









# Noosphere Education as a System of Environment Personality Development

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**Abstract.** The presented experimental and descriptive study was conducted on the basis of mathematical analysis of biorhythmological processes and semi-structured interviews with 200 residents of family farmsteads and family settlements. It has been determined that noospheric education promotes community awareness and creates conditions for multifunctional personal development and harmonization of relations between all participants in the education system. The purpose of the study is to reveal the essence of bio-adequate methodology of noospheric education as a cultural and educational environment and the basis of the society of the future. The pedagogical experiment became the methodological basis of the research. System-synergetic analyses, sociological methods of cognition were also applied. All mentioned above allowed us to evaluate the effectiveness of noospheric education theoretically and practically. The combination of holistic, gestalt and suggestopedic effects provokes the emergence of a wellness effect and increased knowledge. The most fully biodeficient methodology of noospheric education is being implemented in family farmstead and family settlements as a society-oriented environment. There is a close link between the student's health, environment and methodological approaches to learning. The variance of school efficiency is 0.87%.

**Keywords:** Humane pedagogy · Sustainable development · Multifunctional development · Andragogy · Rural development

## 1 Introduction

The global socio-economic and environmental crisis is caused by reduced resources, reduced biodiversity, deteriorated levels and quality of life. The negative result for noosphere is also caused by consumer-driven approach to life management. (Borsos 2007a; Borsos 2013b; Foster and York 2004). The solution to this situation is the implementation of noospheric approaches in managing life and ensuring the strategy of sustainable development of the UN-declared society (Nitsenko et al. 2017; Sabluk and Kropivko 2018). The formation of territorial communities of family settlements is based on the

principles of reasonable sufficiency, zero waste and use of renewable energy sources. The development of noospheric approaches in education and upbringing is the basis of the model of the society of the future. These approaches are most fully implemented by small communities focused on enhancing the area's natural resource potential (Christian 2003; Gilman 2013; Farkas 2017; Meulen 2013). The developments of a person on the principle of reasonable sufficiency and public management with the involvement of all members of the community in the issues of general development are the basic approaches of socio-ecological and economic formation of society.

Ukraine, as a post-Soviet country, demonstrates technocratic and consumerist approaches to resource use, with a focus on technological development, which results in a negative anthropogenic impact on the environment. At the same time, Ukraine's experience illustrates the system-synergistic approach of social growth. This is realized through the practice of noospheric approach, education, education as a holistic, health-saving method of personality formation (Goncharenko et al. 2016a; Goncharenko et al. 2017b) and formation of space in harmony with nature (GEN 2014a; GEN 2018b; Prysiazhniuk et al. 2018; Sandal et al. 2019; Vidickiene 2013). This publication is the result of the study of the practice of tribal settlements in order to optimize socio-ecological-economic relations in society. In addition, it facilitates the development of integrated territorial communities. These processes provide issues of economic and food security, social and environmental development, culture, education, health care, leisure activities. In addition, they address issues of information and communication processes that are integrated into the natural environment.

Study hypotheses: 1) there is a close relationship between the degree of involvement of the cerebral hemispheres and the results of the educational process; 2) harmonization of the work of the cerebral hemispheres and human senses has a positive effect on their health; 3) the harmonization of relations between man and nature allows to achieve a synergistic effect and is the basis for sustainable community development.

The purpose of the study was to reveal the essence of bio-adequate methodology of noospheric education as a cultural and educational environment and the basis of the society of the future. The objectives of the article were as follows: 1) comparison of traditional and innovative approaches in life and education; 2) factor analysis and assessment of the degree of correlation between living conditions and educational performance; 3) modeling of perspective approaches to managing the educational process in terms of integrated territorial communities.

The theoretical and methodological basis of the study is classical theories of noospheric development. These include issues of exogenous economic growth and innovative practices in education. It also includes issues of organizing socio-economic processes of territorial communities. The source of information identifies the materials of Google Scholar databases, Web of Science, Scopus, official data of the State Statistics Committee of Ukraine, government agencies. This study is based on the study of the experience of schools in Kharkiv city (Ukraine). They introduce the noospheric education methodology within the framework of a program experiment supported by the Ministry of Education and Science of Ukraine. The evaluation was carried out using the Omega-M software and hardware complex (manufactured by Dinamika Technologies). This assessment was provided using mathematical analysis of biorhythmic processes

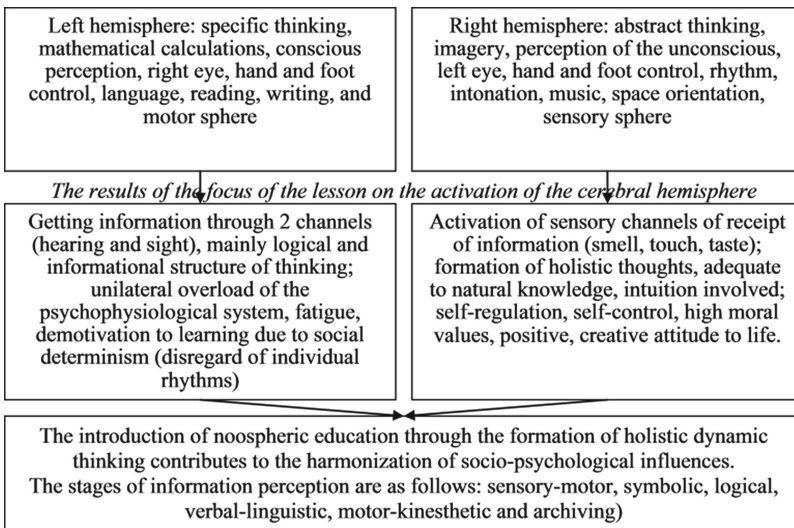
(fractal neurodynamics). The reserves of cardiovascular, vegetative and central regulation, as well as their deviation from the norm, were also evaluated. The spectral-dynamic human indices were estimated using the CSD apparatus (spectral-dynamic complex, by NTEK Technology). Observation as a basic approach to information acquisition allows us to evaluate the effectiveness of the methodological approach and the implications of its implementation on students' performance and health. Based on the data obtained, an academic report on the performance of the practice of balanced personality development was formed. The training process was analyzed by educational experts. The analysis was made from the point of view of the features of planning, organization, management, control and accounting. The analysis of Internet sources, literature and documents was carried out, analogy methods and statistical analysis of data were applied.

The article analyzes the legal acts and literary sources. The analysis was also made on the management of educational and socio-economic activities of territorial communities. Semi-structured interviews were conducted with the heads of territorial communities, residents of rural Ukraine. The target group of the study was residents of family farmstead and family settlements (89% of respondents). Representatives of alternative settlements and environmental movements (7%), residents of rural Ukraine (4%) were also included in this group. The conversations were not rigidly formalized, so the atmosphere between the researchers and the respondent was "free". Some of the questions were semi-structured. Representatives of households living in rural areas were asked to participate in the survey from December 2013 to June 2018. In this way, information about the experience of becoming educational and socio-economic activities of territorial communities was collected. Selective estates were surveyed from January to July 2019. According to the cluster selection methodology (Babbie 2014), areas of the country were designated. They selected areas based on the place of residence of the inhabitants of the tribal settlements. In the selected settlements the premises were surveyed. If the resident agreed, a structured and semi-structured interview was conducted while visiting the premises. If the consent to the sociological survey was not obtained, then the researchers visited another family. An attempt was made to establish cooperation with 2,000 families. About 62% of them refused others partially (27%) or fully (11%) participated in the study. The respondents were asked to rate the impact of the factor on a 10 point scale. The questions also took the form of an agreement (completely agree, partially agree and completely disagree). Questions were asked about the socio-demographic and housing situation. For example, they are gender, age, marital status, educational level, size and channels of family income, length of stay. Surveys have also been obtained from the websites of settlements, individual families and groups of people who are prone to alternative, non-urbanistic lifestyles, their reports and their own observations. Two levels of participants were involved in the study: community leaders (52 people) and family members (148 people) in Zhytomyr, Odesa, Kyiv, Kirovograd regions of Ukraine. During the research, a program of brainstorming of the settlement development strategy was implemented. Desired sources and mechanisms for its implementation are established through the survey method. During the research, individual interviews, group discussions, recording their own observations, discussing participants' existing practices were used. These studies made it possible to evaluate the effectiveness

of existing domestic and foreign experience in the organization and functioning of ecological and family settlements. Participants' observations and practical experience are consistent with the actual steps of the study. They are also consistent with the concept of sustainable development in terms of empowering the human community. Estimates of the transformation of the society in accordance with environmental requirements were made on the basis of responses about the community's own potential. This made it possible to assess its strengths, weaknesses, opportunities, and weaknesses in its ability to develop and implement effective plans. The research partners reviewed the early version of the article and commented. Currently, the results of the study are being used by the governing apparatus of the united territorial communities and the state administration of the Zhytomyr Oblast to formulate a regional development strategy. The Zhytomyr oblast is designated by the Ministry of Agrarian Policy and Food of Ukraine as a pilot for the development of family farmsteads and family settlements. The settlements in its territory are an experimental platform for research.

## 2 Noosphere Education as a Bio-adequate Technique

New requirements for the formation of individuality now affect the dissemination of soft humane practices of pedagogical activity. Which in their totality are components of the bioadherent approach of noospheric education. Through the creation of a cultural and educational environment, creative search taking into account the natural properties of the person achieves the effect of self-realization, creative thinking is formed (Goncharenko 2016). Activation of both hemispheres of the brain, aimed at harmonious perception of information (logical and figurative). Specificity of management of physiological and psychological functions of the person from hemispheres of a brain is shown in Fig. 1.



**Fig. 1.** Difference of activity of hemispheres of the human brain

Practice of formation of spiritual values, awareness of the individual as a part in the system “man - nature - society”, alternation of phases of active and muscular relaxation, use of all senses (connection with all channels of perception of information). Also used is a method of turning the learning process into a game with personal experience. It allows increasing the efficiency of the assimilated material. A comparative analysis of educational practices revealed memory impairment and fatigue after the traditional lesson, whereas during the noospheric lesson, memory and attention did not decrease and students were in a vigorous state. Long-term use of noosphere technology enhances functional activity and is healthy. The traditional system also exhibits health-giving properties. Indicators of adaptive capacity, vegetative regulation, central regulation, psycho-emotional state of students with noosphere system of education are higher than similar indicators of students with traditional system of education (Goncharenko 2017). The results of the introduction of bio-adequate methodology of noospheric education were tested on the students of Kharkiv schools (Table 1).

**Table 1.** The impact of lessons on the health of students in schools Kharkiv, % of total students\*

Sign	The level of manifestation of the trait under the appropriate education system											
	traditional (logic-centered with the left-ball-based education system)						noospheric (with the harmonious operation of the left and right hemispheres and the use of logical and intuitive channels of knowledge)					
	Before lesson			After lesson			Before lesson			After lesson		
	B	C	H	B	C	H	B	C	H	B	C	H
Visual memory	17	83	0	22	86	12	42	58	0	80	20	0
Attention	45	33	22	24	16	60	80	20	0	70	30	0

\*Levels: B – high, C – medium, H – low; School № 46 with noosphere education system; School № 141 with traditional education system.

Assessment of the psychophysical condition of students of Kharkiv School № 18 (students of grades 2 and 6 are studying under the noospheric system of education and students of grades 3 and 10 with the traditional form of teaching) showed an increase in tone and pupils’ attainment after the noospheric lesson - the number of students with adrenal activity increased. Less than satisfied with the lesson are 10th grade students (Table 2). In the traditional lesson, there was an overload of logical information and a lack of imagery. This contributed to the fatigue of most students in grades 3 and 10 (increased activity of alpha rhythms, which facilitates brain rest), along with the activity of beta and theta rhythms.

During the noospheric class, beta, delta, and theta rhythms increased in grades 2–3 (responsible for interest, concentration, memory development). During the traditional lesson, the left cerebral hemisphere is activated, whereas in the noospheric lesson, the

**Table 2.** Activity of neurotransmitters in students of Schools № 46. and № 141 of Kharkiv city before and after the noospheric lesson,% of the total number of students \*

Neurotransmitter	Class									
	2-H*		3-H*		6-H*		3-T*		10-T*	
	Before lesson	After lesson	Before lesson	After lesson	Before lesson	After lesson	Before lesson	After lesson	Before lesson	After lesson
Adrenalin	37	58	50	57	47	84	36	64	57	50
Dopamine	58	42	29	57	53	53	50	57	71	43
Norepinephrine	42	58	57	71	58	68	57	29	43	29
Serotonin	37	58	50	36	37	53	57	57	29	24
Endorphin	47	58	50	43	68	47	29	36	71	64

\*Lesson: *T* – traditional, *H* – noospheric.

activity of the cerebral hemispheres is reduced, their activity is harmonious and balanced, there is no fatigue. The focus is on memorization (in the noospheric lesson, long-term memorization was activated in 71% of students, while in traditional education, only 57%). The variance of school efficiency is 0.87%. Raising the level of personality awareness creates conditions for multifunctional development of personality and harmonization of relations of all participants in the education system.

### 3 Family Settlements as the Foci of New Approaches in Education

The Sustainable Development Strategy is recognized as a priority at the UN level. It forms a fundamentally new worldview framework for human development. In the first place are environmental values, meeting the needs of the modern population without depriving such an opportunity of future generations, a balanced nature between the economic, social and environmental goals of society. The revolutionary law of circular economy, adopted on 29 August 2008 in the PRC, is revolutionary in comparison with the traditional linear model of social development. It regulates the emergence of a new economic model designed to prevent pollution and waste generation, mainly through public participation in strengthening vertical and horizontal links in society: combining consumer and business efforts at the regional level (cross-sectoral, infrastructure, and consumer (George 2015; Zhijun 2007). These can be combined into 5R (Refuse, Reduce, Reuse + Repair, Recycle, Rot) rules formulated by Bea Johnson (Johnson 2013). This allows you to spend less energy, reduce environmental impact and increase life cycle efficiency. The insufficient level of dissemination of these approaches requires their further promotion and demonstration of the positive effects of implementation.

Sustainable development principles combine well with the principles of reasonable sufficiency. In addition, they are successfully implemented in the implementation of environmentally friendly technologies in the livelihoods of tribal settlements (organic production, permaculture design, noospheric approaches in education and upbringing, the use of renewable energy sources, the introduction of waste-free technologies). Establishing a green economy is linked to knowledge transfer and skills acquisition (Sulich

2018). The strategy of becoming a society as an independent ecological, economic and social system was discovered in the 1960s. It must be said that it is formed on the principles of sustainable development and has been embodied in the development of family settlements. The following criteria for socio-ecological development have been chosen as the basic ones in the settlements: increase of soil fertility, availability of clean water and air, quality food, improvement of health and education of the population. As a dominant factor in social change, residents of such a community implement into their production and economic processes a system of livelihoods based on the principles of environmentally sound production (“Earth Health is Human Health”). They are also guided by the principle of reasonable sufficiency (“production and consumption at a minimum and sufficient for sustained spiritual growth”). Their practical implementation is now connected with the functioning of public administration within the existing territorial communities. It is carried out by existing registered non-governmental organizations at certain territory. Serving cooperatives are catalysts for production processes. And consumer societies are mechanisms for better meeting the needs of the population. This kind of business is socially oriented (entrepreneurship with clean minds). These are mechanisms for improving the well-being of society and the realization of environmental, social and cultural development goals.

Family settlements are focused on the harmony of man and nature, biodiversity, waste-free technologies, the use of renewable energy in livelihoods and management. At the same time, they form a balanced and sustainable development (meeting the needs of the population without depriving future generations of this opportunity) as a model for the society of the future. Traditionally, settlement organization as a system-organized structure capable of producing social values has the following algorithm of its creation: 1) selection of like-minded people; 2) community organization; 3) development of training modules; 4) training of successful practitioners (in addition to general education and others, such as settlement organization, rational use of nature, etc.); 5) life planning and management; 6) reflection of all processes. The priority of sustainable development and the focus on equality and humanization of relationships between individuals on a long-term basis outlined the introduction of integrated environmental mechanisms of life, income and leisure.

The settlements are organized by public, business and investment-active youth. The average age of settlers is 35 years, 80% have higher education and advanced degrees. Settlers are rebuilding the infrastructure of settlements, promoting and promoting healthy lifestyles. Without state support and encouragement, the settlement movement in Ukraine tends to increase (in 1990 there were no settlements, in 2019 - 100). It is the organizational and creative activity, the development of culture and spirituality that mediates social change. The community of the ancestral settlement develops natural mechanisms of community development. It practices modern technologies for reducing anthropogenic environmental impacts (use of renewable energy sources, waste management, noospheric approaches in education and upbringing). The inclusive nature of the influences provides a participatory approach to managing development and providing educational activities.

The remoteness of some of the settlements from the infrastructure determines the need to improve the teaching and practice of teachers, students and their parents. The ideological basis of the activity of tribal settlements as a basis for the success of their activity

is provided by the noospheric education system. The amplifying effect is achieved by the impact of the environment, which fully meets human needs. The realization of the territorial development goals creates a positive background for the settlements at the regional level. It also affects the multiplication of the natural resource potential of the settlement's functioning environment. The global vision allows us to create the foundation for the evolution of civilization on the basis of a new consciousness. This is mainly achieved by maintaining environmental principles on an ongoing basis. The decision will have a positive impact on Mother Nature - the settlers choose only environmental solutions. Conscious minimalism - life is provided only by necessity. This approach is significantly different from the trend of technocratic civilization in increasing dependence on resource supply). Conscious minimalism frees up time for personal spiritual growth and mastering new skills. This allows residents of new-type settlements to acquire more activities in less time. According to a survey in five years of living in a settlement, a person has acquired five professions. School-age children successfully take the two-year exams for the general school program by successfully completing the distance learning annually. Another positive psychological aspect is a life without violence, aggression, solving issues without the use of physical or psychological coercion.

Parents are involved in the education of children, including several families together and/or organizing training together, as well as inviting teachers. Such children take exams in all subjects once a quarter. The high level of preparation of children is marked by commendations, diplomas for participation in various competitions. Often, the school curriculum is acquired early (73% of children acquire general education in two classes throughout the year).

Training modules, which were conducted in the Zhytomyr region in the family settlement "Space of Love" and the ecopoly "Granidub" for two weeks. They reported the result of the t-test as significant and the difference with a statistically significant value of 0.000. Interviews illustrated the understanding of residents and their children about the concept of "Family Settlements". The guests of the settlement (including representatives of the Ministry of Agrarian Policy and Food of Ukraine, the National Scientific Center "Institute of Agrarian Economy" of NAAS) confirmed that the development of society according to the above concept is capable to create training centers of holistic personality development in each of the settlements.

Survey participants noted the need for lifelong learning through a system of educational activities directly in the process of life management. It is the realization of objective processes as interconnected phenomena of the environment, with the obligatory inclusion of young people in this movement. At the same time, there is an opportunity to educate older people from young people, which is a valuable experience for all sides of cooperation. It will be not only the opportunity to learn, but also the ability to shape the model of society. The above mentioned model successfully implements the processes of providing and managing the community through internal resources. As a model of dual education, the activity of tribal settlements not only teaches, but also enriches the individual with practical professional skills on a multifunctional basis. Transferring one's own experience from one individual to another implements practical approaches to environmental management. And the system of conscious mutual assistance on the principle of "Toloka" (joint solution of the task by the whole community) promotes the synthesis

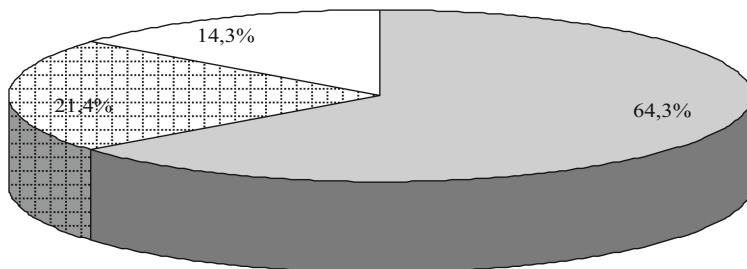


of new knowledge. According to the experience of the family settlements of Ukraine, the educational and scientific potential of the residents allows them to implement high-tech innovative projects while maintaining ecosystems.

The level of households (ancestral estates) in an ancestral settlement is the unit of formation of programmatic community development. The ancestral homesteads are family settlements. It acquires the ability to generate synergies from community collaboration. Thus, the learning process is continuous, with the participation of all residents. The Association of Non-Governmental Organizations Registered in Settlements Locations has demonstrated the effectiveness of sharing experiences and generating new knowledge through collaborative activities. These are events: festivals, forums, settlements. Another approach to conducting educational activities is to visit tribal settlements by masters (highly educated specialists in a particular field of knowledge). By conducting workshops or activities in settlements; they activate the intellectual and educational potential of the residents, provoking them to brainstorm different tasks. Different working groups contribute to this. In addition, teamwork skills are formed. Everyone in such groups is perceived for their ideas. It is accepted that every idea has positive points. This is how the settlement developed and implemented a strategy for the development of the family settlement “Space of Love” until 2034 (for comparison, traditional settlements do not even set the goal of forming their own development strategy, the most active involve external experts for this task, the latter, as a rule, are not sufficiently motivated to maximize the effectiveness of the strategy being developed and have no further responsibility for its implementation, which diminishes the appropriateness of such an approach in management).

The implementation of a holistic approach and the design of noospheric solutions in community education develops the skills of residents in various spheres of social life. These are areas such as agriculture, construction, psychology, management, jurisprudence and more. In addition, it also allows the community to perceive all structures and processes as integral interrelated phenomena. The sense of self-importance of successfully implemented projects is an additional incentive for community reunification due to the possibility of self-realization of each person. And the responsibility for the initiated and taken decisions encourages their implementation both by individuals and their groups. Combining education with practical skills enhances the value of the learning process. We have an example of learning as a mechanism for the effective realization of what has been learned in everyday life. This can be implemented at the level of the family estate as well as at the settlement level. Increased motivation (87% of those polled admitted to learning) makes it possible to carry out independent search for relevant information and communication support from experts as well as from the community, including at the level of district, region, country and world community. Currently, the settlement of “Space of Love” has been visited by representatives of more than 20 countries (Fig. 2). They educate settlers and take master classes of construction, permaculture design, public administration, etc. by themselves.

Formed without government initiation and assistance (there were no settlements in 1999, 100 in 2019), family settlements are steadily evolving, changing the space around them. They live by applying the world’s best educational and business practices.



- Europe (Belarus, UK, Netherlands, Latvia, Lithuania, Estonia, Spain, Germany, Norway, Finland, Czech Republic, Sweden, Switzerland, Moldova)
- ▨ America (Brazil, Canada, USA)
- Asia (Turkey, India, Bhutan, Kazakhstan)

**Fig. 2.** Geography of volunteer educators in tribal settlements of Ukraine

Sustainable rural development can be achieved without big additional budgets of all levels. For this purpose it is necessary to provide:

- to pass the special Law of Ukraine “On Family Estates and Family Settlements” by Parliament of Ukraine;
- to approve a simplified procedure for obtaining land plots for family farmsteads by the Cabinet of Ministers of Ukraine;
- to accept a concept of long-term education through the very motivation of society.

The development of family farmstead and family settlements takes place not only in Ukraine. It covers all post-Soviet countries (family settlements account for more than 90% of all environmental movements), as well as countries in Europe, America, Asia and Oceania (family settlements share second place after ecological settlements). Presented by conscious Earth dwellers who lead and promote healthy lifestyles, culture, education and spiritual development, family settlements are realizing a multifunctional model of personality and society development.

The modern education system is being transformed towards greening, natural technologies, ensuring communication between all subjects of public relations. It is characterized by the inclusion (inclusion) of society, the combination of science and practice. The need for participatory approaches to managing the education system is driven by the search for mechanisms to support not only motivation for learning, but also the emergence of mechanisms for ensuring human health (Rodrigo-Cano 2018). At the same time, the acquisition of new knowledge acquires a status of interpretation of communication, which contributes to the development of competence in the process of environmental perception. Psychological interaction with space within family homesteads and family settlements is a relational factor for critical understanding of the environment. This interaction, through the influence of external factors and climate change, places the individual in an atmosphere of making viable realistic decisions in all disciplines that are needed by the population. Experts estimate that such an impact indicated a reduction in stress and fatigue (by 22%), an increase in the level of interest in the object of study

(by 35%), and increased health (by 13%). Thus, the paradigm of noospheric education is a heightened influence of the natural environment. It has an additional positive effect through communication activities, influence of image and lifestyle. The development of new social and technological connections through participation in common processes allows us to form the basis for sustainable development through the harmonization of human-nature relations. This is a positive example of environmental education policy. Constructivism and mobilization of the individual's potential against the background of cooperation of persons of different ages. Active interaction, both within and outside settlements, acts as a unifying, world-view-oriented force that seeks to take care of the planet and to use "nature-sentered" approach instead of "consumer-centered" one. The positive interaction between man and the environment provokes the study of information and communication technologies. It is also necessary to study the skills and schemes of integration and balance between individual and environment. Family settlement may be considered as startups with unique natural resource and human potential. It provides the development of territories, their investment and technological, innovative and intellectual-spiritual support.

## 4 Conclusions

The highest value of the noospheric approach in the educational process is to increase the individual's motivation for learning. It activates the perception and encourages the student to strive independently to learn something new.

The design and implementation of educational modules through the implementation of the concept of "Family Farmstead" and the introduction of a biodeficient methodology of noospheric education is the most important step for society in shaping the foundation for positive change. The most valuable, at the same time, is a positive and realistic perception of reality. Due to the activity of all sense organs and centers of human perception, a process of positive adoption of educational skills is taking place. The process of sharing ideas and discussion also is very important to obtain and adopt new skills.

Learning in nature environment allows increasing the efficiency of the acquired knowledge. This is realized through the prism of practical experience in learning and managing consciousness through practical skills. The result is the "greening" of all processes of life management of residents of family settlements.

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