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Quality of Life for the Purposes of the Ecological World Outlook Formation in the Educational Environment of Mechanical Engineer

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Abstract

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Creative transformations in the world via engineering and technologies make the following research a burning issue. The aforementioned process can bring modern human society to the environmental catastrophe, and cause the sharp decrease of quality of life. Therefore, under present circumstances it is particularly important to develop the ecological component of professional activity of the engineer. This may sound strange, but it is arrangement of conditions for facilitating the creative potential that improves quality of human life, as well as favors the formation of ecological world outlook. The paper provides deep insight into the importance of the connection of special engineering disciplines and humanities taught at a technical institution of higher education; that activates creative work of students and promotes understanding cultural significance of a cognitive field. Moreover, actualization of cross-curricular connections furthers the development of success model of technical graduates, because it doesn't appeal to importance of knowledge itself, but to the process of cognition. This fact is of significant relevance for contemporary state of mass higher education, when a diploma isn't assured by the right to be employed in the sphere designated in it. However, a creative individual can always support own prosperity and quality of life, which can be considered as a special ecological condition.

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1. Introduction

The issue of ecological world outlook development is a topical one being the subject of wide speculation in scientific community. First, it is pointed out that the characteristic of the modern age directly depends on the development of ecological world outlook. The works by such foreign authors as M. Kikuchi, R. Clarke, W. Lynn, A. Mackay, J. Forrester, J. Ellul et al are the mostly well-recognized in this sphere (Clarke,1973; Forrester,1973; Kikuchi,1981; Mackay,1968; Lynn,1974; Ellul,1991).



The papers of Russian academics in this field also have a wide range of analyzed issue aspects. Among them those are worth mentioning who emphasize the connection of creativity and growth of environmental problems (Poleshchuk,2009; Rozin,2005; Rubanov&Rubanova,2008; Sagatovsky,2007; Stepin,2003 et al).

2. Problem Statement

Contemporary world outlook needs a model to be developed with a balanced aspiration to stability and creative generation of something new in a creative way. At the same time, creativity constantly encroaches on the stability of objective reality. Hence, the man is exposed to risks including immanent possibilities of both a great success and a big tragedy. Here, an ecological tragedy is meant.

To sum up, this research is aimed at revealing the conditions to arrange such educational environment where creative potential of a new generation of engineers promotes improvement of quality of life in modern society without destructively influencing on ecology.

Therefore, the object of research is an educational environment of an institution of higher education majoring in technology; the subject of research is thought of as cross-curricular connections of special disciplines and humanities being the condition for fulfillment of students' creative potential and formation of ecological world outlook.

Arising new conditions, a new sense of communicative educational environment, increasingly dynamical boundaries of contemporary cultural situation undermine a traditional educational paradigm, require for a quick response and application of new tools in the sphere of pedagogy, as well as astonish and let consider astonishment as an integral component of operational wealth of educational reality. In fact, it was ancient philosophy that emphasized the relation of astonishment to world cognition, and modern education can perform its constructive function provided that it addresses itself to the phenomenon of surprise considered as a necessary tool for a subject of educational environment to gain an awareness being the guarantee of survival in the unpredictable social and cultural reality.

Philosophical search for fundamentals of educating a person in the 21st century suggests that pedagogy should reject an anthropocentric functionalism and address to ecological concept. In terms of ecological concept the fascination of natural symbols and structures is to be opened up as a value of the Living. It is obvious that technical and economic relations of the Man with the Nature are absolutely unavoidable at this point of scientific and technical progress. Nevertheless, industrial forms of life can be filled with relations to the Nature through accepting its self-importance, sensual and spiritual superiority. As the consequence, even the early stage of socialization is principally to focus on cultivating the reverence for the Life in form of responsibility to the Nature for Human Mind interference in it.

Cross-curricular connections between subjects are very important for future engineers to form such ecological concept of their world outlook. It is mostly determined by making sense of their level and taking advantages of various forms. Direct cross-curricular connections between disciplines, alongside with the indirect-applied ones give an opportunity to complete the material of related subjects, and provide intellectual training to the students, which involves recurring of notions of one science in the context of the other one, and activating the insight in the new informational field. It is the context, which frequently necessitates the humanities in the educational environment of a technical University.

However, the importance of cross-curricular connections is currently on the periphery of public conscience. An aggressive technological civilization, engrossing the natural environment, has gradual pretensions to spiritual

supremacy (without being unsuccessful). There is a lot of convincing investigations available in this sphere (Imamichi,1995; Stepin,1996; Urbanaeva,1993; Shafarevich,1993; Fedotova&Kolpakova&Fedotova,2011).

Meanwhile, reproduction of mentally-indirect cross-curricular connections can form spirituality of educational environment, which was traditionally typical for Russian engineering thought. Skills obtained in the course of studying humanities are vital for understanding technical disciplines. For instance, formation of cultural importance of cognitive field makes it possible to appeal both to knowledge and to the process of cognition. The latter is especially relevant for current conditions of mass higher education providing no guarantee for a diploma-holder to be employed in the designated sphere.

Therefore, a self-presentation in a communicative flow, memory capacity as an element of intelligence, other characteristics of a personality in contrast to those of just a production engineer in his/her branch of specialization influence on further self-actualization of any higher school graduate.

Actually, ecological education isn't a linear process, and ecological learning is not a sum up of knowledge, represented in curricula contents of the departments engaged in training engineers (for example, in the sphere of life safety, ecology and physical training).

The results of survey conducted in Germany and Austria confirm this statement: «Nine of ten respondents wanted economic order to be improved. But how? Environment protection is the first ranked issue, whereas rational treatment of raw materials is the second important problem...» (Fedotova&Kolpakova&Fedotova,2011). In other words, respondents consider ecological parameters as a component in the project of economic growth.

Hence, widely-spread ideology of consumption in the Western countries and in the post-communistic world reveals the problem of raw materials scarcity, anthropogenic changes in the climate of our planet; that requires economic goals to go far beyond the economic prosperity only and to focus on social, human and cultural capital. Consequently, training specialists in the sphere of environment protection and other engineering professionals capable to meet the challenges of new reality involves their openness to social and cultural activities, their independence, creative awareness, responsibility and modularity.

A forming new sociality (Internet-communities, social networks etc.) enables an autonomous but responsible individual to have a considerable impact on the society. That is why individual aspiration of environmental defenders can forecast dangerous ecological situations, and assure quality of life for themselves and the society.

Nevertheless, the system of socially relevant orientation can be formed provided that a future engineer recognizes some generally acknowledged standards, values, ideas of quality of life. The man identified with the values, standards etc. gets conscious of collective matter of socium, providing his soul with not material interests only.

So, the most loyal individuals with balanced state of mind can transfer human ideas from virtual reality into the objective one. It is the problem of stable psychic processes formation that is solved by humanities and disciplines developing critical way of thinking of future engineers. Then, for instance, competent students – users of the Internet staying in the virtual reality consider it as a source of additional information. When ecological ideas are formed by humanities and special disciplines future specialists are taught to go from virtual reality into the objective one without any difficulties. However, virtual reality is thought of as a new perspective to connect external and internal worlds, keeping one's uniqueness at the same time.

Ecological world outlook formation via optimization of students' creativity is formed, for example, during traditional scientific and practical conferences with elements of scientific school for students and high school students annually hold at *Yurga Institute of Technology, TPU affiliate, Yurga, Russia*. Research helps future engineers involved in such creative forms of organized training to receive evidence of uniqueness of own personality. Finally, it effects on the state of soul ecology.

The research into cross-curricular connections of special disciplines and humanities, being the condition of students' creative potential fulfillment and ecological world outlook formation grounds on the suggestion that the students of technical University are interested in humanities, realize the importance of ecological component in quality of life in modern society, as well as the status of creativity in life of the mankind of this time.

3. Research Questions

The hypothesis was tested according to the following research program:

- 1). Compilation of research program;
- 2). Development of questionnaires and polling of students;
- 3). Processing and analysis of the obtained data;
- 4). Drawing conclusions and making recommendations.

4. Findings

The respondents were students of Yurga Institute of Technology, TPU affiliate, aged 19 to 20 (35 people: 25 – men; 10 – women). Sampling was random, questionnaire poll – voluntary and anonymously. The questionnaire included 14 questions, aimed at revealing the attitude to creativity, humanities, comprehension of content and importance of ecological knowledge for keeping fundamentals of world stable and providing quality of life in modern society.

Unfortunately, the analysis of the results demonstrates, that manipulations with public consciousness over the last two decades have caused formation of absolutely ignorant individual conviction of 30% graduates who consider being kept informed more important than having fundamental knowledge. In other words, from the point of view of future engineers the sphere of their own professional technologies is the most relevant one.

60% respondents chose professionalism as the answer to the question what is more important: to be professional or attentive to people.

Only 20% students answered what methodological culture is.

97% respondents think that an engineer is to be a personality. Whereas only 30% are aware of special methods necessary to develop the memory and suppose that humanities increase its volume; 55% don't think humanities are important and believe that there is no connection between humanities and special disciplines.

15% respondents find difficulties replying the questions whether kindness to people is connected with ecological attitude to the World and if creativity has a destructive potential, 40% answered "Yes", and 45% - "No".

30% of all respondents answer affirmatively the question if ecology influences on the quality of their life whereas 35% have doubt about it.

Taking into consideration the lack of systematic experience of the young we certainly hope that key points of their world outlook can be changed in future. It is possible if the essence of the problem is realized by the generation engaged in forming world outlook of technical graduates.

Therefore, the unity of approaches of lecturing staff to cross-curricular connections is important, first of all, that of their mentally-mediated level. For instance, methodological culture and developed on its basis skills help the students to achieve absolutely new results in any activity, including special disciplines.

The level of methodological culture is practically a "virgin soil" because information on normative documents, state standards helps to avoid unproductive work efforts, including research ones.

The questions, whether the students know these documents, how often they use and if they have a free access to them, as well as whether they realize their importance were answered negatively by 20% respondents, and affirmatively by 10% respondents.

5. Conclusions

If the question was answered affirmatively by all respondents the situations like those mentioned below could be avoided: some lecturers think that an essay can't be extremely simplified, the other believe it isn't necessary to make it more complicated, the third say an essay is to be as detailed as possible, the fourth insists on its laconism. Meanwhile, to exclude the subjectivity lecturers of humanities and special disciplines have to observe the logical law of needless reasons and recommend the students to consult special normative documents, methodological study guides and other sources of information, systematically stating the requirements to papers of this kind.

This mental level of cross-curricular connections of humanities and technical sciences is thought of as a ground for formation of methodological skills to set the purpose of research, develop the hypothesis, and select the methods of investigations. Similar abilities actualize up to the moment of graduate work completion and, there is no doubt, facilitate solution of professional and general problems in independent life. In terms of the mentioned level of cross-curricular connections the model of success of technical graduates can be considered. The importance of humanities in this process is undisputed. If students' ambitions are restricted by having a diploma only, irresponsibility as a main characteristic will be a determinant for one or several generations of certificated specialists. Together with the mechanism of technologies "At any price" or "Ask for more" the spiritual state of the whole period can be foreseen.

Therefore, organization of cross-curricular connections between humanities and special disciplines of the departments engaging in training mechanical engineers for ecological aspects of their professional life is the most important approach for formation of ecological world outlook as a character, spiritual culture of graduates.

Actualization of cross-curricular connections furthers the development of success model of technical Universities graduates, because it doesn't appeal to importance of knowledge itself, but to the process of cognition, and develops a creative, active attitude to life.

This fact is of significant relevance for contemporary state of mass higher education, when a diploma isn't assured by the right to be employed in the sphere designated in it. However, a creative individual can always support own prosperity and quality of life, which can be considered as a special ecological condition.

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