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Implementation of interdisciplinary relationships in education on the basis of science integration

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Abstract

The article deals with the problem of integrating science into the progressive development of the modern world, connected with the expansion of the scientific discovery scope or coverage of phenomena that are associated with the expansion of the thought space. The development of science and the process of its integration that directly affects the education system in Kazakhstan, are described as a phenomenon that requires the renovation of the curriculum. Researchers provide scientific conclusions on the interdisciplinary relationships in primary education and the ways of its practical implementation. Theoretical and practical aspects of interdisciplinary relationships, proved on a scientific basis are presented.

Key words: differentiation, interdisciplinary, scientific knowledge, world outlook, student personality.

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Implementación de relaciones interdisciplinarias en educación sobre la base de la integración de la ciencia

Resumen

El artículo aborda el problema de la integración de la ciencia en el desarrollo progresivo del mundo moderno, conectado con la expansión del alcance del descubrimiento científico o la cobertura de fenómenos que están asociados con la expansión del espacio de pensamiento. El desarrollo de la ciencia y el proceso de su integración que afecta directamente al sistema educativo en Kazajstán, se describen como un fenómeno que requiere la renovación del plan de estudios. Los investigadores proporcionan conclusiones científicas sobre las relaciones interdisciplinarias en la educación primaria y las formas de su implementación práctica. Se presentan los aspectos teóricos y prácticos de las relaciones interdisciplinarias, probados sobre una base científica.

Palabras clave: diferenciación, interdisciplinariedad, conocimiento científico, visión del mundo, personalidad del estudiante.

1. INTRODUCTION

The peculiarity of the Kazakhstani educational system is its integration into the European and international educational space. The intensity of today's global development is the result of the rapid development of science and technology, distribution of the best

practices, scientific researches and knowledge that meet the needs of a changing world. Thanks to the development of sciences, new branches of knowledge are emerging on the basis of the renovated content of scientific knowledge, where the theory develops from the point of view of interdisciplinary integration. The appearance of such a phenomenon allows us to systematically develop science and its sphere of research, systematize its objectives and explain the level indicators known in science. Obviously, this will become the basis for the relationship of knowledge in the field of social, humanitarian, natural-mathematical, technical sciences, aesthetic education and upbringing.

Accelerated development in the social, political, economic, scientific, technical, cultural and spiritual spheres of our modern society led to a radical renovation of the content of education in schools. Accelerated development of scientific knowledge in teaching makes it possible to guide the process by interdisciplinary relationships (Metlenkov, 2018). Taking into account the peculiarities of individual subjects, the authors analyzed the problem of interrelationships of certain disciplines with other disciplines. And after that, the authors justified regularities of interrelationships (Karpanina et al, 2018). The appearance of the system of the general subject taught in primary school is associated with an increase in the students' interconnected knowledge, based on the disclosure of regularities in the phenomena of the surrounding world. Interdisciplinary relationships lead to the strengthening of the integration process of scientific knowledge and become the core of truth and reality in the cognition of the world.

It is obvious that the integration system is not only the process of classification, generalization, integration and interpenetration of the knowledge system in the content structure of all disciplines, not only subject or a textbook, but also the content of the knowledge provided and satisfaction of the current demand as a necessary effective tool for personal development. From a philosophical point of view, this phenomenon denies the disappearance of the historical component of the different knowledge development, which points to the solid unity of scientific knowledge, this in turn, above all, unites scientific research that eliminates the age-old dissociation of individual sciences and scientifically justify the unity of their methodology. Thus, at the present time, the solution of the urgent problem of modern scientific knowledge is a complex approach, characterized by the creation of an integral scientific world image.

2. THE MAIN PART

Today the integration of the sciences is not only the similarity of the object-oriented nature of objects with their accumulation and creation, but also the relationship or proximity of internal and external structural systems, depending on the existence conditions of some properties and regularities.

Metlenkov (2018) said that "when some natural sciences began to separate from natural philosophy, there were attempts to keep them in a single system" (Metlenkov, 2018: 3). Muhanbetjanova in her

studies justified that "the processes of modern science integration can be explained by some phenomena (interdisciplinary relationships) occurring at a high level in some phenomena that can be interpreted on the basis of the definition of the general laws" (Muhanbetjanova, 2000: 11).

According to the scientific idea of the scientist, the integration of scientific knowledge is a combination of the unity of laws and principles of philosophical consciousness and scientific knowledge of the world as a comprehensive and concrete path. Today's progress in science influences the growth and prosperity of state structures. Differentiation based on the integration of science / digitization / and individualization, expanding the scope of scientific phenomena or justification of their regularities, expanding the intellectual sphere, with the current nature of the complexities and diversity of topical problems, based on the life experience, the emergence of new objectives requires scientific integration. That is, the study of emerging problems based on the generated methods and techniques cannot give positive results and causes various difficulties. This, in turn, requires a transition to a new model of science integration.

One of the most important problems is focusing on differentiation / digitization / science. It is clear that one of the problems that occurred during the research work was not to draw attention to the integration law, but to simple differentiation / digitization. This aspect had a negative impact on the research. For example, according to Metlenkov (2018), "all subjects must be

integrated in the 2000s", since the quality of the old knowledge has been reduced, and the volume of methods used in the research is aggravated, revealing some of the most urgent problems. Metlenkov (2018) argues that "integration is not the goal, but the chosen path". A coordinated combination of the scientific integration is to respond to the need to focus on acquiring a diverse knowledge of the cognitive world based on interdisciplinary education. This, in turn, is a directed orientation of differentiation /digitization/ and integration, as a complex, more accurate way of integrating the study of laws and phenomena of life.

Differentiation / digitization / integration (combination in the dialectical unity of opposing directions of research and thinking) is a sign of a true way of knowing the world around us. From this point of view, in the world of human cognition, there are two tendencies or trends. The first direction is the integrity and unity of the surrounding world. The second direction is the recognition of the movement laws of the whole world /material, the cognition of the multitude laws of the diverse qualities, images and the recognition of the individual features of forms and objects.

The first direction is the process of sorting, cognition in the integration system, the second direction is the process of differentiation / digitization / and specialization. However, the processes of differentiation / digitization / integration are subject to the laws of unity in terms of orderliness in science (Kolodin, 2009).If a person pays attention to two situations, then it is obvious that at an early stage

of development the science is in the process of actualization and regulation. The process of integration can be seen as a phenomenon occurring at the highest level of the development of the differentiation / digitization / science. The appearance of such a phenomenon causes the introduction of the new scientific disciplines into the life experience. The appearance of new disciplines does not lead to uncertainty and dismemberment in science, but rather it leads science to analysis and study from a systemic and new level. The appearance of the new disciplines will become the basis of the integration process and the basis for determining the research objects in various sciences. In many cases, the process of differentiation / digitization usually occurs spontaneously. It should be noted that the second question is a question of theoretical principles and methodological instruments that characterize the nature of the laws and phenomena of the world, which corresponds to the objects of truth and reality researches. This means that the scientific knowledge, which is implemented through integration, is a very complex phenomenon.

The organization of the knowledge research is carried out in the selection of various ideas, approaches and research methods, as well as in the analysis of different points of view, cognition methods, which lead to the use of interdisciplinary relationships. Abstract concepts in the process of cognition, in turn, are the basis of theoretical and methodological instruments in purposeful actions that lead to finding solutions to the future problems. This is an actual philosophical problem, which is regulated in the process of systematic and qualitative integration of knowledge into various scientific disciplines.

It is obvious that the appearance of the new disciplines in the field of education contributes to the differentiation of different branches of science, and not only the differentiation / digitization processes. In the process of integration to achieve the desired differentiation / digitization of science always acts as an element of the result, which is a key instrument. According to Metlenkov (2018), the process of integrating scientific knowledge is a complex of technologies, new methods and techniques based on different research methods that provide a kind of relationship between scientific disciplines. In the context of educational philosophy, the objective of creating theoretical and methodological instruments for the selection of scientific knowledge among scientists is the problem of the scientific knowledge theoretical sorting, which underlies the problem of explaining the essence of research methods, function and the necessity of artificially created methods of studying in each science.

This is directly related to the problem of integration and differentiation /digitization of science direction. It is not only the interaction between different sciences and interdisciplinary relationships, but also the reflection of extensive processes in terms of intensifying the content of teaching materials in the field of theoretical connections / empirical / practical materials. Nominate concepts, related to integration ensure the modern character of scientific knowledge in the process of interaction between different disciplines as a result of scientifically based theoretical principles and their relations. The basis of the human life science and its system of knowledge is inextricably connected with integration processes in the

development of the cognitive world, in other words, science itself is the success of integration.

What promotes and advances forward, and what makes it an integral process, is the basis of changes in the social structure, as well as the causes and consequences that make this science integrated. “Integration is the combination of individual elements into the whole, the transformation of any unit" (Nesi, 2003: 11).Metlenkov (2018) noted that the appearance of educational integration in Kazakhstan depends on the following factors: the lack of a legislative base and contradictions in the economic crisis, without restriction of the healthy children’s rights. A number of local scientists were engaged in solving the problem of integrating science in theoretical and practical aspects. For example, the organization of educational process on the basis of interdisciplinary relationships was studied by (Beisenbaeva, 2015). The pedagogical foundations of the process of integration into the educational process of general education schools were studied by (Nesi, 2003). Absatova et al.(2016) in their works considered the formation of the integration idea and the history of its development. The pedagogical bases of science integration and practice in schools of the new type were studied by (Kolodin, 2009). Kolodin(2009) considered the problem of integrating the content of education in an elementary school.

These works are research works aimed at identifying scientific and practical aspects of integration into the modern educational and pedagogical science of the republic. The contribution of scientists to

the integration of science and the issues of interdisciplinary relationships lies in the characterization of its new aspects and definitions, the proposal of other meaningful directions. In the process of integration, science explains the didactic basis of interdisciplinary, inter-scientific concepts.

Today's integration into the European educational process of our society and the new nature of school education programs in the process of deepening scientific knowledge and advanced technologies require the integration of science in different areas of education to a new level. In this connection, the definition of philosophical, psychological, general and special didactic bases of interdisciplinary relationships should be determined on the basis of the sciences integration. The philosophical basis of interdisciplinary relationships is that the world, the environment and other things are interconnected with all objects and phenomena in the world. It is clear that interdisciplinary laws have a pattern of integration that will affect the integrity of the cognition of the world by the human.

Since the objective world is a well-organized system of regularities, a process of integration between sciences is required in its cognition. Subjects of education are based on the logic of each science, without individual separation. Therefore, the task of science is to learn and know the relationship. This is the way to organize and implement a complex phenomenon that is the cornerstone of the cognitive development of a person. It is also the means of integrating theoretical knowledge based on the dialectical and historical perception of the

world outlook, the theoretical and practical reasoning underlying the formation of the student's world outlook. Van Lier(2014)states that integration is a commonness of the methodological basis of scientific knowledge and its organic selection in the continuous development process. Gallagher and Zahavi (2007) believes that integration is an interactive, effective connection between science and scientific knowledge, the interaction between common ideas, methods and approaches, the widespread use of structured content, the study of the realities of the world around in the process of achieving the truth. He explains the process of cognition of the constantly changing object, as a form of cognition.

Van Lier (2014) gave the following theoretical definition of the "integration" concept: "Integration is an important feature of modern science; it demonstrates not only the new organization, but also the internal content, the new subject of study and all its aspects. It is one of the main conditions of reliability". Expanding the content of the "integration" concept Baudrillard (2016) wrote: "integration is the methods, principles and ideas used for the study of one object that are necessary and effective during the study of completely different objects in the relationship of the various sciences ".

"The form of sciences interaction, which presupposes the existence of common research tasks and objectives for different areas of knowledge, and also the specific unified system of cognitive means necessary to implement these problems and goals." - said the Czech thinker Van Lier (2014).

Van Lier (2014) explains the content of the integration concept as a component of the three components. In the first place, the appearance of a connection system between parts. In the second place, the loss of initial identification qualities by the parts when entering into the whole. In the third place the appearance of the integrity new properties, conditioned by the properties of parts, and the appearance of new systems, parts relationships. Integration is the process of movement and development of a particular system. There is a relationship of components in this system, their relationship increases, indicators of similar characteristics are eliminated. The appearance of such a phenomenon is based on the appearance of a new level of interaction and integration, leading to the appearance of new objects that have never been in this system. A new relationship and integration is a necessary connection that indicates the importance and significance, called regularities.

The development of the integration process also serves to integrate other or different parts and properties, as well as to integrate components and particles into a single whole. Zhanabergenovna et al. (2016) in their dissertation gives the following definition: "sciences integration is not just a combination of two scientific elements, but rather a new systemic inner unity that allows them to understand the laws of nature much better"(Zhanabergenovna et al., 2016: 78).Thus, it can be concluded that the positive result is not only the individuality of the integration process, but also the classification, integration, mutual influence and the study of the interaction. In this study, the authors can name the most important features of integration and adaptation of the

characteristic forms and knowledge methods that are new to human cognition, which is typical for the processes of new phenomena.

There are five signs of integration processes according to (Tyunnikov, 2001).

1. Integration is based on the relationship of the previously existing scientific elements.

2. Integration depends on the qualitative and quantitative changes of interacting elements.

3. The existence of an independent logically justified basis for the integration process.

4. Creation of an independent structure of the integrative process.

5. Pedagogical orientation and comparative individuality of the integrative process.

Romero and Ventura (2007) examined the conditions of integrative processes, dividing them into three parts:

1. The appearance of a single system from the appearance of the relationship between each set of independent sciences.

2. The appearance of new relationships between different structural units.

3. Strengthening the connection between the existing structures, i.e. reaching a new level.

There is a process of science integration arising in the process of their relationship, which includes organizational and structural patterns, where new terms are used to determine their meaning.

These terms characterize the systematic nature of the integration process, should disclose their characteristic properties, regularities and logical sequence. Thus, the concept of the integrating sciences process must be perceived as a mathematical concept. Since this is connected to the fact that the cognition of the world around the primary school students is based on the performance of simple mathematical problems.For example, the ways in which primary school students can recognize the world in a scientific sense are relative and follow mathematical logic.

This means there is a cognitive process from simple to scientific cognition. In the current education system, the role of integrated knowledge in recognizing the unity of the world requires an interdisciplinary relationships .After analyzing the work "The Great Didactics" by Van Lier (2014), Bulgarian educator Marev (2016) said: "The scientific reflection of the pedagogical integration in the field of education and teaching / didactic became the basis for the growth and development of pedagogical science. For the first time in the history of education the integration process and the concept of classical didactics, typical for its appearance, led to theoretical principles in their essence".

The development of students' world outlook is based on scientific knowledge of the environment and the world by providing students with the knowledge they need to organize the pedagogical process of primary classes. This development has a special importance as a purposeful and relevant object of didactic research. Didactics are based on the knowledge of the educational materials included in the content of the studied disciplines, as a general theoretical knowledge of pedagogical science (based, taking into account the age characteristics of students) and their forms of organization, laws and principles, types of education, after determining the content of education. This content will contribute to the development of students in the future. Kazakhstani scientist-psychologist paid special attention to the problems of didactics as a basic part of pedagogical science when considering the methods of education among elementary school students. Kolodin (2009) was the first who gave a definition to the notion of didactics on Kazakh language: "Didactics is a field of pedagogy that reflects the rules and laws of the child's education, helps to choose the ways of rapid mastering of the knowledge." The scientist noted the need to rely on interdisciplinary relationships in teaching and education. He also stressed that one should not mix the content of educational materials for individual disciplines. He emphasized that common topics in interdisciplinary relationships will have a beneficial effect and will give positive results in the process of education.

According to the scientist-psychologist, the main subject of education in the field of interdisciplinary relationships is the native language, because it explains that the material, offered for the

development of the student's world outlook should be closer to the nature of life. Kolodin (2009) explains, "...if a student at the end of the school will look at his and other people's lives with different eyes, realizing the value of knowledge, this will be the ultimate goal of education"(Kolodin, 2009: 23).The school should lay a solid foundation for the future development of the children. The place of language in the world of human education is unique, i.e. human thought is expressed in language and, therefore, it can be improved by studying the language, through in-depth study and expressed by the world outlook and language of each nation. Studying the language of other nations, people will be familiar with the spiritual world of these people. Intellectual enrichment occurs due to the knowledge of the world outlook of other nations. All studied disciplines are necessary, but among all the native tongue is the most important, which is beyond doubt. Without the knowing of native language, it is impossible to understand other disciplines. After mastering the native language the students will be able to understand the content of concepts, definitions, found in different sciences, and they can develop logic, engage in self-education. Thus, the native language is the basis for mastering other sciences (Matsuzato, 2007).

With time, special attention was paid in pedagogical science to interdisciplinary relationships, many researchers considered and explained integration as one of the principles of didactics. In these scientific conclusions, it is said that "interdisciplinary relationships show the real connection of the educational process with reality, determines the laws of life, their philosophical content, methods and

object of cognition. That is why there is every reason to believe that interdisciplinary relationships are one of the principles of Soviet pedagogy (didactics)".Common features of didactic principles are influenced to the general impact of the educational process. The content of the individual subject and the interdisciplinary relationships is different, in the interdisciplinary relationship, the concentration of disciplines depends indirectly on the specific nature of the content of individual teaching materials. As a didactic principle, interdisciplinary relationships influence the formation of the pedagogical educational process unity, which does not consist in eliminating the concentration of disciplines, but in understanding the harmony of teaching materials through the concentration of disciplines and the analysis of scientific concepts from the continuity point of view in improving their qualitative level. The appearance of the phenomena described above on the basis of the scientific integration leads to the implementation of the teaching material relationships of various science disciplines, i.e. interdisciplinary relationships. One of the priorities in primary education and organization of educational activities, especially in the renovated educational program of Kazakhstan is the introduction of interdisciplinary relationships on "common topics".

The main goal of combining different disciplines on the basis of "common topics" in the primary school is to improve the system of knowledge provided to students in the scientific development of their environment perception, individually, rather than absent-mindedly, that is, to influence the cognitive development of a comprehensive system of knowledge. According to Brownand Summerbell (2009):

> Social life, commonness of the naturalistic outlook, the orientation of the individual world outlook to different spheres of the world cognition influence the formation of individual's worldview. This influence can be seen in the relationships of people, their activities in the world around them. Science, systematicity, integrity, consistency, continuity and evidence, commonness and accuracy are expressed in the process of interaction with nature and the surrounding reality, revealing the psychological foundations of interdisciplinary relationships (Brown and Summerbell, 2009: 23).

The idea that personal development is in connection with the environment is realized in this context in an integral system of laws of mutual influence. This, in its turn, suggests that the development of primary school students' world outlook requires the introduction of the interdisciplinary relationship system. Implementation of education and teaching on the basis of interdisciplinary relationships in elementary school is a systematic organization by teachers of students' cognitive activity, which is the recognition of the pedagogical process as a scientific and creative basis. The results of observation and assessment of the normal cognitive thinking development of students, that is, the results of learning, will be evident through the relationship between students and teachers. If in the process of student development with the mastering of the knowledge system associated with mastering the laws of the surrounding world, mathematics, natural science, aesthetic education, fine arts, physical education, music, artistic work, etc. the schools consider interdisciplinary relationships, then the system of disciplines on the study of literature and the Kazakh language contribute to the students' mastering the scientific and theoretical knowledge, and in total affect their development.

The transfer of knowledge through the system of "general topics" in primary education is the implementation of development and continuity of the logical sequence, which has a complex impact on the scientific awareness of students. A Kazakhstani teacher in his work "Pedagogy" wrote about the formation of the beauty sense among children that it is necessary to speak beautifully and ethically with children. The child must be thoroughly acquainted with art. The child should hear many beautiful melodies, see beautiful colors, hear beautiful words, learn beautiful songs. Let the child listen to the sounds of various instruments, learn to draw, sing songs, play musical instruments. If the child will do all this, he will develop a sense of beauty. Mağjan (2005) justified the need of the interdisciplinary relationships for primary school students. The modern content of education today is based on the demand that science, culture and world should be on a new qualitative level of the scientific and cognitive process in terms of truth and reality. This level should correspond to the level of rapid scientific development. The direction of educational content, based on the interrelated system of science, directly affects the development of social production and public consciousness. This is the stage when this phenomenon is the starting point of the primary education system.

Based on this the appearance of an educational system based on cultural and social consciousness and economic development in society led to interdisciplinary relationships in the educational process of primary education, which has a special pedagogical character and significance. Interdisciplinary relationships are indispensable condition

for interdependence between educational materials of various disciplines, conditions for determining the content of education in accordance with the age of students and the organization of educational and teaching activities. This phenomenon in the pedagogical process is the implementation of the conditions and goals of the student's world outlook system formation through scientific knowledge reflecting the image and unity of the world. The classification of teaching materials, which is included in the structural system of the studied disciplines, unites the consistency of knowledge on the relationships between nature, society and people. Thus, interdisciplinary relationships will play an important and decisive role in the formation and development of an individual approach to the cognition of the world and the environment in the cognitive process of students. World outlook is a set of views, assessments, principles that determine the most common vision, understanding of the world, as well as life positions, programs of behavior, people's actions. A world outlook is a necessary component of human consciousness. This is not just one of its elements in the series of many others, but their complex interaction. The diverse "blocks" of knowledge, beliefs, thoughts, feelings, moods, aspirations, hopes, joining in the world outlook, form a more or less holistic understanding of the world and people around. In the world outlook the cognitive, value-based and behavioral spheres in their interconnection are generalized.

World outlook is a system of generally developed ideas about the world and the laws of its development, the phenomena that affect the individual activity of persons, the phenomena of nature and society.

World outlook is the multifaceted material life of society, a social phenomenon. World outlook is a person, a social group, public interests and values that are reflected in the system of an individual and the values of society (Ybyraımjanov and Qoıanbaeva, 2016). Baumann et al. (2002) noted that:

> The views of the student to the world around him, his qualities and place among other people are determined by the hope and the system of influences from adults. There are two sides in the development of the student personality. The first side is that the student learns the world in parts, his place in this world, on this basis a new type of motivation of behavior is formed, and under this influence a certain activity is manifested. The second side is the development of feelings and will. They provide the influence of motives, constancy of character and dependence on the changing external situation (2002: 41).

According to psychologists, understanding the world by a child, then as a student, begins at an early age and continues throughout life. The mission of the family and the school is to help the student. The level, depth of students' understanding of the nature phenomena depends on the world outlook, on how and where adults will direct their thoughts. This scientific opinion of psychologists is based on the need to pay attention to the laws of child development, where discovering the surrounding world of adults must begin with the correct organization of primary education.

Interdisciplinary relationships based on the integration of sciences on the basis of knowledge transferred to participants in the cognitive process / student or person making an effort to improve /

physiological, psychological foundations of the knowledge system into the consciousness of the person, the result will allow a person to develop forward. This process is an indicator of person's readiness for creative activity. The basis of interdisciplinary relationships in the pedagogical process is that in the scientific literature educational subjects are taken as a didactic basis. The unification of scientific-mathematical, social-humanitarian, aesthetic education, educational, engineering and technical scientific fields is aimed at their interconnection. These fields are united in such areas as society, nature, labor, where the content of materials is directed to the activity and the union of cognitive objects. Maǵjan (2005) wrote: "Let the child master life, remember, learn, observe animals and learn about existence. Then the mind of the child will be sharp" (Maǵjan, 2005: 5).This is stated in the idea of the complex knowledge system based on the development of the student's view, which should be integrated in a complex in each subject.

It is obvious that the content of integration in the modern period is widely used by states, public associations and scientists. In particular, the relationship of the content structure of subjects (which is the basis of science) is widespread in the implementation of a common scientific cognitive process, that is, interdisciplinary relationships. Obviously, this helps us understand the surrounding world from the position of integrity and systematize the existence of cognition by personality. In the process of education, elementary school students are engaged in cognitive, practical and purposeful actions.As a result of these activities, students develop skills of interdisciplinary activity.

Beisenbaeva (2015) describes the definition of interdisciplinary activity as follows: "The student's interdisciplinary activity determines the ability to use the knowledge, skills, and abilities acquired during the development of the second discipline"(Beisenbaeva, 2015: 9).This interdisciplinary activity is developed among the students of junior grades, and in comparison with the students of the senior grades this activity is formed and developed independently. Thus, interdisciplinary activity is carried out in accordance with the age characteristics of students in primary school and their individual character of development. The works in philosophical, social, humanitarian, natural-mathematical, aesthetic and educational-oriented areas were written on this issue by scholars, teachers, psychologists and methodologists of private subjects, based on the content of modern education. Peculiarities of implementation and regularities of interdisciplinary relationships were studied in psychological, pedagogical and methodological activity. These peculiarities were considered in the aspect of classification and structuring of disciplines.

Interdisciplinary relationships should be formed in accordance with general subject knowledge, ideas, skills and abilities. Interdisciplinary relationships are also characterized by the multifaceted aspect of broader cognitive attitudes. Because their activities and influence are common to all disciplines, this is a scientifically-integrated development of the general cognitive sphere of students. Based on scientific research, the following conclusion was made: Integration of science is the change of the development of society, associated with unification of two or more sections of

scientific groups in the presented sections and properties, as well as patterns in the relationship, re-characterized in interdisciplinary relationships, which is one of the tools and basis in human cognition, which takes place in the development of human capital assets as a phenomenon passing into a new scientific revolution.

3. CONCLUSION

The study examines the implementation of interdisciplinary relationships in the period of primary education. In the first place, the appearance of interdisciplinary relationships on the basis of the science integration is defined as a scientific law. In the second place, in the pedagogical process, based on interdisciplinary relationships, students are provided with a holistic view of the world through a complex and consistent influence of the internal relationship of laws. In the third place, the development of the students' consciousness during the existence cognition and its essence is viewed as a complex process that obeys the psychological laws. In the fourth place, the language relations, based on interdisciplinary relationships, are one of the indicators of the student's personality development level. Therefore, attention is paid to the relationship between the teacher and a student, and that is the basis of solid knowledge. All these arguments exist to describe the features of the primary education period and didactic patterns in the implementation of interdisciplinary relationships. It was revealed that one of the main objectives of the interdisciplinary relationships is the disclosure of the connection between education and

preparation of the didactic problem, the development of the educational process. The formation of the student's world outlook as an individual includes the perception of the integrity of the world or the environment, the systematization of knowledge, education in the context of interdisciplinary relationships, the consistency of the basic idea. It is important for the primary school students to form a scientific concept of the integrity of the world on the basis of a comprehensive world picture. As this will allow to optimally solve the problems and contradictions that arise in the formation and development of students' views on the world and the environment. The following is important in the implementation of interdisciplinary relationships:

1. The existing interdisciplinary relationships are the main prerequisite for mastering the foundations of science and the development of the education system.

2. The formation of cognitive views on the world from the standpoint of truth and reality requires the interrelationships of all the content components in education.

3. Interdisciplinary relationships contribute to the comprehensive implementation of the education system.

4. Interdisciplinary relationships contribute to the effective organization of pedagogical work on a scientific basis.

5. Interdisciplinary relationships influence the activity of the teaching staff on the basis of reciprocity and democracy.

During the implementation of the interdisciplinary relationships in the organization of the cognitive process the comprehensive approach and specific objectives are required in the implementation of the educational process through specific patterns and rules. Interdisciplinary relationships are not limited only by the content, methods, nor types of education organization. This is a part of the teaching and cognitive activities of teachers and students. The priority directions of interdisciplinary relationships in the organization of education in primary school, as well as the development of educational and scientific cognitive representations and the formation of a cognitive world outlook, theoretical knowledge and life experience:

- Organization and carrying out of students' work in the pedagogical process aimed at understanding, conscious perception of interdisciplinary relationships, and increasing activity in scientific and cognitive activities;

- As a result of a pedagogical process organized in the course of studying various academic disciplines, in order to determine the possibility of educating a scientific world outlook and forming individual views of students, work on establishing the relationship between the content of materials, analyze the content of the updated curriculum and to take the application of practical experience of teachers at schools as a basis in the application of interdisciplinary relationships;

- Another aspect of the scientific knowledge strength based on interdisciplinary relationships is that it must be done both in

school and in out-of-class work. Since the accumulation of innovative methods, best practices and use of theoretical knowledge will lead the process to a combination with life experience;

- Determining the level of teacher training for the organization of the pedagogical process to educate the students for the scientific world outlook and use of the interdisciplinary relationships in the education system;

- Personal development of primary school students should be in accordance with the general conditions and adapted to the learning environment.

The impact on the formation and development of the student's world outlook in the process of adaptation is the objective of applying interdisciplinary relationships in education. On the other hand, the methodological, material and information aspects of education should be adapted for a comprehensive perception of knowledge by students that will depend on the ability of primary school teachers to organize a pedagogical process on a scientific basis. On the fundamental importance of interdisciplinary relationships in the work aimed at developing the knowledge, skills and abilities of students in the period of primary education, the authors note the following:

- Interdisciplinary relationships contribute to the development of different disciplines based on interaction with each other, based on internal rules and affect the increase in the scale of the

students' scientific outlook. These rules are the core of active participation in cognitive activity;

- All the components provided in the content of education, that interact with each other, positively influence personal development of students in primary school. This aspect forms their world outlook;

- Interdisciplinary relationships are opportunities for an elementary school teacher to organize a pedagogical process on a scientific basis in accordance with the age characteristics of students;

- Interdisciplinary relationships are based on the content of the educational disciplines taught in primary school, the leading ideological principles, data, etc., which ensure interaction between the methods of scientific knowledge through a system of common topics and is the basis for developing students' own outlook from the didactic point of view.

The main types of structural components of cognition by the primary school students of the world and the surrounding reality on the scientific and cognitive basis are formed on the basis of interdisciplinary relationships:

- Systematic and comprehensive nature of the proposed knowledge;

- To connect the personal life experience of a student with theoretical knowledge, the justification for studying the world, environment and the development of an individual, the content, scope of definitions and concepts in the proposed scientific knowledge, their influence on the basis of the influence of creative activity on the world outlook of a student, being the subject of study from the point of truth and reality view;

- At the stage of primary education, due to the interdisciplinary relationships, the students learn about the world and the environment with the help of the following methods: general-logical, theoretical, experimental, hierarchical, creative, pictorial methods in cognitive activity, individuality, world and environment, ways of establishing emotional-value relations between people.

New approaches in the formation of world outlook, the novelty in environmental knowledge and the unity of new methods / technologies on the world from the scientific point of view, based on interdisciplinary relationships, that contribute to the development of deep knowledge by junior school students. Perspective ways of implementing innovative approaches / technologies and the solution of educational problems on the implementation of interdisciplinary relationships in understanding the content of concepts and definitions that appeared on the basis of the scientific integration:

- Stage-by-stage education in elementary school from simple to complex, taking into account age features, learning goals and

features of mastering knowledge, the appearance of personal cognitive interests in understanding and mastering scientific concepts about the world and the environment;

- Directions research of certain types of activity in the field of studying the world concepts, laws and phenomena of the environment from the point of reality, on the basis of the proposed concepts and definitions;

The choice of instruments and used methods; Self-knowledge of a student and many types of his/her activities; the ability to construct a coherent chain of knowledge based on the acquired knowledge of the surrounding reality;

- Relying on scientific knowledge about the world and the environment, from the point of truth and reality view, observing, defining, comparing, describing and explaining the results of their appearance, on the basis of teaching objectives, develop the ability to control personal development, self-esteem. The goals and tasks of interdisciplinary relationships are the development of the students' world outlook on the basis of methods of upbringing, taking into account age features, on the basis of disclosing the scientific and cognitive ideas of private disciplines, develop independence in the cognition of social consciousness and culture, the interrelationship of social consciousness with life, understanding of the integral harmonious picture of human and nature unity. The leading direction of educational activity in pedagogical process, in the

formation of knowledge and skills based on interdisciplinary relationships, is the education of the cognitive sphere of the student's personality.

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