' understanding of significant trends in the metallurgy industry with its current challenges and evaluate their ability to solve various technological issues. Finally, the committee reported that the students demonstrated a solid knowledge base combined with a decent level of professional culture during their qualification project assessment.

## **7. Conclusion**

The proposed research substantiated the professional culture as a dynamic phenomenon, driven by the strategy of the sustainable development of civilization.

It is demonstrated that the facilitation of the professional culture requires corresponding changes in the educational system. The enrichment of learning content with issues reflecting the current trends in industrial development is recommended. Besides, the implementation of courses covering professional values and ethics provides an overall contribution to the facilitation of the professional culture.

In the scope of global ambiguity emerging unique problems require the development of project-based solutions as a range of strategies aimed to overcome the ambiguity. The proposed approach fosters the cognitive development of future specialists while the professional culture regulates their course of action.

The expert survey demonstrated that the implementation of project-based learning in the framework of CDIO-based engineering program provides the significant advance in the facilitation of professional engineering culture among students. It could be concluded that applying the advanced education methodology is essential for the preparation of future specialists able to act professionally towards the sustainable development goals.

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