INTEGRATED ENVIRONMENTAL AND ECONOMIC EDUCATION AS A FACTOR OF SUSTAINABLE DEVELOPMENT OF MODERN SOCIETY

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ABSTRACT
The integration of economics and ecology is becoming a global trend, and the values of industrial civilization no longer meet the modern requirements of safe and sustainable development. Awareness of the unity and balance of socio-ecological-economic interests, which are the basis of the life of mankind, led to a fundamental idea about the transition of world-management thought to a new way of making safe environmental and economic strategic decisions, and the rejection of the old, extensive path that has not justified itself. In light of the goals and objectives of integrated environmental and economic education, it is necessary to revise generally accepted ideas about the causes of the degradation of the planet's ecosystem and the slowdown in global economic growth, which are not so much technological progress as the person himself, his personal qualities, and personality orientation, the formation of which depends on the field of education. The developed principles of integrated environmental and economic education are considered by us as an effective tool for the training of highly qualified specialists who possess the entire set of professional knowledge and value orientations that correspond to the realities of the current unstable environmental and economic state of social development.
Keywords: sustainable development, integrated education, environmental and economic education, environmental and economic values, axiological approach to education.

1 INTRODUCTION

The consumer attitude of society over the past decades has been largely determined by the priorities of the modern model of the economy, which are profit maximization, competition, and the use of an increasing amount of natural resources. This leads to an uncontrolled increase in the negative anthropogenic pressure on the environment, the depletion of which is already affecting the deceleration of world economic growth. Modern postindustrial society can be interpreted as the beginning of the transition to a new type of civilizational development, the formation of which is associated not only with the technological revolution, but also with the reformation, criticism and revision of a number of previous basic values of anthropogenic culture: the ideals of a consumer society, its attitude to nature, the cult of power as the basis transformative activities.

Ensuring safe and sustainable development of society involves a change in existing priorities in all aspects of social policy. This is impossible without the approval of a new ideological dominant in society, without a corresponding change in the consciousness of people, the value system of society as a whole, an understanding of the essence of environmental-economic problems and the responsible participation of each person in their solution. A transition to a different paradigm of modern science is needed, integrating aspects of economic well-being with the environmental safety of current and future generations of people.


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The translation of such a productive synthesis, in our opinion, should be the education system, which is the fundamental basis for the formation of the ecological and economic orientation of the individual. It is necessary to introduce a mandatory environmental and economic component into the education system, which, of course, will require the development of innovative goals, objectives, principles, means and technologies of the learning process.

2 RESEARCH METHODOLOGY

In the scientific literature, the problem of implementing sustainable development is based on the idea of the interdependence of the biosphere and the global economy at the global level, since it is their systemic relationship and the results of systemic interactions that lead to environmental and economic contradictions and create problems that humanity will have to solve in the near future.

The world economy is in many ways similar to an ecosystem with its inherent ecological and economic contradictions, if we evaluate them in the parameters of the presence and dynamics of material-information-energy flows (MIEF). The world economy is a global environmental and economic system with incoming (mineral, organic, energy and other resources) and outgoing (waste after their use and processing) MIEF. The ratio of these flows characterizes the material energy efficiency of the ecological and economic system. The less MIEF at the entrance and the greater the amount of MIEF remaining inside the ecological and economic system, the higher its efficiency and environmental friendliness, the less its contribution to global problems associated with the inefficient use of natural resources, the release of waste into the biosphere that the natural system cannot process [1], [2].

We will focus on a key driving force, without which it is impossible to predict the future of the natural and human systems. This driving force is a generalized human potential, a multifaceted unity, which includes a spiritual, educational, cultural, creative, humane and economic component.

In modern society, the analysis of human potential includes the assessment or conditional accounting of its intellectual stock and future opportunities. The problem of preservation, development and realization of human potential is the subject of increased public attention. It is necessary to choose a new development strategy, an innovative promising path based on the development of new technologies, where the decisive role is played by the intellectual forces of society. The education system is a “forge” of human potential, a kind of source of unlimited intellect resources, due to which it becomes possible to establish fundamentally new ecocentric values in the developing world.

At the beginning of the XXI century. eco-economy has gained rapid development. The book of L.R. Brown describes the transition to ecoeconomics as a problem that goes far beyond both economics and ecology [3, p. 392]. We agree with the author that the path to ecoeconomics, as well as to improving human population health and social stabilization, lies through the formation of a new value system. However, we do not support his position that the growth of economic, scientific and technical capabilities in itself does not improve the situation of harmonization of relations between civilization and nature. In the context of our study, we believe that it is economic, scientific and technological progress that is the factor in harmonizing relations in the system “man–nature–society”, but subject to the presence of ecological and economic value orientations that are formed in the process of education.

The theoretical and methodological basis of the study was made up of the following scientific concepts: the theory of an integrative approach to the design of pedagogical systems (Bezrukova [4, p. 152], Berulava [5, p. 192], Verbitsky [6], etc.); theory of the technogenic influence of society on nature (Bobylev [7], Mella and Gazzola [8], Davankov et al. [9], etc.); the provisions of the integration of ecology and economics in education (Amend and

Salamatov [10], Ryabchuk et al. [11], etc.), an axiological approach to the formation of human potential in the learning process (Kiryakova et al. [12], Amend and Salamatov [10], Slastenin [13, p. 192], etc.).

In an experimental study of the level of formation of environmental and economic value orientations, methods of sociological research and methods of analysis of empirical information were used (Lapin et al. [14], Rokich [16], etc.).

3 RESEARCH RESULT

Any pedagogical process can be viewed from two sides: as a process of acquiring a person's vitagenic experience, cultural potential, existing objectively independently of a person; as a process of understanding the value of acquired knowledge, the possibility of their further application in professional activity, of understanding their role in the formation of personality, which is purely subjective. The search for fundamentally new values that can adequately reflect the ongoing changes in society translates the axiological approach into the status of the pivotal methodological landmark of modern pedagogical science, which sets the direction and motivation of its future development [13, p. 192].

In pedagogical science, the term "value" is extremely important, since in addition to choosing the direction of the content of the educational process, its function is to determine the outcome indicators of pedagogical activity. Values, influencing the attitudes of future specialists, turn into the main guideline of professional behavior, lifestyle, subjective reflection of objective activity.

The value orientations of the future specialist reflect his preferences regarding the chosen profession and are correlated with the nature of the personality structure. However, the process of value formation is difficult, almost uncontrollable and contradictory, since their interiorization does not have a linear structure: they appear, migrate, and, if they lose relevance, die off. That is why values in the process of the educational process are modified into something more, into the orientation of the personality, built into the worldview system of the person's personality. To ensure the personal nature of the process of forming value orientations, a modern teacher needs an adequate system for diagnosing their presence, as well as an effective toolkit for assigning significant values to the learner's personality.

The need for the formation of an integrated environmental and economic orientation of the individual is also due to the fact that the consequences of the values of specialists in the humanities profession (historians, sociologists, psychologists, teachers, etc.) will necessarily manifest themselves later, while the thoughtless, devoid of orientation towards sustainable development, professional actions of leaders and managers are visual and material in the near future. At the same time, value orientations are inelastic, difficult to adjust, which makes it necessary to form them, starting from school, continuing at the university, and then developing in the system of additional education.

By environmental-economic values, we mean specific formations in the structure of the individual's consciousness, which are subjectively ideal samples and objective guidelines for the environmental and economic activities of individuals and societies.

Imagine the environmental-economic (ecological-economic) values in their comparison with the modern personal values of youth (see Table 1). This approach seems to be constructive from the point of view of evaluating the productivity of the system of integrated environmental and economic personal values [15].

Compared with modern personal values, environmental-economic values are more acceptable both from the point of view of a person's moral guidelines and from the point of view of obtaining material wealth for his worthy existence, while resolving the historically established contradiction between environmental and economic values.

Table 1: Comparison of environmental-economic values with modern personal values.

Environmental-economic personality value	Modern personality value
Enterprise	The ability to "make" money. Consequence: achieving the goal by any means.
Labor as a means of satisfying needs	Labor as a "punishment" for not being able to raise money in an "easy way". Consequence: laziness, inaction, disorganization, the result of the lack of incentives.
Rational needs	Wastefulness. Consequence: a strong incentive to achieve success, but not through labor, but at the expense of "easy money".
Justice by law	Egalitarianism. Consequence: hostility to upstarts and haves.
Thrift	Scope, breadth, tendency to large-scale affairs. Consequence: negligence, carelessness, fatalism.
Responsibility	The pursuit of quantity to the detriment of quality. Consequence: irresponsibility for the final result.
Human health as a prerequisite for wealth	Work (labor as "punishment") "for wear and tear". Consequence: poor health, reduced life expectancy.
Environmental safety as a condition for a high quality of life	There are no analogues.

A revision is taking place today of the attitude towards production, the person employed in this production, property, etc. It means, first of all, access to new criteria for evaluating entrepreneurship, initiative, competition. These criteria are deprived of their previous ideologized character, their application proceeds purely from economic and moral positions.

The assessment of orientation to material consumption, well-being and prosperity changes significantly. These orientations are legalized, "come out of the underground", where they hid under conditions of falsified equality and deformed justice. For a long time, the working ideal of a peculiar asceticism, hope for a "bright future" has not been able to inspire the younger generation today. People want to live well today, and often without stopping at nothing to achieve their goal: they sacrifice their conscience, calm, take risks, abandon their acquired profession, neglect their qualifications and education if they do not bring obvious dividends.

Unfortunately, the rooting of new economic values is not accompanied by concern at what price the orientation toward a high level of consumption will pay off. In the modern world, the question is becoming more and more urgent: what can and should a man give up in satisfying his needs in order not to degrade the environment and at the same time not put on himself a miserable existence?

The problem of the formation of environmental-economic value orientations among students was the subject of a special sociological study.

The sample consisted of 217 students of a pedagogical university in the field of: economics and management; computer science and computer engineering; economics and

geography; economics and environmental management, mathematics and physics, mathematics and English. An experimental study was conducted to determine the initial level of formation of environmental and economic value orientations in students. For this, we used the method of Rokich [16], aimed at the diagnosis of terminal (reflecting the goals of existence, priority, significant for the individual) and instrumental (reflecting the type of behavior and personality quality, which are a means of achieving the set life goals) values.

Students were offered a list of twenty values. Students were required to determine for themselves the significance of each value in a given period of their life (the most important thing had to be put in the first place, etc.).

The test results show what place in the value picture of the young man's world is occupied by environmental and economic values along with universal values. In this test, it is important not what of the first places this or that value takes, but what values the student considers insignificant, because it is this that allows one to most accurately penetrate into his value picture of the world.

The data obtained during the study were processed using statistical methods: for each parameter (value), its average X value was calculated, which made it possible to establish the degree of stability of students' subjective assessments, i.e. determine the value of a particular value in a given period of their life.

An experimental study showed that in terms of overall significance in the hierarchy of values absolutely dominate: family (4.7174); health (6.2391); education (6.5543).

Further in terms of importance are such values as: loyal friends (6.6744); self-realization (7.5435); harmonious development of personality (8.3913); material well-being (9.3478); life as an absolute value (9.8370); respect of comrades (9.9783); personal security (10.4021); biodiversity conservation (14.5000); culture (national and world) (11.6630); religious and spiritual values (7.4239); maintaining the quality of the natural environment with stable economic well-being (13.5978).

Among the insignificant (those who took the last five places), for the majority of students, terminal values included labor as a means of satisfying needs (15.2174), rational needs (15.5326), environmental safety (16.6957); among instrumental values – responsibility (16.0217), justice under the law (16.9891), thrift (17.1304). Thus, in the hierarchy of values of modern youth, environmental-economic values occupy the lowest positions.

The formation of environmental-economic value orientations in the process of integrated environmental and economic education assumes that future specialists will have an awareness of subjective experience, be more able to analyze environmental and economic changes in the modern world, have the ability to determine the criteria for the success of a management decision made from environmental-economic position, have the ability to plan and construct a personal professional trajectory with moral convictions E, choose the techniques and methods of work in the environment with its limited resources, adjust the goals and methods of economic activity, and have the ability to objectively assess the results of their professional activities in the context of environmental safety and economic feasibility.

Turning to the level gradation of values, which, in our opinion, seems very significant in pedagogical research due to its orienting nature, we emphasize the importance of attributing environmental and economic values to values of the first or second kind (true values), and not to the variant essence of preferences of the third order (Table 2).

Pedagogical activity on the formation of environmental-economic value orientations is primarily associated with the awareness of the learner's personality about truly valuable things. Using the axiological approach involves the mastery of environmental-economic values, as well as the study and modeling of promising ways of their formation.

Table 2: Level gradation of values.

Level	Specifications	Examples of values
First	Values that a person will not give up under any circumstances.	Life, patriotism, fatherly love, religious preferences.
Second	Values that a person can refuse in case of a threat to the security of his existence.	Material condition, cultural heritage, favorite profession, work of life.
Third	Values that a person will refuse in case of insignificant and insignificant influences.	Comfort, hobby, relaxation.

Summarizing the research on the theory of the value approach, we will present its main provisions in relation to the subject of our study (see Table 3).

Table 3: Application of the basic principles of the axiological approach in the theory of integrated environmental and economic education.

Principles of the axiological approach	Application of the principle of the axiological approach in the theory of integrated environmental and economic education
The principle of the formation of a holistic triad: value consciousness – value relation – value behavior.	The triad formed in the process of integrated environmental and economic education – an ecologically oriented worldview, ecological and economic value orientations, economically efficient and environmentally safe behavior – helps to solve the most important problem of forming an ecological-economic orientation of a person.
The principle of determination of personality traits.	Ecological-economic value orientations are determined by the general conditions of the human environment. They are manifested in the goals, interests of the individual, determined by its characteristics and life experience, determined and adjusted by the system of upbringing and education, public relations.
The principle of integration of internal values and values of conditions.	In the process of integrated environmental and economic education, the task is to orient the learner to internal values as priority, ensuring the formation of a specialist's attitude towards the transformation of the values of professional activity, thus harmonizing the inconsistency of environmental and economic motives, needs and interests.
The principle of formation of the "image of the future".	A highly educated professional who is able to consciously make morally oriented decisions, accepts environmental-economic values as a guideline for his successful professional activity, a constantly self-developing personality is the ideal image of a future specialist.

4 SUMMARY

Of course, from the point of view of adaptation of students to obvious contradictions of socio-economic and socio-ecological reality, there is a difficulty in adequate reflection of the ongoing environmental and economic transformations.

The personal and professional socialization of students is contradictory and difficult, since it reflects the psychological and moral state of society, the main characteristics of which are economic instability and environmental crisis, many values are sometimes transformed to a state of "antivalues".

The use of the axiological approach in the process of integrated environmental and economic education will require changes in the methodological and technological support of vocational education, which in this aspect acts as a mechanism for increment of value orientations for future specialists.

Value orientations, in our opinion, are a vector directing human potential into the conjuncture of its most effective implementation. The main factor in the formation of value orientations is the reflection of subjective life experience. The prevalence of reflection on action, understanding the preliminary significance of the acquired knowledge, skills and prospects of creative abilities and innovative thinking allows us to bring research in integrated environmental and economic education to a qualitatively new current level of pedagogical problems.

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REFERENCES

[1] Salamatov, A.A., Ecological and economic security of Russia: The future in retrospect. Part One. *Society and Power*, **1**(51), pp. 102–108, 2015.
[2] Salamatov, A.A., Ecological and economic security of Russia: The future in retrospect. Part Two. *Society and Power*, **2**(52), pp. 74–81, 2015.
[3] Brown, L.R., *Ecoeconomics: How to Create an Economy that Protects the Planet*, The Whole World: Moscow, 2003.
[4] Bezrukova, V.S., *Integration Processes in Pedagogical Theory and Practice*, Ekaterinburg, 1994.
[5] Berulava, M.N., *Integration of the Content of Education*, Perfection: Moscow, 1998.
[6] Verbitsky, A.A., Fundamentals of the concept of the development of continuous environmental education. *Pedagogy*, **6**, pp. 31–36, 1996.
[7] Bobylev, S.N., Sustainable development: a paradigm for the future. *World Economy and International Relations*, **3**(61), pp. 107–113, 2017.
[8] Mella, P. & Gazzola, P., Sustainability and quality of life: the development model. *Enterprise and the Competitive Environment*, **2**, pp. 542–551, 2015.
[9] Davankov, A.Y., Dvinin, D.Y. & Postnikov, E.A., Methodological tools for assessing the socio-ecological and economic environment regions within the boundaries of the biosphere stability. *Economy of the Region*, **4**(12), pp. 1029–1039, 2016.
[10] Amend, A.F. & Salamatov, A.A., Continuous environmental-economic education of students in comprehensive schools. *Education and Science*, **3**(21), pp. 86–96, 2003.
[11] Ryabchuk, P. et al., Eco-economic security of the region: Expanding the management system for assessing the state of development. *International Journal of Supply Chain Management*, **7**(6), 2018.

[12] Kiryakova, A.V., Olkhovaya, T.A., Melekesov, G.A. & Presnov, A.A., The axiological approach to the analysis of the problems of modern university education. *Mediterranean Journal of Social Sciences*, **6**(2 S3), pp. 22–28, 2015.
[13] Slastenin, V.A., *Introduction to Pedagogical Axiology*, Academy: Moscow, 2003.
[14] Lapin, N.I., Ossadtchaya, G.I. & Yadov, V.A., Integrating university sociological education and scholarly research. *Sotsiologicheskie Issledovaniya*, **2**, pp. 106–111, 2002.
[15] Salamatov, A.A., Gnatyshina, E.A. & Gordeeva, D.S., The concept of sustainable environmental and economic development in the transition to the digital economy. *Proceedings of the International Scientific and Practical Conference on Digital Economy (ISCDE 2019)*, pp. 857–862, 2019.
[16] Rokich, M., *Methodology "Value Orientations"*, Big Encyclopedia of Psychological Tests: Moscow, pp. 26–28, 2009.