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The Quality of Education as a Factor of Social Well-Being: the Transdisciplinary Approach to Education

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Abstract

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The problem of the individual's well-being mostly depends on the social well-being, which is the essential multi-factorial phenomenon. The social well-being depends on material resources, political and legal freedom, moral and religious values, accessibility and quality of education, and many other factors. This article is devoted to analysis of the quality of education which is an important factor of social well-being. The comparative analysis of disciplinary, interdisciplinary and transdisciplinary approaches to education is presented in the article. The advantages of transdisciplinarity of modern education as the basis of holistic (evolutionarily-synergistic) world outlook are evaluated and proved. The role of interdisciplinary synthesis of knowledge for the humanization of society and overcoming the alienation of cultures is released. The potential of transdisciplinary approach to university education is also released. The specificity of a new type of education in the context of the imperatives of the epoch and new social practices is pointed. The thesis that the holistic trend provides the integrity which appears due to transdisciplinary accomodation is proved. According to the article it's possible to conclude that the high quality level of education in the modern world can be based on the transdisciplinary approach to education, on the holistic world outlook.

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Keywords: Well-being, holistic world outlook, transdisciplinarity, cultures alienation, a new type education.

1. Introduction

According to various studies the concept of "well-being" in science is analyzed through the concept of "satisfaction", "self-realization", "success", and others (Belov, 1997; Gooding, 2004; Ilyin, 2009; Shevelenkova, Fesenko, 2005).

The success of a man in today's dynamically changing world mostly depends on the quality and the level of education, the high level of professional qualifications. It's possible only due to systematic, holistic world outlook based on the dialogue of cultures. Therefore the purpose of this article is to study



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the process of the holistic world outlook formation in the educational space of the modern university through the synthesis of two cultures – science and humanitarian.

2. Methods

The comparative analysis of disciplinary, interdisciplinary and transdisciplinary approaches to education is presented in the article. The advantages of transdisciplinarity of modern education as the basis of holistic (evolutionarily-synergistic) world outlook are evaluated and proved.

3. Results

Traditionally in evolving space of university education two concepts of substantiating the university nature and mission can be found, – one of them got the definition as disperse, the second – holistic. In the topical field of the disperse approach the university is interpreted as an educational and professional institute. The inclusiveness in this institute provides a non-reducivity to the particular world outlook basis, within such institute it is possible to get knowledge, free from the world outlook loading (philosophical, ideological, etc.). Within the boundaries of holistic approach, relevant to the requirements of a civilized society, the inclusion is provided to dialogical thinking concepts ("I – Another"), giving the opportunity to design the world outlook principles, universal human images and meanings of existence. It is possible to agree with L.N. Revyagin when he states that exactly the holistic tendency provides the integrity arising on interdisciplinary coordination, and the ability to see the whole is the most important peculiarity of cognitive and creative human activities (2008).

Provided knowledge within the disperse and holistic approaches is various. In the first case we can go about knowledge which is pragmatic, "receptored", while in the holistic approach this knowledge is full of world outlook, focused on spiritual meanings and joint world outlook principles. The idea of interrelation between a human and nature should be the dominant in the modern rationalism that will be the prerequisite of overcoming technocratic thinking. Fundamental university education has to provide the formation of the project-oriented culture in the joint cognitive space, where can also be formed those skills of thinking that will allow to look at the scope of research from universal positions. The university can be interpreted as the culture domain, a holistic type of university education and specifics of noosphere type of thinking with a position of project-oriented model of university education, as well as from a position of project-oriented culture. The last is possible only in the conditions of overcoming alienation of two cultures: natural-science and humanitarian. The interdisciplinary synthesis which is carried out in cognitive space of modern university is the prerequisite and the basis of this alienation overcoming.

In the space of studying scientific knowledge dialectics, logic and methodological problems of its development the importance of the questions connected with theoretical synthesis of scientific knowledge is indisputable. The solution of this problem leads to some other problems essential to understand both the general logic of science development, and logic of university educational practices formation. They are problems of classifying sciences and the differentiation and integration problems which are actively discussed today in the theory of science and the theory of education. This is the problem of theoretical synthesis which received into itself great advantages of such spheres, as the

interdisciplinary and intra disciplinary processes, allowing carrying out theoretical communication of empirical data. Theoretical synthesis is usually interpreted as the process focused on assembling elements and spheres of scientific knowledge, on the knowledge communication disconnected before. There are various kinds of synthesis: "synthesis through the correspondence principle", synthetic permission of competing theories fight (through synthesis).

One of the most important varieties of theoretical synthesis is so-called "synthesis through the law". This type of synthesis is widespread most of all and in comparison with others it is primary, probably owing to the simplicity. This type of synthesis allows carrying out those interdisciplinary communications and the relations which show the efficiency in the system of higher education. Theory developing always leads to the synthesis intra disciplinary and to the interdisciplinary synthesis. Discovery of the law taking as the basis of the created theory is the discovery of "generality form in the nature", this discovery coexists with theoretic material synthesis, disconnected before. So, massive synthesis of chemistry and physics of the XIX century was preceded by such discoveries as the periodic law (1869), chemical atomism (1803), the law of conservation and transformation of energy (1845). In biology of the XIX century the prerequisite of synthesis was the cell theory (1838–1839) and the theory of evolution (1859). In the XX century "synthesis through the law" in physics became possible owing to the theory of relativity (1905), the theory of radioactive decay (1902) and the quantum theory of (1900). In biology synthesis became possible since the advent of the theory of heredity (1909), from the discoveries made in the sphere of physical and chemical genetics and molecular biology.

Today the analysts working in the subject area of the university education theory, name among dominating tendencies of university education development the consolidation of humanitarian and natural-science knowledge into a holistic paradigm of university education.

What is the holistic paradigm and how "the idea of university" in the context of holistic approach can be interpreted?

Modern university education functions in the context of modern social practice. In this situation the concept "new type of education" is formed. The humanitarian thinking and the complete world viewing based on eco-focused perception of the world is the basis of this concept. Holistisity is an obvious orientation, a tendency of civilization development today. This tendency is global. In the context of imperatives epoch this tendency cannot but concern the spheres of university education.

From the moment of appearing the first universities the disciplinary structure of education was formed. As a concept "disciplinary image of science" is applicable to science, this disciplinary autonomous science is the basis which defines professionalization. D. L. Sitnikova connects a disciplinary image of scientific knowledge with a classical stage of science development when writes that "...the disciplinary image of knowledge is formed at a classical stage of development of science as a result of processes of differentiation and specialization of researches. In the XVII century in Europe science as professional activity arises in the form of natural sciences which yet has no accurate disciplinary structure. ... At the time of the first academies scientists tried to avoid studying "objects of social and humanitarian disciplines", they consciously did not interfere with divinity, metaphysics,

morals, policy, grammar, rhetoric and logic, therefore till XIX century the disciplinary image of scientific knowledge was only natural-science" (2008).

At a classical stage of science development the educational system trained a specialist. That preparation corresponded to the developed disciplinary structure of science. G. I. Petrova (2008) writes about shifting emphasis in understanding universality of knowledge and university education which goes from analytical installation of a classical paradigm of science development (Newton, Descartes). This installation demanded to decompose the world to parts and components, to find truth in their fundamental depth. In epistemological value the principle of universality was transformed to the principle of fundamental nature of knowledge, and relatively, of university education. Its disciplinary differentiation became the main testimony of fundamental nature of science. Universality, fundamental nature, disciplinarity are synonyms.

The disciplinarity qualified fundamental nature because it suggested the necessity of the general principles of cognitive activity for all sciences. Those principles were made out by its paradigm dominant. The last one created the general style of scientific thinking which carried out the fundamental power over all knowledge. It stipulated its stable, unilinear and one-to-one relations. Style of thinking was a filter passing into the science only what corresponded to its paradigm installations.

Not only the science was divided into certain spheres, but also the disciplinary organized education showed itself in separability of the subject content and dismembering the training process. The content and all organization of university education: lecture system, subject teaching, faculty and cathedral structures – all the signs were about its disciplinarity" (Petrova, 2008).

Specification of this position is the standpoint of I.E. Moskalev believing that disciplinary structure of scientific knowledge is the reflection of analytical installation of a classical scientific paradigm, originating in Descartes and Newton's works. According to this installation, the world for the scientist was presented as a functional structure. This functional structure allows spreading out the phenomenon to components that gives the chance to define an essence of a studied subject. The functional structure describes the classical disciplinary scheme (Moskalev, 2014).

It was possible in the context of disciplinary structure of scientific knowledge in classical science. The dominating metaprinciples structuring space and system of classical university education, V. V. Vasilkova considers the principle of universality, the principle of a university autonomy, a cult of the teacher, training of the expert as subject of reproduction of culture, the principle of education as shapings under an ideal image (Vasilkova, 2008). Last one is possible only in the disciplinary autonomy both a science and education. However the disciplinary structure of education does not allow to see a problem in the globally as does not allow to work with those problems and objects which are multidimensional and to look at which it is possible only polydisciplinarity foreshortened.

The foreshortening of a polydisciplinarity is made out within the interdisciplinary approach. Here A. Grunvald's position is interesting. In our opinion he fairly believes that the interdisciplinarity cannot be regarded as the goal in and of itself of university development. But it is necessary for providing the perspective solution of many social problems (Grunvald, 2005). Interdisciplinary communications and the relations in the system of university education can be considered as a condition of implementing the project of humanistically organized maintenance of university education.

What defines interdisciplinarity as a form of the relations in the intellectual space of science and education? I.T. Kasavin defines interdisciplinary interaction as "a natural state of science" (2004), but A.N. Knigin interprets interdisciplinarity of science as a space "between" various areas of science (Knigin, 2008). Therefore there is an idea that today new fundamental nature is an interdisciplinarity (Knigin, 2008). He pays attention to the interesting and important in understanding interdisciplinarity concept "integration" considering that integrative processes start proving definitely enough during an era of Modern times. According to A.N. Knigin, "integration occurs "by aspiration to apply the methods which have justified behind borders of initial scope of application. So, there are a biophysics and biochemistry, economic geography, mathematical economy and so forth. The word "integration" is not incidentally used in quotation marks: it is inexact designates a real situation. In processes of integration there are new disciplinary divisions and borders: old disciplines continue existing, their intellectual field even extending, "taking" nearby subject domains" (Knigin, 2008).

Is it possible today when the knowledge formed by society, in post-non-classical science to keep disciplinary structure of education? To our opinion, this conservation would play the role of an impediment to innovative character and significance of education because in science development, precisely in the borderland between public requirement and internal logic of science development, the knowledge can only be formed, interdisciplinary in its essence. It is capable to predetermine an innovative trajectory of modern.

Together with the scientific and technical revolution of the XX century having demanded from science fuller and deep penetration into the laws of the nature and society, than it managed to be done before by means of disciplinary and interdisciplinary approaches, the new form of knowledge fundamental nature – transdisciplinarity – started its formation. This term was firstly entered in 1970 by J. Piaget in the discussion with E. Yanch within the international working group "Interdisciplinarity – Training and Research Programs at Universities". He is the author of the first definition of a transdisciplinarity, he wrote: "After the stage of interdisciplinary researches, it is expected the higher stage – transdisciplinary which will not be limited to the interdisciplinary relations, and will place these relations in global system, without strict borders between disciplines" (Cit. by Internet).

Today transdisciplinary researches are conducted at many universities of the world (the USA, Austria, Austria, Romania, the Republic of South Africa, Russia). Active discussion of a transdisciplinarity in world science started in the 80th of the XX century. However, owing to the semantic potential, the term "transdisciplinarity" still did not receive unambiguous definition (2002, 2008). Nowadays some notions and types of transdisciplinarity are marked out.

In extremely general sense it is an innovative type of knowledge which assumes "an interval between practical and theoretical reason" (Kijashhenko, Moiseev, 2009), between truth and benefit. It is the way of synthesis of the disciplinary and extra disciplinary spheres. The result of this synthesis is the informative model which is not reduced to one of parts making it.

Analysts (Vasilkova, 2008) consider production of new knowledge is one of the priority approaches in post-non-classical science. That is caused today by such tendencies of science development as commercialization within which knowledge completely finds properties of goods and, at the same time, is caused by a problem of producing knowledge in a situation of society development uncertainty.

V. V. Vasilkova speaks about such feature of innovative knowledge as its ability to be "an introduced innovation", – owing to the knowledge will be supplied with technological advance by means of infrastructure creation, by means of formation of personnel structure (so-called innovatics managers).

During the era of mounting crises the education is capable to develop in a person a sense of responsibility for a world survival, fully implementing such function of education, as an advancing, preventive function. In space of "democracy of reason" (Ed. Morin) both global ethics and global responsibility are formed. And contributing to it reforms in university education has to be focused on understanding of that the post-non-classical science entered a transdisciplinarity stage. In this context the holistic-emergent (synergetic and evolutionary) picture of the world with necessity replaced a classical and mechanistic (disciplinary) picture of the world and non-classical and mechanical (interdisciplinary). In this case the dialogical relation "the person – society – the nature" is presented completely, and the problem of synthesis of culture natural-science and humanitarian becomes a dominating problem of their interaction. Earlier Hegel predicted the necessity of two cultures synthesis when he said that the culture is not self-sufficient in the sense that, without using other methods (methods of other culture), it will not be able infinitely to develop. I. Prigozhin writes about the dialogue language forming in the course of a new scientific paradigm when he speaks about returning to the unity at new level of understanding of the world and about the arisen opportunity to describe the self-organization phenomena universally in conditions where values of systems openness are shown, an accident role, a constructive role of chaos and when there is a uniform meta language – natural scientists and humanitarians.

In the course of overcoming alienation of cultures the new approach following organically from an evolutionary and synergetic paradigm of natural sciences is necessary. In this approach the relations and interactions are integrated in a new way disciplinary communications. It is difficult to overestimate the potential of synergetic approach in transdisciplinary synthesis. This approach allows synthesizing various ways of vision and comprehension of the world, dialogue of cultures, synthesis of scientific and extrascientific knowledge.

Today analysts, investigating a transdisciplinarity as the phenomenon, claim that the problem of a transdisciplinarity is a problem of an education built in a special way, the education which will promote forming new type of the "clip" thinking based on "facet" sight. That is possible only in a situation when interdisciplinary knowledge mastering is supplemented with methods of transdisciplinary material presentation. And only when a number of courses will be read as conceptually unitary, only then "the effect of systemacity" will be succeeded. That will lead to formation of a certain style and type of thinking (Knigin, 2008). Thus the process of transdisciplinary synthesis can approve itself as taking subject fields of various disciplines, and in smaller scale, – it is a question of one discipline topics. The result of the new communications which were formed in educational space and the relations is "the new image of knowledge" – "synergetic knowledge", directed on rapprochement of natural-science and humanitarian knowledge in educational space of university. This new image of knowledge arises owing to that the post-non-classical paradigm of

science characterizes nonlinear style of thinking. There is a new interpretation of chaos role and ambiguity of theoretical representations and formulations.

Synergetics in its developing based on ideas of the theories of systems, cybernetics, statistical physics of open systems, a universal evolutionism, on the ideas connected with the existence of open nonlinear systems. Addressing to the idea of synergetic knowledge in a context of a problem of two cultures unity, V. N. Arshinov believed, that the discovery of dynamic chaos gives to exact natural sciences quality of openness to humanitarian knowledge (Arshinov, 1994). This is the important factor of overcoming alienation of natural-science and humanitarian cultures. The analytics give the status of the meaning-originitive principle of post-non-classical science to the idea of dialogue.

G. I. Petrova describing university education through a prism of dividing into classical and non-classical stages of development considers that in the XXI century the modern university modified disciplinary model in the direction of non-classical – interdisciplinary the organized principle. According to the author, today the interdisciplinarity becomes a non-classical form of fundamental knowledge in science and education (Petrova, 2008).

In the context of university education these are courses of inter- and transdisciplinary orientation that are capable to assume a role of the basis synthesizing fundamental knowledge which will promote formation of professional culture and formation of adaptation mechanisms to a profession. They will promote formation of a holistic world view and that place which in this world is intended to the person. These disciplines allow overcoming limits of disciplinary dissociation of science, at last, allow removing alienation of natural-science and humanitarian cultures.

The transdisciplinarity is an analysis method of the complicated. It shows the productivity in the situation when to realize new synthesis opportunities it is necessary to find in discipline something that can be single, special, general. For example, in this process of defining general (to fix intersubject communications) it is difficult to overestimate a physics role. Being the basis of natural sciences, the physics is capable to offer a solution from consistent methodological perspective, other natural science knowledge gives the ideas of other studying common physical phenomenon of the world, and is connected with each other on the basis of generality characteristics.

Formations of intersubject communications analyzing a problem on the basis of generality signs, see complexity and an obstacle of a solution that the universal techniques, allowing to realize idea of communications of this sort, don't exist.

In this regard it becomes possible to use the potential of system methodology. And if within transdisciplinary approach the task has to be solved as a problem of knowledge consolidation, then use of system methodology can play a role out of the various disciplines boundaries (in intervals "between") as well as in one discipline. In this sense transdisciplinary approach and system approach supplement possibilities of each other. In prospect fundamental nature and systemacity of university education will be fastened by the integrating interaction, as implementation of the principle of university education fundamental nature is possible only through maintaining integral nature of education. The concept of integral, universal education accompanied the idea of university since the first universities appeared: "Education becomes fundamental if it is focused on identification of the deep intrinsic bases and communications between various processes of world around. Fundamental

knowledge of these bases and communications are contained in the general natural-science and humanitarian disciplines generally reflecting logic and structure of the corresponding sciences. Education becomes integral when these general disciplines are not simply set of traditional courses, but form the uniform cycles of fundamental disciplines united by the general criterion function, object of research, methodology of each discipline and focused on interdisciplinary communications (Suhanov, 1994). The Transdisciplinarity is carried out by means of orientation to the potential of methodology of the complex analysis, to possibilities of historic and philosophical, culturological, evolutionary and synergetic approaches

In the context of university education the inter- and transdisciplinary courses can be the basis synthesized fundamental knowledge, – the last one will help to form professional culture and adjustment mechanisms to profession. They will help to form the holistic world view and that place which intended for a person. These disciplines provide to overcome the disciplinary disunity boundaries of science, finally they help to take off the alienation of natural scientific and humanitarian cultures (Brylina, Kornienko, Kabanova, 2014).

4. Conclusions

In the context of modern information and communication society and the postnonclassical model of the science transdisciplinarity is conceded to be a new type of organization of scientific knowledge and fundamental university education. Just knowledge and education help a person to evaluate his success, satisfaction of being, self-realization. It goes without saying that all these determine his well-being.

In such a way, it's possible to say that at the present time the high quality of modern university education mostly depends on the use of a transdisciplinary approach, which can be considered as a new form of fundamental knowledge. The use of the synergistic approach is appropriate not only in science, but in the social and humanitarian sphere, including education.

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