**Methodology for developing ecological education based on the integration of subjects in primary education**

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**Abstract.** In the article, based on the skills, qualifications and competencies of primary school pupils, which ensures the formation of a responsible attitude to the environment, that is, environmental education and upbringing based on the integration of academic subjects in primary grades, the development of environmental education; the formation of environmental consciousness and ethics that regulate their diverse activities in the social environment, as well as the way of interdisciplinary integration of the integrity of the worldview of pupils, the interdependence of objects and events in the objective world It indicates that the main task is to form with the educational process, the development of ecological education based on the interaction of nature, society, technology and human, and the integration of sciences in the teaching of natural sciences into the educational process, the material and spiritual world. Taking into account the mutual cooperation of different scientific disciplines and the process of their natural development, as well as the scientific worldview and environmental culture of pupils as a formative factor, the education and upbringing of pupils in the course of the lesson plays an important role in their human development as a person, acquisition, interest in life, positive qualities, protection of nature and the view of importance in everything appear on the basis of the formation of environmental education in primary school pupils.

**INTRODUCTION**

The interdependent development of various phenomena and relations between nature and society can be understood on the basis of the integration of sciences. Separate study of natural and social sciences leads to the formation of scattered knowledge about them. Such knowledge does not allow to create ideas about the integrity of nature and society, the place of humanity in nature, the correct understanding of the nature of global problems facing humanity and the need for a systematic approach to their rational solution.

In particular, in the teaching of natural sciences in primary grades, environmental issues are comprehensive, and these are the natural phenomena and changes that occur in educational materials, the nature of their organic and organic connection, mutual connection 's features make it possible to understand how easy it is to break them. For example, an increase in air temperature on our planet means that the resistance of living organisms to live in an adapted area will lead to death in the struggle for survival.

In the context of the development of environmental education based on the integration of sciences in the teaching of natural sciences in primary grades, the following tasks should be performed:

- acquisition of pupils' knowledge about the integrity of nature, the interdependence of society and nature, acquisition of ecological knowledge, skills and competencies that are the basis for forming a conscious attitude to nature;

- to understand the importance of nature and its components in a broad sense, to be able to distinguish between renewable and non-renewable resources;

- economical use of natural resources, preservation of environmental cleanliness, implementation of greening and increase of natural resources, formation of motives for active participation in socially useful work.

Formation of ecological thinking in the process of teaching natural sciences to pupils is a dialectical knowledge that interprets the harmony of nature and society as a natural-historical, progressive, social problem.

The process of developing environmental education based on the integration of educational subjects among primary school pupils is carried out in the field of environmental education and training.

In particular, environmental education includes the following main sections:

- educating pupils in the spirit of loving natural beauties and enjoying them aesthetically;

- to provide knowledge about the laws of improvement of animate and inanimate nature, complex interactions between nature and society, as well as the impact of human economic activity on nature.

Many scientific researches have been conducted on the improvement of teaching based on the integration of subjects. In particular, in his research, M.N.Skatkin divides the inter-discipline temporal relationship into three types: between the previously acquired knowledge and the knowledge being studied, between the learned knowledge and the knowledge to be mastered in the future, and simultaneously acquired knowledge is divided into connections between knowledge [19].

A.N.Zakhlebniy and M.V.Reshkov emphasize the need to integrate subjects in the content of separate academic subjects in the school, taking into account the links in the curriculum and textbooks. Thus, the desire to embody educational materials is undoubtedly a natural and leading feature both in the world and in our national pedagogy [8].

The function of integrating the subjects of the sciences is the leading one, it comprehensively provides learning and teaching of the basics of other subjects, following the didactic principles, and allows to achieve effective results. The opinion is expressed that it is necessary for pupils to acquire knowledge, understand and use it effectively based on the mutual integration of subjects that are important in the formation of skills and qualifications in pupils [22].

According to M. N. Berulava, the integration of educational content means the process of interaction of the structural elements of the educational content and the result of which is the increase in the systematicity and density of pupils' knowledge [3].

The directions of integration chosen by N.K.Chapayev determine the composition and structure of the integration process. The composition of an integrated process means a set of objects that interact and form a new integrated unit [23].

However, the study of this phenomenon in education has not еt been completed. Therefore, A.Ya. Danilyuk emphasizes that the concept of integration is included in the context of pedagogy, but insufficient pedagogical content does not allow to talk about it as a sufficiently grounded scientific-pedagogical concept [6].

According to A.V. Usova, the influence of interdisciplinary relations on the education of pupils is carried out by improving and revising the internal logical structure of teaching methods and styles [20].

M.T.Gafurov's scientific research works put forward the issue of strengthening ecological knowledge by unifying the teaching process of related subjects on the basis of ecological goals and directing them to a mutually consistent goal [4].

International experience shows that integrated sciences, which are the basis for the development of knowledge about nature and society, are included in the curricula of many countries. It is reported that integrated sciences focused on natural sciences are the main means of forming environmental responsibility of pupils in the world community.

Also, in studying the integration process, Ya. A. Komensky states that "everything related to each other should be studied in the same way" [11].

Later, many pedagogues approached the idea of interdisciplinarity and contributed to its development and generalization. According to D. Locke, "In the formation of educational content, one subject should be filled with elements and facts of other sciences" [5].

In his article on the didactics of I. V. Pestalozzi, while discussing the issue of correlation in textbooks, he says, "Remember the objects that are related to each other, realize that they are in a state of organic connection in nature" [9].

About the spiritual-pedagogical nature and psychological-pedagogical connection of the didactic influence in the pedagogy of the past, K.D. Ushinsky says: "Knowledge and ideas expressed by any science should be given to the world and life with a wide and bright [ 21].

Indeed, today a new approach to the integration of school subjects has begun. It solves the problem of combining and matching different topics that are closely related to each other in interdisciplinary communication.

In particular, certain works were carried out by the biologist-methodist scientists of our country on the research of interdisciplinary relations between natural sciences. D.A. Gafurov discussed the problems of interdisciplinarity in the teaching of biology, S.S. Fayzullayev discussed the problems of interdisciplinarity in teaching the basics of genetics and selection, J.O. Tolipova studied the problems of using the integration of subjects in the training of pedagogical personnel [17].

B.S.Abdullayeva's scientific-research works developed the integration and classification of knowledge, which is one of the important problems of education. In particular, according to the scientist, integration serves to establish structural links between different systems of knowledge, to generalize them, to form pupils' holistic vision of nature and society [1].

Also, the formation of ecological thinking, worldview, behavior, general culture of young pupils, especially ecological concepts, is recognized as an important pedagogical problem. There are scientific research works of many scientists in this field, G.O. Komilova, P.U. Berdanova carried out scientific research on the pedagogical foundations of the formation of environmental culture among children of Karakalpak families on ecological education of preschool children [2; 12].

In the textbook "Environmental Education in Biology Lessons" created by M.G.Nishonboyeva, focusing on interdisciplinarity in biology lessons, that is, the use of ecological concepts and laws in the process of teaching biology, the formation of ecological concepts in pupils, natural sciences, the acquired knowledge is consciously and leading to deep learning. It has a comprehensive system of scientific knowledge about nature and society, their interdependence, and natural laws. It was emphasized that it is appropriate to use environmental issues in the organization of lessons based on the interrelationship of natural sciences [16].

It should be said that today the problem of integration of subjects is recognized as one of the directions aimed at actively searching for an effective solution to influence pupils in the educational process.

Currently, the development of environmental education based on the integration of sciences is considered as a factor that serves to improve the school activities, as well as to increase the potential of pedagogues, to find optimal methods of influencing them.

The goal of developing ecological education based on the integration of sciences is to establish a clear vision of nature and society in primary classes and to form a personal attitude to the laws of their development. In the context of the development of environmental education based on the integration of education, it increases the enthusiasm and interest of pupils in learning subjects, increases the level of knowledge in academic subjects, their mental activity, the interaction of educational materials. Develops mystery and ensures consistency.

In addition, in the course of the lesson, pupils develop conscious interest, the ability to think independently, a personal attitude to the subject, and a sense of creativity. In integrated lessons, the unity of education is realized as a whole. Learning subjects in harmony as one of the important factors of strengthening pupils’ knowledge requires the harmony of the educational process.

Improving the content of education, scientific, life the mastery of basic subjects and their presence in the world, establishment of interdisciplinary connections is the methodological basis of the approach to the integration of education. This can be achieved by returning many times to the concepts of various topics, deepening and enriching them, identifying important signs that are understandable at this age [14].

A well-structured and organized group of concepts can be the basis for any lesson integration. At the same time, the results of the analysis of concepts related to other educational subjects are included in the integrated lesson. Concept analysis is integrated into lessons that relate to knowledge gained in other academic subjects.

The development of environmental education based on the integration of sciences into the educational process is a requirement of the present time. After all, the integrity of education, the integrity of academic subjects is important for the development of students as humane, patriotic, moral and well-rounded individuals.

In studying and researching the problem of integration of sciences, it became known that the basis of the process of integration of science and scientific knowledge is the unity of the material world, that is, nature, society and its mutual understanding. As a result of the development of coherence and interdependence between sciences, the importance of information media in this field, the achievements achieved in the process of education and training are also manifested in nature, society, the field of technology and the material world. This interaction is a necessary factor for the internal natural development of each science [13], interesting materials can be prepared based on modern educational technologies. One such material is integrative knowledge.

The balance of the environment and harmony in the state of nature determine the rhythm of human life. The morality of a person's life is determined by his spirituality. Only a person with a high spirituality can form an ecological understanding, ecological thinking and a culture of ecological safety. The use of folklore in providing ecological education to the growing youth has good results.

Human and nature are the oldest and most popular subjects of spoken word art. Mother nature has always amazed people with its beauty, freshness, elegance, and generosity.

In fact, the ecological concept is a very comprehensive resource. Culture influences ecology and vice versa, ecology influences culture in various fields. The common sources for these concepts are also varied. Only a cultured person strives to rationally manage the interaction of nature and society. His performance in this regard defines his culture. Culture serves to make people educated, to teach them the rules of work, and also to economize production, technology, and science.

The concept of ecology includes: protection of nature, use of natural resources, culture, culture of changing the ecological system. A person who has formed a culture of ecological safety deeply understands the importance of taking care of the issue of nature protection at the district level and effectively influencing the remote ecological situation. It is not possible to educate pupils in ecological culture only by teaching them the basics of rational use of natural resources. Teaching young people to use nature wisely to create spiritual and cultural wealth, as well as to explain to them that nature is changed not only for profit, but according to the laws of beauty, is in line with moral requirements. It is advisable to follow the following procedures in the process of forming ecological concepts among primary school pupils of general education schools:

first of all, it is necessary to influence the feelings of pupils, to instill in them a love for nature from a young age. The earlier this education is started and consistently developed, the more positive it will be;

secondly, to form an active life point of view in the minds of pupils on the issues of nature protection and rational interaction with it. It can be described as the moral level of a person. Every member of the society needs to understand that nowadays its dependence on the state of the natural environment is increasing instead of decreasing.

Therefore, each of us should protect nature. There are objective requirements for the development of science and technology, especially for those responsible for using its achievements for practical purposes. They should take into account the subtleties of nature, not allow it to exceed the limit of stability, understand more deeply the nature of complex and interrelated phenomena, and not act contrary to the laws of nature in order not to cause irreversible processes.

Also, raising the culture of environmental safety requires continuous continuation of environmental education. They are required to study social and natural sciences in the course of professional activity in general primary schools. Further enrichment and development of acquired knowledge requires independent work. The educational work carried out in the ecological direction in enterprises and organizations will help a lot. In particular, when primary school pupils take an independent step into life, it is necessary to become nature's defenders, not subjugators. Undoubtedly, they are helped by their teachers, coaches and educators.

Love of nature is a very broad and complex feeling. It forms a complex whole that includes high spiritual and spiritual layers. It is important to educate this feeling from childhood. Every child has a desire to look at the country and nature in which he lives, to look at it with his heart [7].

**METHODOLOGY**

Today, the attention to the use of interactive methods, innovative technologies, pedagogical and information technologies in the implementation of environmental education in the educational process is increasing day by day. One of the reasons for this is that until now, in traditional education, pupils were taught only to acquire ready-made knowledge, but now modern technologies allow deep assimilation of acquired knowledge, independent study and analysis, and even creative conclusions. allows to release. In this process, the teacher creates conditions for the development, formation, learning and upbringing of the individual and performs management and guidance tasks.

The use of interactive methods is of great importance in the implementation of modern education. If the teaching process continues in this way, the pupil's hearing will weaken and become tired. This situation turns the pupil into an indifferent listener, as a result of which the efficiency decreases and the quality of training decreases. Therefore, the organization of classes based on innovative pedagogical technologies creates comfort for pupils, turns them from passive listeners to active participants.

Ecological education is one of the urgent issues of today. Protection of the house, street, neighborhood, village and city where one lives from pollution, beautification, greening, preservation of natural habitats and their effective use, nature protection is a component of environmental education. Also, in the implementation of environmental education, retraining courses for various layers of the population on solving environmental problems, in particular, short-term courses such as "Fundamentals of ecological education", "Environmental protection", "Current problems of the environment" Courses are held on the basis of certain educational programs, such as "Environmental cleanliness and human health", "Economic use of nature and natural resources", "Ecology and youth education". In addition, organizing trips to various farms and enterprises and meetings with experienced farmers, workers, technical staff, engineers, connecting theoretical knowledge with practice, studying the environment in different groups, negative environmental effects in it can be motivated to improve conditions.

In order to improve the knowledge, skills and abilities of primary school pupils, the following tasks are mainly set:

- clarifying the place of young people in environmental problems and finding their solution;

- to reveal the purpose, tasks, object, subject, concepts and principles of the educational course;

- clarifying the place of environmental education in the field of ecology;

- introducing pupils to the methodology of ecological education and training;

- explaining the content and essence of the training course;

- environmental education - revealing the continuity and integrity of education;

- to provide an understanding of universal fundamental and national ecological values;

- educating a highly spiritual and ecologically cultured person who can think based on the rules of sustainable development in harmony with society and nature;

- instilling love for nature in the young generation, etc.

Indeed, environmental protection, the ability to convey environmental knowledge, skills and competences to society, environmental spirituality and leadership in enlightenment, promotion of advanced ideas related to environmental protection. Must have communication and advocacy skills.

So, development of a new educational concept for the further improvement of education based on the integration of subjects in elementary school pupils, a program covering the problems of ecology, sustainable development education for all levels of the education system, and a corresponding textbook and creating study guides, ensuring that ecology is taught as a separate subject in general education institutions, establishing special schools and boarding schools specializing in in-depth environmental education, training for general education teachers methodical manuals, creating textbooks, development of visual and didactic materials, information and analytical manuals dedicated to the current situation and development prospects of ecological education - educational system, educational institutions, family, citizens the large-scale reforms implemented in the self-governing bodies in terms of continuous environmental education and training deserve special attention.

The main goal of the development of ecological education based on the integration of sciences is to create the foundations of a noble idea about nature and society in primary grades and to form an attitude to the laws of their development. It is important for primary pupil to see natural processes or phenomena from several perspectives: logically and emotionally, from the point of view of a biologist, artist, musician, etc., in a work of art and in a popular scientific article. [24].

One of the urgent issues of today is to be able to identify hidden links and connections in the formation of a scientific worldview, to ensure interdisciplinarity, that is, consistency. Because a teacher who is able to organize a lesson in an interdisciplinary way not only increases pupils' interest in their subject, but also helps them master this subject. As a result of systematic implementation of interdisciplinary communication, the relevance of the educational process increases significantly. Pupils develop dialectical thinking skills.

**ANALYSIS AND RESULTS**

It should be noted that this is an important condition for the development of knowledge and interest in academic sciences. By analyzing the educational material by topic, it is superficially determined which topics of different educational subjects are related to each other, and through structural analysis, the concepts, arguments, laws, judgments, and conclusions that make up the educational material are determined, and imaginations The connection between adherence to the principles of interdisciplinarity is one of the important factors of improving the quality of education. It is known that such a connection ensures a complete study of the studied object. It is interpreted in pedagogy at the levels of coherence, interdisciplinarity, reciprocity and integrative connection. Including these facts:

- continuity - ensures gradual expansion, deepening and development of acquired knowledge, skills and qualifications;

- interdisciplinarity is a broad concept by its essence and implies the comprehensive disclosure of various aspects and features of the studied object;

- by the essence of interdependence, it represents the relationship between two educational sceinces, that is, the knowledge and methods of action acquired in the first educational subject can be applied in the second one.

Integrative communication is a relatively high-level communication, which differs from the previously mentioned ones in that it is included in the curriculum and, according to its purpose, necessarily requires its provision. As a result, systematic and perfect knowledge about the object allows to form methods of action. In order to establish interdisciplinarity, the content of the educational material is analyzed from logical, psychological, didactic, methodological and other aspects. In pedagogical practice, methods of thematic and structural analysis of educational material are widely used.

By analyzing the educational material by topics, which topics of different educational subjects are related to each other, structural analysis, structural concepts of the educational material, arguments, laws, judgments and conclusions, the study of the educational material Interrelationships are determined superficially and imaginations are formed. Identified interdisciplinary connections are recorded in a schematic table, in verbal forms. How to record interdisciplinary communication depends on the capabilities of the user.

The problem of improving environmental education based on the integration of educational subjects of primary school pupils is important for both theory and practice. Currently, the problem of creating an integrated course that mainly studies knowledge from natural sciences is considered urgent. They assume the main task of gathering ecological and other types of knowledge. This approach has been solved for a long time in the experience of well-known and foreign schools. It includes the content of a number of subjects not only in classes, but also in the middle and final stages of general education. It is planned to include a number of socio-economic, ethical and aesthetic ideas and concepts necessary for understanding the unity of nature and society in these comprehensive sciences. Implementation of interdisciplinarity in the educational process has a strong impact on the quality of education, allows for modernization of education, expansion of innovative teaching opportunities. A teacher who is able to organize a lesson in an interdisciplinary way not only increases pupils' interest in their subject, but also greatly helps them master this subject. As a result of the systematic implementation of interdisciplinary communication, the relevance of the educational process increases significantly [15].

One of the main tasks of the school is to form pupils' ability to look at the world as a whole, interconnected unit, to see its global problems and their solutions. In the content of education, man and his relationship to the world: human and nature, human and society, human and human, human and technology, nature-human-technology-environment problem are increasingly taking a central place.

Natural sciences cannot be mastered in a short time. It should be studied continuously and organically in the kindergarten and school system. Natural sciences should reflect the harmony and integration of knowledge related to various academic disciplines that study the relationship between human and nature. This will lead to new qualitative changes in the knowledge of natural sciences. This knowledge is manifested as a unique synthesis, a set of knowledge related to natural sciences and humanities. Characterization of thinking as a systematic and probabilistic method is considered one of the distinguishing features of natural knowledge. It is the integration organized on the basis of dependence that can effectively determine the place of natural sciences in finding solutions to global issues related to scientific knowledge of the biosphere, the study of human activity, and the struggle for peace. As a result, this leads to a systematic change in the relationship between special knowledge and general cultural knowledge in all school subjects. In this way, integration organized on the basis of consistency appears as the main mechanism of humanizing the content of science education.

Development of ecological education based on the integration of sciences in primary grades increases the efficiency of the lesson, leads to efficient use of time, helps to learn the lesson in depth, increases the effective use of free time, and attracts pupils to science circles.

In fact, when choosing educational content, it is necessary to take into account the unique ability and ability level of each pupil, as well as the development of each pupil in continuous education, the integration of learning materials, which covers integrated learning materials requires the principle of creating textbooks. The solidity of the imparted knowledge, the level of general development of pupils is initially based on the goal.

The result of mastering the educational content provided for in the national curriculum should be manifested as solid knowledge, skills and competencies. All pupils are required to master the educational content provided for in the national curriculum at the level of proficiency. Only after that, it is necessary to provide more complex educational materials, taking into account the individual capabilities and desires of pupils, and these educational materials should be reflected in appropriate curricula, textbooks, and study guides.

In this case, the quality of pupils' knowledge and the requirements for learning a certain educational subject will be increased to a certain extent. It is important to embody the content of education, to present all concepts included in the content of education as knowledge related to natural-scientific and social-humanitarian fields. After all, integrated activity helps pupils to form a holistic vision of the whole world. That is why today there is a great need for the integration of a number of educational sciences.

Integral education forms a sense of confidence in pupils. This ensures the success of the educational process and the high quality of knowledge, specific aspects of psychological comfort are inculcated in classes, educational activities aimed at the effective organization of pupil activities are provided [10].

The problems of the integration of teaching and education in primary schools are very important from the point of view of the current era, theoretically and practically and are becoming more urgent based on new social requirements. Today, the demands arising from the development of science and huge changes in production are setting new tasks for school education.

Integrated lessons help children naturally understand the unity of the worldview, the harmony of events. It should be taken into account that the integration of lessons in primary grades is not scientifically developed. The problem of integration is still one of the controversial issues among scholars, since the existing different opinions and views are contradictory and conflicting with each other.

It is important to develop the theory of integration, to develop scientific pedagogical concepts in the process of teaching. Integration is closely related to differentiation. This unity is clearly manifested in the formation of the system of pupils' aspirations to understand the acquired knowledge.

Formation of ecological concepts in schoolchildren, reasonable attitude to the environment, preservation of natural resources for future generations are the main factors of prevention of anthropogenic effects. In this regard, the importance of environmental education is extremely high. After all, environmental education is important in ensuring unity and harmony between nature and society, maintaining natural stability [18].

Also, ecological education allows young people to consciously use nature, to instill love for nature in their hearts, and to teach them to be thrifty. Of course, forming and developing a sense of respect for nature in the hearts of the young generation is one of the most important issues. This, in turn, places great responsibility on the pedagogic personnel. In the process of teaching in educational institutions, it is desirable to enrich the minds of pupils with knowledge that reveals the essence of current environmental problems and to strengthen this knowledge with practical activities and social work. In solving such a responsible task, the teacher needs knowledge of this field, pedagogical skills, high ecological understanding, as well as constant research and study.

The importance of environmental education starting from primary grades is immeasurable. Today, it is important to consciously use nature, to instill love for nature in the hearts of pupils, and to teach economy. One of the most important issues is the implementation of these tasks and the formation of a sense of respect for nature in the hearts of the young generation. This, in turn, places great responsibility on us future teachers.

As a result of excessive use of natural resources by mankind, the appearance of our entire land is changing, the species of flora and fauna are decreasing, mineral resources are running out, air pollution, and the increase of waste materials are clear examples of this. This problem is considered a violation of the ecological balance between nature, human and society. In order to prevent such situations, in order to improve human qualities, it is an important factor to encourage the organization and implementation of environmental education given to children on the basis of interdisciplinarity from a young age based on the requirements of the time [25].

**CONCLUSIONS**

All the subjects available in the school have their integration opportunities. But their compatibility and effectiveness of integrated courses depends on many conditions. To do this, before creating a new program, educators and designers should consider the situations in which the possibility and necessity of integration will help the conclusion work. To do this, the teacher first analyzes the level of preparation of the pupil, studies their moral characteristics, interest in learning. Difficulties in educational activities can be one of the reasons for using the integration method. The success of some pupils in one subject may depend on the knowledge, skills and abilities they have acquired in another subject.

Recommendations: On the development of environmental education based on the integration of subjects in primary grades, the content of environmental education, the imlrovement of teaching methods, forms, ways, tools and opportunities in accordance with the purpose and the determination of pedagogical conditions and didactic activities implementation and the using on the results of scientific and practical research.

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