

# Role of Ecological Cultural Synthesis in Enhancement of Importance and Competitive Ability of Polytechnic Education in the Southern Far East of the Russian Federation

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**Abstract.** The regional features of polytechnic education development under present-day conditions are considered. The enhanced role of ecological cultural synthesis is proved to be necessary in order to enhance the importance and competitive ability of the polytechnic education in the southern Far East of the Russian Federation. Ecological cultural synthesis is the major condition to turn natural management into the ecologically sparing management of natural resources; it is also a method of a person to learn nature and the mutual relations with nature. It should become a basis for educational programs in the higher schools of the Russian Federation (that may be used with the practical purposes not only in the Russian Federation), and it may promote the search of the national idea, ideological core, and basic principles of further education development in Russia.

## 1. Introduction

The present-day situation in the field of education in many respects depends on global, regional and local features of political, social, demographic and ecological-and-economic development of a certain region. Global reasons: displacement of the centre of our civilization to the Asian-Pacific countries; switching to postindustrial (informational) civilization; redirection to renewable natural resources and alternative energy sources; general importance of the polytechnic education (based on the approach directed to practical training in main principles of the industrial engineering organization, ecophilous technologies, skills in using computer equipment and knowledge of software). Regional features of education in the Russian Federation: ecologization (it requires implementation of the concept of stable development accepted by the international community); polytechnization (in order to intensify production of goods, improve training of engineers, technicians and workers, and solve some problems as follows: social problems (overabundance of experts in the field of law and economy), economic problems (diversification of the economy stipulated by the necessity “to get rid of the natural-resources addiction”), political problems (sanctions from European Economic Community, the USA and some countries-supporters, and the forced intensive development of our own industry). Local features: the status, location and a rating of certain Higher Schools of Vladivostok. Disintegration of the USSR caused occurrence of a new economic situation in development of Russia, which required redirection in training of top-skill personnel and switching to new pedagogical cogitation. Formation of new pedagogical cogitation (a rigid request, some kind of a pedagogical imperative of an ecological crisis epoch) becomes the essential component stipulating change of a nature management paradigm,



which necessity is understood by Russia and some other countries. Philosophical consideration of the problem is in replacement of dictatorship of the consumer's relation to the nature by ecologically-protective relation to it. It is caused not only an exhaustion of natural resources, but also (perhaps, first of all) by reconsideration of human's personal importance (a measure of his liability for environmental modifications occurred). In Russia that coincided with the phase of transformation of the Soviet education system which had a deserved authority all over the world [1].

As expected in our country with any transformation (or adaptation new economic conditions, as it is still bashfully named), embedding into a world education system occurred on a revolutionary basis, i.e. started from disintegration of the old system to the very foundation. The disintegration of pedagogical system of the Soviet school at the end of the 20th century was predictable. After all, it was largely designed for training of a servicing staff for bureaucratic state mechanism, and its basis consisted of the informational component, namely transfer of skills, methods, approaches and the amount of knowledge necessary for certain industrial activity. However, the main advantage of the Soviet school was considered the polytechnic approach (giving general knowledge), continuous (though ideologized) education and fundamental knowledge (allowing to form one's own world view). Not quite justified deviation towards the western experience of teaching (based on narrow specialization, frequently task-specific training and reception of certain approaches, methods, and skills within the limits of the techniques concerning achievement of economic benefits in general) is understood already as complete failure by major teachers. The disappointment in the last years is also aggravated with the corruption of the old school (loss of communications, successions in solution of pedagogical tasks by educational institutions at various levels) instead of its adapting to new economic conditions.

## 2. Methods

In the study the following methods were used: historical (in order to provide the retrospective analysis of the situation developing in the field of education); analytical (in order to detect certain reasons of the recent problem status) and prognostic (in order to define the opportunities). In our view, the synthetic approach combining the most important specifics defining continuity in historical development of region with the most urgent problems in polytechnization of education in Russia and with the most general world tendencies should become the key. That is the ecological cultural synthesis [2]. Ecological cultural synthesis includes the following aspects: the comparative analysis of philosophy from the participated countries and determination of the general principles and approaches; formation of the purposes and tasks in the education system; ecological instructions, education and training under the coordinated program. Instruments of ecological cultural synthesis are as follows: legal bases (special status fixed by laws); program of joint activity; program of scientific investigations and teaching of bases (first of all in the natural management system) [1]. Outcomes: joint frontier (and further transfrontier) especially protected natural areas and water areas; joint scientific-educational programs; joint ecological projects (including basins of the Amur River and the Sea of Japan) of the enterprises and establishments; joint ecological control and ecological forecasting.

## 3. Results and discussion

In the beginning of the 21st century abilities to find solution in situations full of considerable uncertainties, i.e. training of people who can adapt quickly and successfully in difficult conditions and to make correct decision in any unusual situation, become predominating in the pedagogical process.

Proceeding from these directions, creation of the erudite, free and responsible person combining the professional competence with civil liability, with a due world view, moral consciousness should be initial priority in education. Today the graduate should demonstrate not only a good professional knowledge in the sphere of selected activity, but also to have a polytechnic education, in order to be capable to build on this base a new certain knowledge under new conditions [3].

However, in the course of practical teaching activity, in particular in the field of natural-science disciplines, a situation is necessary to be considered when a part of students are not ready in

accordance with their level of development (especially it concerns graduates of rural schools) or valuable motivation (after all, among those who pay for their training at higher school there are a lot of students understanding this phase of their life as time for active “parties” and establishment of promising communications) to study [4].

Most educational programs of the higher school are based on the principle of systematization of knowledge, and the purpose of these programs is frequently as follows: to ensure fundamental training in certain area; to teach the students to put knowledge into practice operatively, effectively and creatively. However the description of the purposes is quite often substituted by the enumeration of knowledge and abilities, which the student should acquire. Therefore, the items “the student should know” and “the student should be able” are the immutable element in the developed standards. Depending on the purposes the choice of the contents, methods and tutorials, and education is made. Under rather diverse variants opened on the surface of phenomena, few invariants generating them often exist. Such fundamental invariant knowledge revealed by system-structural analysis allows axing of the material to study. Studied and learned on several specific phenomena, the fundamental knowledge allows introducing of all other special cases with invariants by simple logic procedures. Based on knowledge of invariants the generalized kinds of activity provide the expert with a possibility to solve a huge number of subproblems [5].

Thus, invariance to time inverse (implying independence from shifts in time behaviour) stipulates the possibility of the retrospective analysis, and with modelling it allows students to apply the received skills on the most important (actual for them) situations and not to deviate from the subject matter. The acquired knowledge is learned reliably, they may be operatively applied in certain situations (i.e. satisfy a principle of importance) and later (examination of residual knowledge).

Ecologization of education is a necessary current condition, as the alternative to stable ecological development is absent. Training of experts in various fields of knowledge is already impossible with lack of ecological deviation in education, as it is common to refer. That requires development of the corrected curriculums on ecological education, which should in our judgement [2]: base on ecological cultural synthesis (unite the cultures, civilisations and ethnoses based on ecological principles of behaviour); adapt to local conditions of the contact zone at global level (and no doubt that the Far East including Russia refer to such a contact zones); be approved in various courses of lectures (on Ecology, Natural Management, History of Natural Management, Economy of Natural Management, Safety of Vital Functions, etc.) at various higher schools.

Natural-resource addiction provided to us by the West and our own government, dependence on petrodollars, round timber and other resources will most likely be defining for a long time in formation of the world view and the financial budget of educational programs (lacking financing of education in Russia is minimum 150 billion rubls, and it is necessary to increase it twice, as minimum).

The demographic situation and availability of a great many of higher schools in the Russian Federation made it necessary to promote educational programs in the oversaturated world market of services. This task is practically impossible without a new educational concept, and withdrawal of obsolete principles and elements. So, in the USSR they were based on ideology, economic and political support of underdeveloped countries, totalitarian regimes with a significant amount of people trained in our higher schools and, hence, promoting them.

As a basis for the new concept, only universal values may be used with no doubts (such as religious dogmas and scientific postulates). An alternative variant is changing of a paradigm of the relation to the nature, namely: to problems very important for all mankind (ecological problems). From our point of view, the solution lays in the middle. Hence, both of these above-named elements should be the basic components for creation of the concept.

In our opinion, the ecological cultural synthesis (more precisely, natural management ecologization, and in particular, development of educational programs that may be used in practice in the Russian Federation and abroad) meets all these requirements. After all, such country as Russia consider it very important to recapture the lost leading position in education (especially in higher

education), increase its competitiveness in the world market and make it more appealing to foreign students. Resolution of these important tasks will improve image of our country in the best way.

In order to achieve the purpose, it is necessary to perform the following tasks:

1. To carry out the retrospective analysis of reasons of falling educational standard.
2. To evaluate the basic advantages of our education (the educational recreational area).
3. To define ways of the task solution (raising educational standards)

The decreasing level of education is stipulated by the following: economic reasons (commercialization of education, underestimated percentage of underachievers, financing on residual principle and dependence of the teachers' salary on quantity of students who paid their training partially or completely); crisis of the secondary school (failing to train school-leavers up to a sufficient level because of lacking up-to-date equipment, reduced quantity of necessary materials, such as terms or didactic units); thoughtless imitation of the western teaching process (consisting of training, solving the problems by known algorithms with no searching of alternatives, switching to the test system of examinations that poorly stimulate the process of cogitation).

Furthermore, not the best students stay at higher schools (considering rather low salary), and they start teaching instead of the leaving professorate. It is possible to speak about effect of the global reasons caused by specificity of the present development of a noosphere. First of all, it is the lost priority of the older generation's experience and, as a consequence, less dependence of youth on it. A human being differs from an animal by taking care of the experienced people with the ability of knowledge (i.e. experience) transfer, and such care of the elderly data carriers with said experience stipulated a possibility of the society survival in ancient times. Now, such relations changed because the communication media and the means of information (the Internet, etc.) occurred. The burden of care of the old generation and feeling of encumbrance (most aggravated by low level of life and short duration of life of citizens of the Russian Federation) will become the next stage.

However, the greatest loss is deideologization of the society that makes to suffer not only the old generation feeling uncertainty and needlessness, but also youth forming its world view on the Hollywood consumer goods. Perhaps, it is better to have any ideology, than none. However, the European and the Asian parts of the Russian Federation are significantly different in searching of a direction for the development of educational services. The western mentality is closer to the European part of the Russian Federation. After all, most young people understand the western countries, as a place of their future employment. The Asian part of the Russian Federation (and the Far East especially) is closer to mentality of the eastern neighbours, as they should work with representatives of "the East Dragon" countries. Therefore the management of higher schools also looks towards China, India and Indonesia with growing interest.

The labor-market analysis in the Russian Federation shows, that people of pre-pension/pension age still have very few occupations where they may have a success. One of them is education.

Quantity of the young people wishing to continue training after finishing the secondary school and to get education (especially the higher education), and the number of places in Higher Schools are compared (because of the demographic situation caused by reorganization and switching to a new economic way). The Higher School is practically a unique place where young people can get both practical-and-theoretical knowledge and craft skills, and also have an opportunity to create (more exactly, to modify a usual stereotype of cogitation and behaviour inspired by mass media and street morals) one's own world view adapted to the varying social conditions. Average age of teachers in higher schools of the Russian Federation has crossed over 50 years long ago; however the young generation is not much anxious to take their place. Low salary (of young teachers especially) is to blame for that first of all.

Russia has initial advantages in comparison with the other countries: the greatest (among all world countries) territories for the field experiments (that make possible development of natural management systems and approbation of alternative variants of managing); huge experience of solution of interreligious disputes, tolerance and multi-confession structure; spacious-intellectual potential of the professors and teaching staff that remained on disintegration of the USSR (the generation of the most

reading people on the planet able to think and analyze also remained, therefore, necessary conditions for existence of the medium optimal for implementation of the projects are available).

Displacement of the civilization centre to the Pacific coast is one more reality of the 21st century, and first of all, that was caused by a demographic situation in China, Indonesia, Japan and Korea. Irrepressible thirst for knowledge (especially to higher education as way of achieving a high level of a life and a possibility to be pulled out from poverty) provides a potential possibility in usage of our high IQ-potential (and first of all in the Far East of the Russian Federation) in development of the educational programs focused on training of students from these countries. Certainly, prestige of our education is in question (especially in the last years), and life conditions leave much to be desired. But rather low-level cost of training and a possibility to enter the largest raw market of the planet are the inducement to make a choice in favour of Russia.

Throughout many centuries Russia was mainly the agricultural producer, and it has become an industrial producer in the 21st century. The economy of the Russian Federation was outlined as resource mining at the end of the 20th century and it finally became so in 21st century. This feature is declared practically as the national idea: "Russia is the great power state" in public documents and in mass media.

It is necessary to consider consequences of the new orientation of the country's policy for science and education and appreciate them. It's quite probable that acquisition will reimburse our losses with interest. World experience shows that regional specificity may transform into mobilizing reforming efforts from a brake.

In the period of accelerated development of the Far East, there is created the scientific and technical and scientifically-teaching potential considerably exceeding requirements of the region. Science and education in the Far East of Russia did not lag behind the economy. They were created "liberal". This potential may be and should be used in order to strengthen our country in the market of educational services, and to influence ecological cultural synthesis through them. With this purpose, it is necessary to use favorable conditions, i.e. global, macroeconomic, geographical and historical.

Among global conditions for reinforcement of our country's position in the market of educational services, the first place is taken by real displacement of centre of the world social and economic activity to the Pacific basin from the Atlantic.

Macroeconomic conditions are caused by Russia's switching from producing economy to mining and servicing.

Geographical conditions are specified by the Amur River basin that naturally unites natural managements of Russia, Mongolia and China and influences the natural managements in many other countries.

Historically, traditions of natural management are interlaced in the Far East of Russia from people of China, Korea, Mongolia and many nationalities of Russia. The traditions of natural management on islands and marine coasts are especially interesting.

Specific feature of the region is big tolerance of its population to another world view. Being at the centre of confrontation between the western and the eastern civilizations with various points of view on relations between the person and the nature, the Far East of Russia ought to be more careful concerning traditions of the border countries.

In the western civilization the consumer's key view is Christian: "God created man in his own image, and there is nothing in the physical world that would have any other purpose, except serve the man". Hence, the spirit of competitiveness and violence predominate in it. It has entered into inconsistency with fundamental laws of nature. Our south-eastern neighbours (China, India, the North Korea, Indonesia, etc.) understand western ideology as ideology of customers, who have used favourable conditions (the scientific achievements, new technologies, and coincidence of circumstances under which these countries have left far behind the eastern states in the development) in order to promote its own principles and behaviour rules. Democratic principles, where the uncontrolled liberty lays at the heart of an angle, are understood by many people in the East as immorality and permissiveness similar to banditry.



The Eastern civilization has the basis that the man is one of the kinds, he is subject to the laws of nature, the man is the most competitive kind, but he destroys the nature, he does not understand it, technical progress and economic growth generate problems which cannot be solved.

In the conflict between the western and the eastern civilizations (historically based on the religious conflict) the Far East of Russia may play a key reconciling role. The aboriginal population of the Far East and the most numerous countries of the world (China, India, Indonesia, etc.) possess the common mentality grounded on other priorities in spiritual, social-and-economic and ecological developments.

Exploring of the Far Eastern Russia followed its own way due to specificity of Russian civilization stipulated by its originality: neither western (human's domination over the nature), nor eastern (human's absorption into the nature), and never consumer's. Consequently, this place has every chance to develop ecological cultural synthesis in the spheres of regionalization of natural management and education.

Special role in implementation of these projects belongs to Vladivostok. This city may play a special role in the ecological cultural synthesis as scientifically-educational centre. Favorable conditions are as follows: the world-wide popularity of Vladivostok (the Great Trans-Siberian Railroad ends here); higher education with more than century-old history (the Eastern Institute was based in 1899); location of one of the major centers of sciences (the Far-Eastern Branch of Russian Academy of Sciences); depopulation of the northern Far East of the Russian Federation (the southern Primorye Territory becomes one of accumulation centers for the population leaving from the northern areas); location far from "hotspots" and zones of international conflicts; the neighborhoods with thriving China, and advanced Japan and Republic of Korea, which are on a way of post-industrial development.

#### 4. Conclusions

1. Ecologization and education polytechnization is a compulsory condition for the present-day development of education.
2. Ecological cultural synthesis is the regional specificity of the Far East of the Russian Federation and its advantage.
3. Implemented ecologization and polytechnization with applied ecological cultural synthesis in the educational process promotes: recapturing of the lost leading positions in education (especially in the higher education), growth of its competitive ability in the world market and making more attractive for foreign students; changing of image of Russia to the best in the field of higher education; improvements in training of experts (that will ensure increased employment of the population and solution of many other problems).

#### References

- [1] Maierov I S 2006 Environmental education in the Russian Far East *Sat Second Int Conf Earth Sciences and education* (Saint-Petersburg) pp 101–107
- [2] Seledec V P and Kozhenkova S I 2006 *Social ecology* (Vladivostok: Vladivostok university) p 140
- [3] Verbitsky A A and Larionova O G 2009 *Personal and Competent Approaches in Education: Problems of Integration* (Moscow: Logos Publishing House) p 336
- [4] Maierov I S and Garbuzova G F 2007 Ecological cultural synthesis-an essential condition for the emergence of a new concept of education of the russian federation for the promotion of educational programmes in the world market for services *Basic research* **1** pp 69–71
- [5] Maierov I S and Golikov S Yu 2015 *Regional environmental management (Bio-analysis)* (Vladivostok: FEPU Publishing House)