



The visual arts' role in the development of students' noosphere worldview

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Abstract

Noospheric education is considered the basis for the formation of an environmental culture in people and society aimed at solving a complex of problems related to ensuring the sustainable development of society. Identifying promising areas for noospheric education development and demonstrating the importance of students developing a noospheric vision of the world through the visual arts depend on whether the necessary conditions for achieving the desired results have been established. This study aims to examine the impact of software on the effective formation of students' noospheric vision of the world using the visual arts. A quantitative and qualitative research design was used in this study. The study involved 240 fourth-grade students at secondary school no. 12 in the city of Almaty (Kazakhstan). The findings revealed issues with the formation of students' noospheric worldviews which demonstrates that students have an unstable perception of the intellectual sphere and develop an enthusiasm for the bright, spectacular objects and phenomena of their surroundings rather than their content. Experts can use the research findings to model environmental education in secondary schools, in the practical work of visual arts instructors, in the creation of curriculum and instructional aids for the visual arts and in the transmission of information on noospheric concepts.

Keywords: Formative, Noosphere worldviews, Secondary school, Teaching, students', Visual arts.

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Contribution of this paper to the literature

This study analyzes whether the author's software using the method of empathy that was not covered in previous studies contributes to the formation of students' noospheric vision of the world using the visual arts which increases the country's noospheric education in schools.

1. Introduction

The relationship between humans and nature has now become a major environmental issue. People will destroy themselves if they do not learn how to protect nature as soon as possible. The development of noospheric education is a solution to this problem. It should be noted that noospheric education, environmental consciousness and culture are far from homogeneous concepts. The level of knowledge in the field of ecology is increasing annually but it has no effect on finding solutions to problems related to the environment. Probably their awareness rather than their knowledge is the problem. Noospheric education is an integral part of the moral education of an individual. Its task is not only to achieve knowledge of ecology but also the formation of environmental consciousness, behavior, environmental culture, beliefs and an active life position on environmental protection issues.

There are several obstacles that prevent the advancement of noospheric education. People's desire to learn additional information and the development of a worldview are not influenced by the poor standard of living of the population of a country, unemployment or poverty.

Noospheric education is a strategic component whose goal is to ensure that a person's attitude towards the environment corresponds to the current stage of society's evolution while also contributing to the eradication of the growing environmental crisis.

Furthermore, noospheric education must begin in elementary school because the knowledge gained at this age can later be transformed into firm convictions. Future generations' development of the fundamentals of the noosphere worldview is increasingly significant as a sign of society's survival and its dynamic progress in addressing the critical problems of today's world. The task of the school is not only to form a certain amount of knowledge on ecology but also to contribute to the acquisition of skills in the scientific analysis of natural phenomena, understanding the interaction between society and nature and understanding the importance of its practical assistance to nature (Boca & Saraçlı, 2019; Božak, Hegediš, & Hus, 2023; Marpa, 2020).

Noospheric education is an innovative field of pedagogy. Researchers are currently trying to provide the theoretical and practical foundation for it. The environmental imperative and environmental ethics are the main factors of noospheric consciousness which should become the norm of human behavior in the socio-natural environment and daily life habits.

Noospheric School focusses on issues such as personality development, worldview, the inner world and spiritual and moral principles. Thus, noospheric education is advanced, focused not on what is today and what will be tomorrow but on what should be.

The method for resolving the issue entails a fundamental moral transformation of everyone's behaviour and way of thinking as well as a shift in perspective towards the creation of a conversation with nature (the development of a noospheric worldview) (Fremaux & Barry, 2019; Jasečková, Konvit, & Vartiak, 2022).

The task of noosphere domain education is to teach holistic, dynamic thinking through mental images in addition to discursive and logical thinking (Shoshitaishvili, 2021; Ursul & Ursul, 2020). The solution to this problem will raise the cultural level of students as it will enable them to understand the laws of nature through their biological systems and teach them to respect the world (Ronfeldt & Arquilla, 2018).

1.1. Problem Statement

The modernization of Kazakhstan's educational system has led to the identification of noospheric education as the development of a new type of individual with new environmental thinking who can realise the implications of his activities regarding the environment and who can live in a comparatively harmonious relationship with nature. The content of primary school noosphere education includes two aspects: the imparting of environmental knowledge and its transformation into attitudes. Knowledge is an essential part of the process of forming eco-cultural principles while attitudes are its final product. Noospheric knowledge forms the conscious nature of an attitude and gives rise to ecological consciousness. However, the past ten years of reforms in general education not only failed to improve its effectiveness but did not improve the spiritual and moral context in society and at school (Nagima et al., 2023; Nurgaliyeva et al., 2023; Ospankulov, Zhumabayeva, & Nurgaliyeva, 2023; Zhumash et al., 2021; Zhussupbayev et al., 2023).

Kazakhstan's environmental issues are now becoming worse, affecting both the environment and the people of the country. They are part of global environmental problems. However, the population's level of ecological culture is equally concerning. Recent incidents have caused disappointment in some cases such as the beating of seals in Aktau, the pollution of the unique Kobeytuz Lake and the abuse of domestic animals, including children themselves. Students in Kazakhstan are still far behind students in other developed countries in terms of environmental awareness and attitudes. Noospheric education in the country is quite poor, occasionally ordinary and knowledge is shallow and frequently intuitive. There are some motivated instructors at the school who promote the concept of conducting projects for the students. Therefore, the ecological culture of Kazakhs must be promoted in schools. Noospheric education is more important today than ever. Children must be taught to be responsible, humane and environmentally conscious. This is not just a matter of one school subject. We must take into account the content, methodological aspects, didactic issues and age characteristics as well as integrate environmental aspects into other subjects (Ospankulov et al., 2023; Tajibayeva et al., 2023).

The role of visual art in the formation of this phenomenon is unique. Assimilation of the basics of noospheric knowledge through various types of artistic activities is most effective at school age as children emotionally view nature as a living thing that is stimulated and reinforced through artistic means. Teachers are given the primary role in the process of noospheric education of schoolchildren through art education. The teacher must find pedagogical methods and techniques that can arouse children's interest, elicit an emotional attitude towards the

depicted, elicit a desire to evaluate their work, notice in them a variety of forms, brightness of color combinations, rhythmic repetition, location in space which will undoubtedly translate from the image to the real image of wildlife thus leading to a cautious attitude towards it.

However, a review of the current condition of the method and the outcomes of teaching students the visual arts revealed that they had inadequately established experience in artistic and creative activity which is regarded as one of the forms of personal experience that constitute the content of education in noospheric education. Additionally, visual arts instructors lack the knowledge and competencies needed to create and implement successful strategies to develop a noospheric worldview in the visual arts classroom. In this regard, modern technology is not completely used in the process of shaping students' noospheric worldviews and the teaching opportunities of the visual arts have also been ignored (Jin & Ye, 2022).

The significance of our study is also confirmed by the topicality of environmental problems for mankind which finds its objective expression in the need of society to be self-sufficient, capable of planning the process and the result of their life activity and "environmentally cultured" citizens who transform the surrounding reality without violating the laws of sustainable coexistence between nature and society.

The analysis of modern training and methodological complexes, teaching forms and techniques and learning ecology leads to the conclusion that these features of the teaching process are not relevant to the investigated group of students, schoolchildren in the lower grades. The difference between the age-related psychological characteristics of students in elementary schools and the basis of the programmes now offered in the educational field of "Ecology" as well as the training and methodological complex supporting these programmes is the main manifestation of the inconsistency.

Therefore, there is a need to find teaching support to effectively organize the formation of the noospheric worldview of students using the visual arts.

The importance of this study is based on the need to address the difference between:

(1) The lack of understanding of the importance of forming students' noosphere worldviews under the conditions of secondary school and the lack of development of this issue at the level of teaching programs and methodologies.

(2) Students' insufficient readiness to form a noosphere worldview and teachers' lack of recognition of the significance of this process.

(3) The traditional content of visual arts teaching and the need to enrich it with the vision of noosphere education to form a noosphere worldview among students.

1.2. Research Questions

Q1: What are the views of learners regarding the noosphere's worldview?

Q2: What is the real degree of development of the noosphere's worldview among students?

Q3: What are the dynamics of the students' noospheric vision of the world after introducing an author's software and method support in the educational process?

1.3. Objectives

This study aims to examine the impact of software and method support on the effective formation of students' noospheric vision of the world using the visual arts.

2. Theoretical Framework

2.1. The Vision of the Noosphere's Worldview of Students

The noospheric worldview is both a survival strategy for the world and a development strategy for humanity (Frischmann & Selinger, 2018). It infers another urgent task of modern education which relates to the development of a noosphere worldview in students and a moral attitude towards nature. The formation of students' noospheric worldview and responsible attitude towards nature is a very complicated and long process (Khah, 2020; Samodryn et al., 2023).

The validity of a student's noospheric worldview is based on environmental requirements as well as spiritual and moral values. It is important to understand the structure of the noospheric worldview to detect the main directions of the student's noospheric worldview (Liseev, 2020; Wilson, 2017). The term "worldview" in philosophy is defined as a system of perspectives about the world and the role of a person, society and humanity in it as well as those related to these essential life positions of individuals (Lemmens, 2018).

The global viewpoint is regarded as the foundation of an individual's worldview which psychologists understand as a broad system of knowledge about the world and the mental process for its development. The existing system of world education throughout its history has to a greater extent, involved precisely this intellectual side of the child's psyche. The development of a worldview as an emotional-sensory aspect of a worldview received less attention in education. This component of the child's personality has to be intentionally developed since it is continually emotionally charged and rich with sensory relationships to things, subjects and events in their surroundings (Zalasiewicz et al., 2019).

The combination of intellectual and emotional elements, attitude and worldview develops as a result of an individual's interaction with their environment. Thus, the worldview becomes the foundation of a person's spiritual culture and gives him guidelines for independent actions in a complex and contradictory reality. These provisions are fundamental to teaching theory and practice. First, they predetermine the requirements for knowledge. Science has historically been prioritized in education but we believe that a complete worldview can only be achieved through discussion about the various types of knowledge such as natural sciences, humanism, philosophy and cultural studies (Tulsi & Ji, 2020). It should be noted that the development of the thinking qualities associated with the noospheric worldview namely integrative, non-linearity, reflexivity, criticality and creativity should begin in elementary school with the child's generalization of almost all social and vital experiences. Thirdly, if the focus of general education is solely on cognitive and knowledge components, it will be ineffective. It is impossible to create

a deep moral attitude towards nature and people in students who depend solely on books and textbooks and spend all of their study time in school buildings.

The educational process should include feelings and emotions in addition to knowledge which is made possible by the practical activities that students participate in (environmental, socially significant, research and so on). It is possible to carry out such activities successfully due to modern advancements in the information and educational environments as well as the social partnership of the school. The idea that the mind is not the only instrument for understanding the world around us is crucial for education especially environmental education (Roscoe, Subramanian, Jabbour, & Chong, 2019). Examples are obvious: the sound of leaves, the smell of flowers, the beauty of a starry sky, the murmur of a brook and the smell of strawberries. None can be accurately described in words. It is also impossible to convey in words such feelings as love, compassion, and joy; for their understanding, the child's personal experience is necessary. Emotions, intuition, and inspiration are the irrational elements at the basis of creativity as a priority activity for both children and adults.

Environmental education in particular, enriches the ways in which we perceive the world around us by using approaches and procedures that are sensitive to children's experiences. Based on the above, we understand the noospheric worldview as the spiritual education of a person based on the ecological imperative which includes emotionally colored ideas about the world, a person, their physical and spiritual relationship, beliefs, assessments, ideals, principles and programs of behavior as well as thoughts and activities that bring this system together (Ermis & Imamoglu, 2019). The visual arts are critical to shaping a youth's noosphere literacy worldview. Many researchers have recognized the visual arts as an effective means of raising students (Bertling, 2017; Guler, 2021). Visual art is one of the subjects of the curriculum and its educational function is to accumulate spiritual, cultural and social experience (Johnston, Hadley, & Waniganayake, 2020). Appealing to the personal experience of the student and the natural biorhythms of the human body reduces the time spent studying the subject of visual arts by 3-6 times, frees up the student's health resources and makes it possible to increase the efficiency of acquiring knowledge and skills in the noospheric literacy by the same amount (Özsoy, Mamur, & Saribas, 2020). However, an acute problem of modern art education is the development of its value content through the task of forming a "culture of peace" among students (Demirbatir, 2020).

Several scholars have emphasised the following element of noospheric thinking suggesting that it is both a characteristic of the noospheric worldview and a preferential outcome of noospheric education:

- Thinking creativity with its dialectical nature provides mental flexibility, readiness for non-standard answers and the generation of new ideas.
- Non-linearity of thinking expressed as a combination of the rationalism of the natural sciences and the irrationality of humanitarian thinking, subordination of thinking to the emotional and spiritual sphere and moral feelings.
- The reflexive nature of thinking allows comprehending one's spiritual, moral, intellectual and physical development due to which self-knowledge occurs, awareness of oneself as a microcosm, macrocosm and one's destiny in this world.

Three aspects of the noospheric worldview ontological, axiological and reflexive determine its structure from which the following substantive areas of school noospheric education can be distinguished:

- Study of objects, phenomena and regularities of the surrounding world.
- The validation, awareness and internalization of the spiritual and moral values that underpin the ecological imperative.
- Awareness of oneself and one's purpose in life.

Thus, the development of a noospheric worldview in students is only possible if the learning process includes all three cognitional channels: cognitive (the transmission of knowledge about the world and man), perceptual (the involvement of emotions and feelings in the schooling and achievement process) and practical (the involvement of the individual in a socially significant, natural and creative activity).

2.2. The Noosphere's Philosophical and Methodological Foundation

The scientific concepts, theories and philosophical views of the twentieth century's great thinkers serve as the foundation of noospheric education (Samodryn, Moskalyk, Oleksenko, Leushyna, & Khavina, 2021; Nikitenko, Voronkova, Andriukaitiene, & Oleksenko, 2021). Of course, their vision of the universe, of man's place in nature, and man's interaction with nature, following the principles of humane pragmatism and creative creativity became what the twenty-first-century school needed (Khairullina et al., 2019).

The literature study and the experience of the practical activities of educational institutions allowed us to conclude that the main "problems" and "points of growth" of noospheric ideas in education today are the appeal to the genesis of noospheric pedagogy and noospheric education and their introduction into the practice of education, the development of models of noospheric education, the formation of organizational and methodological basics of noospheric learning, the development of the content of noospheric orientation as an integral phenomenon and the creation of schools of noospheric orientation as an integral phenomenon (Alabas, 2019; Shutaleva, Nikonova, Savchenko, & Martyushev, 2020).

Today's noospheric education is quite diverse. It includes at least the following models: globally oriented, noospheric, planetary, ecological-holistic, education for sustainable development and so on. Despite some (sometimes significant) differences, these models share a common methodological foundation and are subject to comparable target value proposals (Nerubasska, Palshkov, & Maksymchuk, 2020). The diversity of educational practice confirms the notion that "noosphere education" is now primarily empirical and necessitates serious generalizations, theoretical concepts and models (Khanin, 2018). Analyzing the stages of growth of noospheric education as well as present noospheric pedagogical practice allows us to discover a definite relationship between the process of evolution of noospheric concepts in education and the rethinking of its social elements (Abdullah, Zakaria, & Razman, 2018).

We define noospheric education (as a holistic pedagogical system) as advanced education that fosters the development of a human with a co-evolutionary worldview who feels and recognizes himself as a part of the Cosmos responsible for life in all of its manifestations (Ovchinnikova, Abramova, Solovyeva, & Vitkovskaya, 2020).

The visual arts have a significant role in shaping students' noospheric worldviews. Many researchers recognize that it is an effective means of developing students (Kuščević, Brajčić, & Jurišić, 2022). From the perspective of its teaching possibilities, visual art is one of the subjects that develop spiritual, cultural and social experiences. In this regard, the identification of promising areas and how to demonstrate the necessity of the issue of students developing a noospheric vision of the world through the visual arts are dependent on whether the necessary conditions for achieving the desired results have been established (Yafi, Tehseen, & Haider, 2021).

The main significance of art education in environmental education lies in the fact that art allows to visually show and reveal the essential nature of certain phenomena in the surrounding nature. The successful formation of the noospheric worldview in schools takes place within clearly defined areas of one's education and upbringing.

- The development of the student's artistic and creative abilities and personal expression abilities and mastering the methods and means of using art to understand the world's aesthetic and artistic knowledge.
- Moral qualities ensure the success of their knowledge of material and spiritual cultural values and their ability to preserve and develop folk traditions in culture and art.
- When describing the goals and objectives of visual arts education, the following indicators can be identified:
- The choice of the artistic method which forms the basis of the artistic and methodological system, determines the ratio of form and content in the created artistic images in the drawings of students.
- Transmission through a visual image of an emotional attitude and aesthetic impressions of the world around us is one of the tasks of the visual activity of students.

3. Method

3.1. Research Method

The current study combined quantitative and qualitative components. Explanatory research looks into the "why" and "how" of particular relationships. As a result, the objective of the causal relationship investigation was to assess the impact of the visual arts on the effective formation of students' noosphere worldviews. The 12th school in Almaty (Kazakhstan) presented the program and methodological support for visual arts lessons organized by the research group whose goals were to form students' noospheric worldviews through the use of visual arts. A random sampling method was employed to gather information from Almaty's primary schools. The current study was carried out in the field. Researchers collect and analyze data using both cross-sectional and long-term research. Cross-sectional analyses offer observable data at a certain point in time, whereas longitudinal studies aid in understanding how data evolves over time.

3.2. Research Sample Formation

The study involved 240 fourth-grade students at a secondary school no. 12 in the city of Almaty (Kazakhstan). To analyze the effectiveness of the work, the control group CG and the experimental group EG were identified. The selection of the experimental subjects was carried out using random selection, selecting groups with approximately the same level to introduce the developed method into the practice of the educational process.

3.3. Research Approach

The level to which students have formed a noospheric worldview was determined using a set of criteria and indications. A high level is defined by personal comprehension by students of the diversity and significance of the values of the surrounding ecological space, attitude towards environmental objects as a value, personal willingness to act morally in the ecological space and the ability to perceive and reflect ecological values in artistic images. The average level of formation of the noospheric worldview among schoolchildren is distinguished by their partial awareness of the values of the surrounding ecological space and the manifestation of instability in their emotional and sensory attitudes towards objects and phenomena of the environment. The low level of formation of the noosphere worldview among students is characterized by their lack of ideas about the environmental values of the world around them, the predominance of a negative, egocentric attitude towards environmental objects and phenomena, passivity and their unwillingness to participate in environmental activities.

3.4. Data Collection Tools

The collections that were used to collect data for the present study were as follows: (1) a survey to assess the evolution of students' noosphere worldview, (2) a technique "characteristics of ecological ideas," (3) a technique "aesthetics of color," (4) a technique "picture of the world", (5) a technique "value orientation (6) test for self-assessment of attitude towards nature".

3.5. Experimental Process

The algorithm for studying the material in the program "Images of the Modern World" consists of three interrelated stages.

Stage 1: An acquaintance of students with contemporary art based on the semiotic method of cognition contributes to the enrichment of the sensory experience of children in their perception of the surrounding noospheric environment. Involvement in the problems of the noospheric worldview took place through personal perception, evaluation and recognition of the subjective significance of environmental objects represented in various types of contemporary art.

Stage 2: We create the conditions to establish a causal relationship between the part and the whole (art and the world around us) while activating students' emotional-sensory spheres.

Thus, there was an enrichment of the auditory, visual and kinesthetic nature of cognition of the world which contributed to the formation of the integrity of world perception in the student.

Stage 3: Students' planning of artistic and practical activities for the creative use of their obtained environmental experience. The ability to operate with environmental values was embodied in the creative works of students when creating new artistic images and was present in the motivation of environmental actions.

The success of educational work at all its stages largely depends on the organization of developing environment that ensures the poly-artistic activities of students and makes it possible to implement socially oriented situations in the classroom for the student to master and accept environmentally oriented functions and roles of subjects in modern society.

The analysis of contemporary art's forms, content, compositional elements, and artistic language allowed for the identification of its ecological and pedagogical potential. This potential is found in the full range of educational and teaching tools and opportunities for artistic and figurative reflection of contemporary world values among which their noospheric component acquires special significance by reflecting the experience of interaction between man, nature and society. The formation of a noospheric worldview among students using modern art was accomplished through the method of empathy, the method of developing individual ways of interaction with the natural world through the modeling of environmentally oriented situations in the creation of comics, cartoon projects and installations, the stimulation of a strategy to help the natural world and the organization of environmental activities in direct contact with the natural world. The main inference is that in EG, the number of students with high levels of intellectual worldview formation increased. Therefore, it can be argued that the formation of a noospheric worldview among students through the method of empathy (excursions and conversations aimed at introducing children to art, conversations about the means of the image, visits to an art gallery as well as organized independent activities in the creation of comics, the cartoon projects and installations where each child can take the initiative and realize their abilities) is convenient in the educational process.

4. Results

At the ascertaining stage, a group of students with an average level of formation of the noosphere worldview according to the figurative-content criterion was identified: 55.8% in the CG and 59.2% in the EG with a low level: 39.2% in the CG and 37.5% in the EG. Of the total number of subjects, only 5.0% of CG children and 3.3% of EG children scored higher. A high level of formation of the noospheric worldview was found among a small number of students. This fact suggests that students have an unstable view of the noospheric sphere and that they develop enthusiasm only for the bright, spectacular phenomena and not for their content. Consequently, the formation of a figurative-content component for students is needed.

The formation of the noospheric worldview according to the emotional-motivational criterion was revealed. The average level is 55.8% in the CG and 60.8% in the EG, the low level is 35.0% in the CG and 37.5% in the EG. At the same time, only 9.2% of the CG and 1.7% of the EG showed a high level. The level of formation of the noospheric worldview among students according to the emotional and motivational criteria is predominantly average. A high index was more significant than an index with an equally high level in the figurative meaning criterion, indicating the relevance of the student's sensory sensations and the prioritization of the emotional assessment of the surrounding noospheric environment.

According to the effective-practical criterion, the results show that low and medium levels were noted in the CG (55.8% and 43.3%, respectively) and the EG (50.0% of students each) while a high level of formation of the noosphere worldview among students was insignificant in the CG (0.8%) and absent in the EG (see Table 1).

Table 1. The results of diagnostics of levels of formation noospheric worldview among students at the ascertaining stage.

The level of formation of the noosphere worldview	The control stage							
	CG (%)				EG (%)			
	Figurative-content criterion	Emotional-motivational criterion	Effective-practical criterion	Average data	Figurative-content criterion	Emotional-motivational criterion	Effective-practical criterion	Average data
Low	39.2	35.0	55.8	43.3	37.5	37.5	50.0	40.0
Average	55.8	55.8	43.4	51.7	59.2	60.8	50.0	58.3
High	5.0	9.2	0.8	5.0	3.3	1.7	0	1.7

The results showed that the average level is predominant: 58.3% in the EG and 51.7% in the CG. The high level in the CG is 3.3% higher than in the EG (1.7% in the EG, 5% in the CG). 43.3% in the EG and 40.0% in the CG have a low-level formation of the noospheric worldview.

The training was carried out in accordance with the author's "Images of the Modern World" programme, which also includes a workshop museum. The program material is based on a synthesis of contemporary art genres, such as comics, animation, collage, and installation. In several cases, to implement the ideas of the program, it was necessary from time to time to involve specialists in various fields, for example, an animator, director and photo artist as well as the creation of temporary creative teams consisting of teachers, specialists in various fields and parents.

The ecological and pedagogical potential of modern art forms used in drawing classes in the aggregate of artistic and figurative reflection in the works and creative projects of the values of the modern world, the importance of their environmental component, the versatility and availability of the material and the specifics of children's perception allows the student to live environmentally-oriented values of modernity and to establish harmonious relations in the noosphere. The organization of a subject-spatial ecological and developmental environment through the creation of socially focused situations in the classroom with the use of modern art forms (animation, comic strips, collages and installations). Diagnostics of the CG and EG were performed following the completion using the same diagnostic tasks as the ascertaining stage to assess the efficacy of experimental work on the formation of a noospheric worldview among students.

Table 2 displays the findings of the diagnostic task analysis.

Table 2. The results of diagnostics of levels of formation noospheric worldview among students at the control stage.

The level of formation of the noosphere worldview	The control stage							
	CG (%)				EG (%)			
	Figurative-content criterion	Emotional-motivational criterion	Effective-practical criterion	Average data	Figurative-content criterion	Emotional-motivational criterion	Effective-practical criterion	Average data
Low	37.5	37.5	50.0	40.0	30.8	36.7	50.0	36.7
Average	57.5	53.3	49.2	55.0	61.7	54.1	46.7	56.6
High	5.0	9.2	0.8	5.0	7.5	9.2	3.3	6.7

We established a direct dependence of the effectiveness of forming the noosphere worldview of students on the completeness and quality of fulfillment of the given pedagogical conditions using a comparative analysis of the results of ascertaining and control experiments. The change in the levels of the EG and CG is shown in Figure 1.

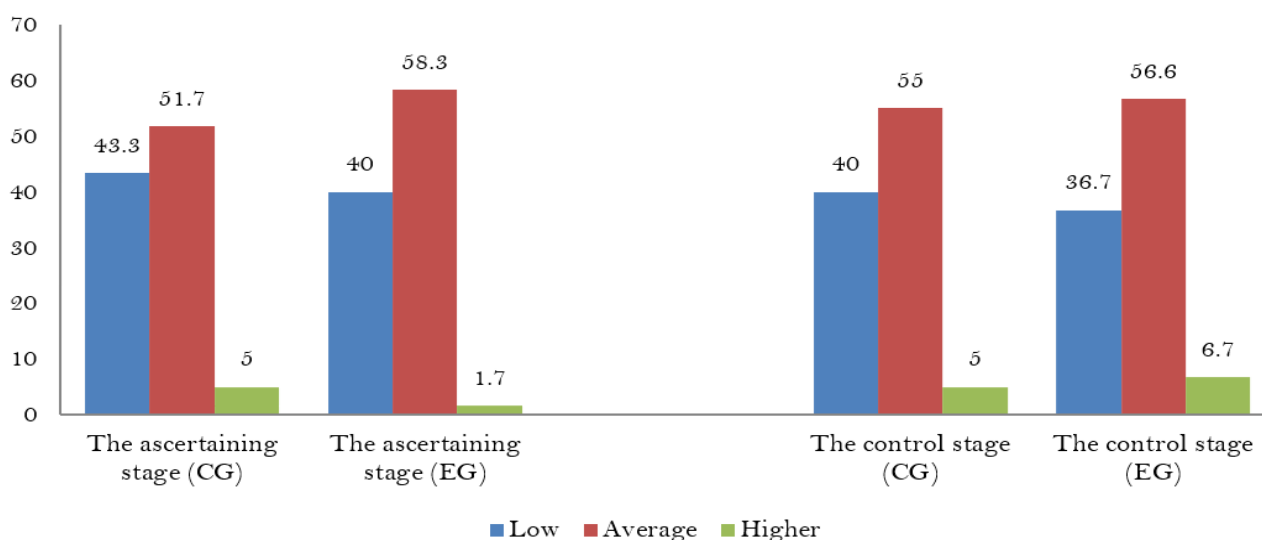


Figure 1. Dynamics of formation levels of noospheric worldview among students from the EG and CG (%).

In EG, the number of students with high levels of intellectual worldview formation increased by 5.0% to 6.7%; low levels decreased from 40.0% to 36.7%. In CG, the number of high-level students remained unchanged at 5.0% while the number of low-level decreased by 3.3%. The average level remains predominant in the CG and the EG until the end.

The χ^2 -criterion used to compare the results insisted that positive changes in EG were statistically significant (χ^2 -criterion of 15.03, a significance level of 0.001, within a 0.1% margin of error). In CG, there was little change in the diagnostic picture at the beginning and end of work; although there was a positive trend, it was not statistically significant.

5. Conclusion

The study is relevant because the country's noospheric education level is quite low; the knowledge of students is superficial and frequently intuitive. Children must be taught responsibility, humanity and environmental awareness. At school age, as children emotionally view nature as a living thing that is stimulated and reinforced through artistic means, assimilation of the fundamentals of noosphere knowledge is most effective. An examination of the state of the process and the outcomes of teaching students the visual arts revealed that they have insufficiently formed experience in artistic and creative activity which is regarded as one of the types of personal experience that is the content of noospheric education. This confirmed the need for the development of software and method support based on visual art as well as its implementation in the course of an elementary school's educational process to form the students' noosphere worldview. The software and method support for the formation of students' noospheric vision used in the study was intended to develop an emotional and value attitude towards the environment, the foundations of ethical and environmental positions that will be manifested in the interaction of children with nature and their awareness of their inseparability from it. The conducted study made it possible to reveal the effectiveness of the methods and techniques of teaching the visual arts for the formation of students' noospheric vision of the world. A study of the author's program "Images of the Modern World" which included a museum workshop was organized in a way that facilitated the development of the students' noospheric worldview. A variety of natural objects allowed the teacher to organize interesting and useful activities for children. In the process of looking at pictures, observing, playing, and working in nature, children became acquainted with the properties and qualities of objects and natural phenomena and learned to notice their change and development, to notice in them a variety of forms, the brightness of color combinations, rhythmic repetition, and location in space, to analyze life phenomena with their reproduction in the visual arts and to study an object from different angles which will undoubtedly be broadcast from the image of wildlife and consequently to have a careful attitude towards it. The aesthetic perception of nature evokes in children feelings of a careful, caring attitude towards animals and plants and their care for them. The main inference is that in EG, the number of students with high levels of intellectual worldview formation increased. Therefore, it can be argued that the formation of a noospheric worldview among students through the method of empathy (excursions and conversations aimed at introducing children to art; conversations about the means of the image; visits to an art gallery; as well as organized independent activities in the creation of comics, the cartoon project, and installations where each child can take the initiative and realize their abilities) is expedient in the class. Thus, the creation of

software and techniques to support the formation of students' noospheric vision of the world using the visual arts is effective.

6. Limitations and Additional Future Directions

The results of the study do not claim to be an exhaustive completeness of the solution of the indicated problem; however, they are a concrete step in its pedagogical comprehension and resolution of the identified contradictions.

Prospects include a broader study of the formation of the noospheric worldview among students of various ages as well as the incorporation of theory and technology for using the pedagogical potential of modern art for the training of educators to implement environmental learning principles among students.

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