

Introduction of the Ideas of Sustainable Development into Ecological Education

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Abstract: The introduction of the idea of sustainable development in environmental education requires the consolidation of efforts of state structures, society and the education community. To implement the idea of sustainable development in the system of modern education is not enough to change the content, you must change the methods and technologies. When you create an interactive learning among educational dialogue as means of formation of ecological culture. Difficulties of formation of civil position of students in the study of natural sciences as well as consideration of environmental aspects in the teaching of the humanities in higher education related to the need to integrate academic disciplines and interdisciplinary designation field of knowledge. Significant changes must relate to relationship between school teachers and higher school teachers how to force to have real levers of influence on young people in order to implement the idea of sustainable development in the educational process. The interactive debate technology is a communication model, the structured intellectual dispute and means of formation of key competences and means of formation of ecological culture.

Key words: Sustainable development, ecological education, priority of moral values, debate technology, integrate

INTRODUCTION

Functioning of ecology-oriented economics requires not only system, complex ecoeconomic approach to the solution of the problem of rational natural resources utilization and environmental protection but concept formulation and implementation of sustainable development and mechanism of its support (Chaikova, 2007; Azqueta and Daniel, 2007; Anonymous, 1995). In consideration of the fact that economics and ecology developed as separate fields of knowledge for a long time, at present none of the scientific branches cannot ensure solution of all tasks relevant to education for sustainable education (Scott and Gough, 2003; Anonymous, 1997; Throsby, 2001). The topicality of investigation is connected with the fact that ecology-oriented economics requires ecology-oriented education to go through the procedure of reorientation in content and methodology. The personal experience of the researchers who have the researchers programs, learners' guides, complexes of electronic educational resources on the ecological disciplines that are approbated in both teaching school subject of Biology and teaching Biology and Ecology in higher school, allows to suggest for discussing some issues of introduction of the ideas of sustainable development into educational process and the ability to

use interactive technologies in the process of ecological education and tuition. For example, methodically and competently organized at different levels the work with the use of interactive technologies, “Debates” in particular, not only provides the students, the pupils of secondary specialized educational institutions and schools the access to the educational environment but also helps to self-realize in it, to make ecological education more efficient.

MATERIALS AND METHODS

The material of research was collected in the process of educational work in secondary and higher schools, work in the system of post education in children's centers of ecological orientation.

The analysis of literary sources enabled to reveal the state and perspectives of ecological education for sustainable development through content updating of general and post education.

The analysis of the results of SSE on Biology is based on the data presented in open access at the website of Federal state budget research institution “Federal Institute for Education Measurement” of Federal service on control the sphere of education and science (Anonymous, 2012; Kalinova and Petrosova, 2015).

The data about people's interest in solution of the problems of sustainable development have been obtained on the basis of polling the people aged from 20-30, living in the cities with population of about 1 million inhabitants, that is in Moscow, Saint-Petersburg, Kazan with general number of respondents 482 people. For the purpose of revealing the contribution of school pedagogy, it has been carried out the work with the teachers of Biology, Chemistry, Geography, History and Social Studies in comprehensive secondary schools of the City of Kazan and educators of the system of post education working in eco-biological circles where the overall number of respondents accounts for 34 people.

RESULTS AND DISCUSSION

The analysis of the state of ecological education in the russian system of secondary and higher education: The analysis of the state of ecological education in the Russian system of secondary and higher education shows that nobody denies great importance of ecological education and learning but the process of creation of actual conditions for acquiring ecological knowledge, culture, thinking and behavior encounters great difficulties (Ponomaryova, 2009; Sadovnichy and Kasimov, 2009). Ecological education is realized in secondary school mainly in the form of divided and often commonly interrelated topics and issues (Argunova, 2011). The course "Ecology" aimed to combine the ecological knowledge is chosen by the regions or even by schools at their own discretion. The majority of schools manages without this course, therefore at present more or less full ecological education is acquired by smaller part of the Russian schoolchildren.

Connecting economic, social and ecological problems, first and foremost, just the ecological education must become the basis of strategy of Education for Sustainable Development (ESD), in the second place, in the light of modern civilization paradigm, it is required not only intellectual but ethical development of personality being aware of his responsibility for decision making in terms of freedom to choose. Broadening the problem aspect, the researchers discuss the notion of Ecological Education for Sustainable Development (EESD) and it is implied the ecological competence among the key educational competences (Lukashevich, 2006; Melnikova, 2012).

The modern model of a graduate either of university or school implies that the graduate must not only acquire a certain set of knowledge, abilities and skills. But, the graduates of teachers' training institute are laid special claims to. It is needed such change of educational content in teachers' training institutes that would be

capable to provide forming holistic world vision and ecological culture of the student, a future educator, his training to act a new sociocultural role of translation of values, ensuring transition to sustainable development of society.

Therefore, to adopt the ideas of sustainable development into educational process the modern educator must be strong, charismatic personality as only the educator like this has chances to radically change the consciousness of population in relation to the principles of life, social stereotypes of thinking and behavior. Not prejudicing the merits of the modern youth on the whole, nevertheless, it should be noted that it is very difficult to withstand a powerful advertising industry and to push the ideas of sustainable development on, even if for two reasons. Firstly, the graduates of higher school are rather young themselves. They dream of amenities of life just because they are 22-23: 62% of the respondents from the youth environment wish material goods, the value of material goods is appreciated by 68% of respondents, 75% of respondents are inclined to the position of egocentrism (El Serafy, 1991; Shulepova, 2009). Secondly, a modern young generation is a generation to have been taught with the computer mouse being in social networks more often than at the websites of high moral and spiritual standards. It is not possible not to take account of these two factors when at the modern stage of development of human society the formed ecological thinking becomes very crucial.

For the purpose of confirmation and illustration of the thesis about unreadiness of the modern Russian society for cardinal change of priorities which causes difficulties in promoting ecological ideas, analyze the answers of the young people from three metropolises who were answered rather simple question: "To what extent is it interesting for you personally to discuss the issues of ecology?" (Fig. 1).

Owing to the fact that the upper age limit of the respondents is 30 and a man is a formed personality to the

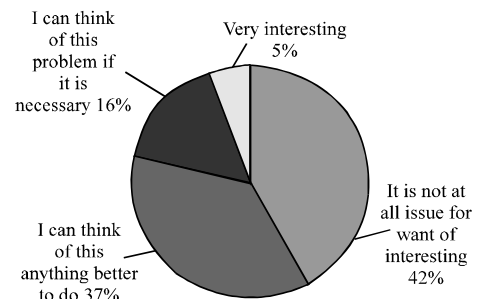


Fig. 1: Interest in discussing the environmental problems; to what extent is it interesting for you personally to discuss the issues of ecology?

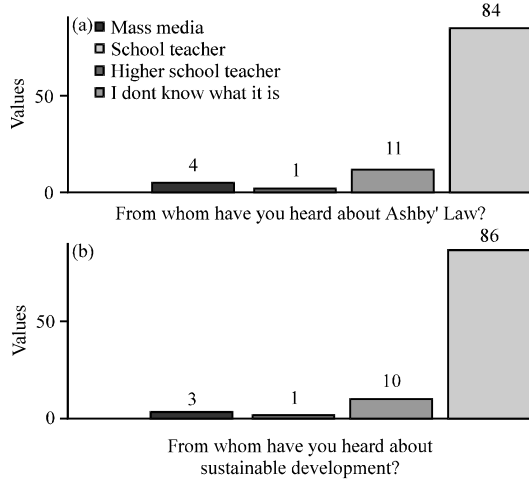


Fig. 2: Translators of information (%)

age of 30, one can discuss sustainable development of generation lost again for introduction of the ideas, since 42% of the respondents are absolutely uninterested in the problems of ecology as the issue to discuss.

If one takes into account that only 14% of population have heard about sustainable development (Fig. 2) and overwhelming majority does not know of it, the numbers acquire suppressive meaning.

Since, it is ecological education that must be the basis of EESD, (Since, it is the environmental education should be the basis of the EUR), the basic concepts of ecology must be used not only by the teachers of natural science but by the teachers of history, social science, literature, directly forming the world outlook and spiritual-personality values of the pupils.

“Debate” technology as the means of forming ecological competences:

The main methodological innovations are connected today with the use interactive technologies of education. It is created the environment of educational communication that is characterized by commutability, interaction of the pupils, equality of their arguments, accumulation of joint knowledge, possibility of mutual grading (Selevko, 2002; Vorontsov, 2002).

Consider the interactive form of the work “Debates” technology not only as the means of forming key competences but as the means of forming ecological culture in seminar classes in a higher school and at the lessons on Biology in secondary school.

“Debates” is a mind game, a structured form of discussion being held on clear, previously defined rules. The point is that two teams are putting forward their mutually exclusive arguments concerning the suggested thesis in order to convince those present of the truth of

Table 1: Possible topics of “Debates” at the lessons on Biology

Sections	Topics for discussion
Natural history	Nothing in nature depends on my behavior
Botany	A bunch of wild flowers will not disturb the beauty of the meadow
Zoology	Parasitic worms are useless creatures of nature Keeping animals in zoological gardens is useless undertaking
Man	In oder to live bright life, I must try everything, including alcohol, drugs and smoking
Ecology	Direct killing the animals does much harm to nature than indirect influence on it “In society man’s domination over nature is not only evident good but asbsolute evil” (L.N. Tolstoy)
Biosphere studies	Man geological power. Life on the planet originated in the process of biochemical evolution

their statements. On the one hand, “Debate” technology is the basis to form general academic abilities and skills, on the other hand opportunity to give access to the norms and values of civil society, implying the ability to compete, to carry on polemics and to battle for one’s interests. One of the basic and the most advantageous constituent part of the suggested educational technology is the absence of the defeated in connection with the fact that education has greater importance than winning (Anonymous, 2001).

The form of “Debates” can still vary under strict and relatively complex regulation. There exist classic, modified and express-debates. In connection with it, the educator has the right to correct depending on the pursued goals. The main task of the school teacher or university teacher using this technology is to formulate the topic of discussion. It is natural that it must meet educational and work programs. The experience of work in this direction allows to propose the following topics to discuss at the lessons on Biology at school (Table 1) and at seminars on Ecology at university (Table 2).

During preparing to the lesson according to “Debate” technology the students are choosing one of the possible roles for themselves: one of the four speakers of the asserting team; one of the four speakers of the denying team; one of the four judges; an expert in case of even number of spectators; a spectator. The acquired experience of work using “Debate” technology enables to propose judicial team consisting of four people as the most effective. The first judge is following the regulations and considering the participation activity of the spectators in discussion, the second is analyzing the content of teams’ speech, the third the culture of disputing by the participants of the teams. The fourth judge is managing the work of the judicial team a winning team. The total time on discussion is desirable to confine to 45-55 min, otherwise the students are getting tired and it begins to lose keenness of the game.

Table 2: Possible topics of “Debates” at the seminars on ecology

Topic of the class	Topics for discussion
Biosphere and man	Variant 1, a Man with economic education cannot be interested in studies about ecosystems Variant 2, a specialist on service (tourism) cannot be interested in studies about ecosystems
Protection of water resources	One may drink tap water
Protection of atmosphere	It is necessary to accept atmosphere pollution
International co-operation in protection of the environment	Ecological situation in Tatarstan is better than in Russia on the whole World government forming is the only solution of the problem of environmental protection Ecological legislation in RF to RF does not stand up to criticism
Natural resources, their classification and protection	Preservation of natural resources does not depend on my wish and behavior in household use To create “green office” in a single organization is senselessly
Energy problem as one of the global problems	Alternative fuels and high level of economic development are mutually exclusive notions

The poll of the spectators can be organized in the form of raising hands but conclusion of the vote with bulletins prepared in advance, where it is necessary to put down only the signs plus or minus, fills the class with emotional experience, aggravates tension of serious passions. “Debate” technology fits easy into the framework of grade-rating system being adopted in higher school now a days.

Summary: Basing on the stated above one can summarize that the mind game “Debate” enables to effectively decide the whole set of tasks of educational process through the creation of sustainable motivation to learning, as it is provided the personality significance of curricular material and the element of competitiveness creates incentives for creativity, search activity and thorough working out of the studied material.

CONCLUSION

It is insufficient to change the content of education to realize the ideas of sustainable development in the system of modern education, it is necessary to change the methods and technology. One creates the environment of educational communication as means of forming ecological culture in interactive learning. The difficulties of forming civic stand of the students in learning the natural-science disciplines as well as consideration of ecological aspects in teaching the humanities in higher school are connected with the necessity of integration of branches of science and identification of interdisciplinary branches of knowledge.

Major changes must concern treatment of the school teacher and higher school teacher as of the forces having real levers of influence on young people in order to implement the ideas of sustainable development in the educational process.

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REFERENCES

- Azqueta, D. and S. Daniel, 2007. Valuing nature: from environmental impacts to natural capital. *Ecological Economics*, 63(1): 22-30.
- Argunova, M.V., 2011. Ecological Education: condition and prospect. The eighth international academic and research conference “Humanitarian and natural Sci. factors of Environmental problem solving and Sustainable Development”, Novomoskovsk, September 23-24, pp: 11-21.
- Anonymous, 2012. Analytical report about the results of SSE for 2012. Biology. The mode of access: <http://www.fipi.ru>. The Federal Institute for Education Measurement.
- Anonymous, 2001. Debates, Education and methods complete set, M. “Bonfi” Press, pp: 296.
- Anonymous, 1995. Effective financing of environmentally sustainable development: proceedings of the third annual World Bank Conference on Environmentally Sustainable Development in I. Serageldin and F. Sfeir-Younis (Eds.), *Environmentally Sustainable Development Proceedings Series no. 10*, The World Bank, Washington, D.C., pp: 30.
- Anonymous, 1997. The Environmental State of the Baltic Sea. From the 2nd ECO-BALTIC Conference, *Environmental Management in the Baltic Sea region*, 9-11 October, Gdansk, Poland pp: 163.
- Chuikova, L.Yu. 2007. The conception of strategic and tactical environmental management. Part 1. Management for sustainable development at global level. *Astrakhan Herald of Ecological Education*. 1: 41-84.
- El Serafy, S., 1991 “The environment as capital” in Robert Costanza (Eds.), *Ecological Economics: the Sci. and Management of Sustainability*, New York: Columbia University Press, pp: 168-175.
- Kalinova, G.S. and R.A. Petrosova, 2015. Guidelines for some aspects of Biology teaching advancement (on the basis of the typical difficulties of school-leavers at carrying out tasks of SSE). The mode of access: <http://www.fipi.ru/sites/default/files/document/1408709719/bio.pdf>. The Federal Institute for Education Measurement. Analytical and methodological materials.

- Lukashevich, O.D., 2006. The conception of Education for Sustainable Development (ESD) as method basis of realization of permanent ecological education in the system "School-University". Permanent ecological education: problems, experience, prospect. Materials of inter-regional academic and research conference. Tomsk, November 2-3, Edited by M.I. Kobzar, O.V. Khakhalkina. Tomsk: STT, 2006. pp: 17-20.
- Melnikova, O.Yu. 2012. Place and role of ecological education in the system of education for sustainable development. The prospects of development of science in the modern world. *Perspektywy rozwoju nauki wespół czesnymœwiecie* 29.03.2012, 31.03 2012. Krakow Krakow, pp: 96-100.
- Ponomaryova, L.I., 2009. Stability and crisis phenomenon as the factors of development of eco valueology education system. Proceedings of the Ural State University. Series 1: The issues of Edu., Sci. and Culture, 62(1-2): 141-148.
- Scott W. and S. Gough, 2003. Sustainable Development and Learning: Framing the Issues. Routledge Falmer. L., N.Y., pp: 192.
- Sadovnichy, V.A. and Kasimov, 2009. Formation of education for sustainable development in Russia. Ecological education: preschool, at school, out of school, 4(29): 3-9.
- Shulepova, A.N., 2009. The variants of course of life in youth. Proceedings of Tula State University. Humanities, 2: 195-207.
- Selevko, G.K., 2002. Traditional Educational technology and its humanitarian modernization Moscow, Research Institute of school technologies, pp: 144.
- Throsby, D., 2001. The environment, sustainable development and the Australian economy, in John Niewenhuysen *et al.* (Eds.), Reshaping Australia's Economy: Growth with Equity and Sustainability, Melbourne: Cambridge University Press, pp: 111-129.
- Vorontsov, A.V. 2002. Modern education: from the approach of knowledge to the approach of competence. Samara, pp: 39-40.