SOCIO-HISTORICAL STAGES OF FORMATION OF MATHEMATICAL CONCEPTS IN PRESCHOOL CHILDREN (ON THE EXAMPLE OF UZBEKISTAN)

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ABSTRACT

This article discusses the events taking place in the socio-economic, political, cultural and spiritual life of Uzbekistan, its rapid integration into the world community, as well as the mechanisms of reforming the education system, one of the key factors in accelerating reforms to build a socially oriented market economy. One of the important conditions for this is the need to improve the professional skills and abilities of the country's workers, especially those involved in the education of young people. Today, there is information about the need to pay more attention to the rapid growth and development of information, the acceleration of scientific and technological progress, the transition to a new stage of pedagogical, psychological, methodological and practical training. mechanisms for developing scientifically based conclusions and recommendations to increase efficiency are described.

Keywords: Modernization, pedagogy, management, professional activity, vocational education, modern world of professions, professional specialization, education, master, skill, teacher-student, student, teacher.

INTRODUCTION

We can distinguish the stages of historical formation in the development of the theory and methodology of the development of mathematical concepts. The empirical development of the first stage-method. Problems of children's mathematical development have their roots in classical and folk pedagogy. Different numbers, proverbs, riddles are good material in teaching children to count, allowing the child to form concepts about numbers, shapes, sizes and more. Later, at this stage, the idea of the need for mathematical development of preschool children was put forward. Well-known thinkers of the past (Ya.A. Komensky, I.G. Pestalotstsi, K.D. Ushinsky, L.N. Tolstoy), well-known figures (M. Montessori, F. Froebel) noted that without the initial mathematical training it is difficult for children to master the school curriculum they understood.

The second stage is the first stage in the formation of the theory and methodology of mathematical development of preschool children, and scientific research has been conducted in the field of the content, methods and techniques of working with children, the definition of didactic materials.

Review

Historically, this stage dates back to the 20-30 s of the twentieth century. Individual teachersresearchers played a major role: E.I. Tikheeva, F.N. Blecher, V.L. Glagoleva, etc.), since the beginning of the XX century in Uzbekistan the interdisciplinary didactic system of teaching mathematics to preschoolers was created. Its first stage is the early twentieth century and the 40 s of the twentieth century. At this time, the manuals usually referred to family and preschools at the same time, in which parents and caregivers were introduced to the content of teaching mathematics to children. For example, "Mathematics in kindergarten": games, conversations, exercises, study of numbers 1-10, with them a guide to actions, shapes, quantities, measurements. Through the manual, children were taught to count in preschools, where it was recommended to rely on a theory that existed at the time: counting numbers and perceiving with a picture. These methods are:

- * laboratory (testing of practical actions with the use of visual aids)
- * research (search for cases similar to the knowledge learned by children)
- * illustrative (strengthening effective work skills)
- * exhibition
- * game.

The third stage is the creation of a science-based didactic system for the formation of elementary mathematical concepts in preschool children, in which the content, methods and techniques of working with children, the didactic features are determined. This phase lasted from the 1950 s. A.M. Leushina studied the theory and methodology of developing quantitative and numerical perceptions in children in the learning process. The fourth stage is psychological and pedagogical research in the 60 s and 70 s of the XX century. The laws of development of the formation, calculation and calculation of ideas about numbers were studied. The need to teach children from an early age, starting with the perception of a series of objects, and then counting, to illuminate the relationship between numbers was justified. Didactic materials, manuals and games were developed. These were studies conducted by psychologists and educators: Yablokov, Menchinskaya, Lezava, G.S.Frenkel, A.M.Leushina, N.G.Bakst. In the 70-80 s of research on various issues of methodology (T.V.Turuntaev, V.V.Danilov, G.A. Kornilova, T.D. Richterman) The fifth stage - the current state of the theory and methodology of mathematical development of preschool children, ie It is the period from the 80 s of the 20 th century to the present day. The current state of theories and methods of developing mathematical imagination in preschool children was formed in the 80-90 s and the first years of the new century under the influence of the development of ideas for teaching children's mathematics and the reorganization of the entire education system. In the 1980 s, ways to improve the content and methods of teaching mathematics to preschoolers began to be discussed. As a negative point, attention was paid to the development of children's subjective actions, mainly in relation to counting and simple calculations, in accordance with the level of generalization. This approach did not provide preparation for mastering mathematical concepts in subsequent lessons. Experts stressed the need to increase the theoretical level of knowledge acquired by children by studying the possibilities of intensification and optimization of education, which contributes to the general and mathematical development of the child. This required a restructuring of the curriculum. The search for ways to enrich the content of education began.

In the process of teaching mathematics to future educators, cognitive mental processes improve perception, thinking, memory, speech, attention, imagination, methods and techniques of mental activity are formed analysis, synthesis, generalization, classification and others. In this way, children's mathematical abilities begin to take shape.

V.A.Krutetsky describes mathematical abilities as "individual-psychological features of a person who are equal, relatively faster, better and deeper than anything else, which helps him to acquire knowledge, skills and abilities in the field of mathematics." Z.A. Gracheva analyzed the manifestations of mental activity of preschool children and identified some components related to the structure of mathematical abilities: flexibility and independence of thinking, development of spatial imagination, logic of actions and thinking, ingenuity and intelligence.

The scientific basis for the development of education in kindergarten was developed by A.V. Zaporozhye, P.Ya. Galperin, L.A. Wenger. The evolving direction of teaching in mathematics is the leading trend of modern educational and upbringing processes.

The above allows us to conclude that the mathematical development of the child is interrelated with the natural conditions (inclinations, abilities), the surrounding social environment and the child's own activities in the learning process. But even so, an important role in the process of mathematical development belongs to teaching and learning, which allows the process to be managed.

Theoretical aspects of shaping the readiness of educators for the process of managing the mathematical development of preschool children. Hence, a child's mathematical development is a controlled process. The needs of the theory and practice of children's education are especially relevant to identify the pedagogical technology of the management process and on this basis to substantiate the model of readiness of specialists to manage the mathematical development of preschool children.

DISCUSSION

The interest of L.F. Spirin, V.A. Slastenin, M.V. Kuzmina, T.V. Polyakova, E.M.Talanchuk defines the problem of research, and at these stages it is necessary for the management and skills of teaching and learning activities, its implementation also reflects the theoretical model of the activities of the future educator, researchers V.I. Loginova, P.G. Samorukova, L.G. Semushina, L.V. Pozdnyak, etc. L.F. Spirin identified four groups of skills according to the stages of management activity:

- Skills of the pedagogical task definition stage: diagnosis, design, analysis of initial conditions and formation of pedagogical task;

- Skills of the programming stage of the pedagogical task (selection of the method of pedagogical influence, modeling of the pedagogical system, the ability to perform program activities, educator, program, educational information);

- Skills of the pedagogical problem-solving stage (skills of teaching, management, material and technical support of the educational process); - Ability to analyze the results of pedagogical tasks (to analyze the results of pedagogical actions, to analyze the solution of pedagogical tasks, self-education and setting goals for improving pedagogical skills) V.A. Slastenin identifies four stages of management activities in the process of solving the pedagogical situation:

Stage 1 - analysis of the pedagogical situation, projecting the results and planning the pedagogical impact;

Stage 2 - design and organization of the educational process;

Stage 3 - regulation, correction of the pedagogical process on the basis of current data collection;

Step 4 - Final calculation, evaluation of results and identification of new pedagogical tasks.

N.V. Kuzmina, studying the psychological structure of the educator's activity, emphasizes that his activity has a managerial character. It identifies five key functional components that are reflected in the structure of the teacher's work, which form the basis for managing the child's upbringing, teaching and development.

We can distinguish the stages of historical formation in the development of the theory and methodology of the development of mathematical concepts.

The first stage is the empirical development of the method. Problems of children's mathematical development have their roots in classical and folk pedagogy. Various numbers, proverbs, and riddles are additional good material in teaching children to count, allowing the child to form concepts about numbers, shapes, sizes, and more. Later, at this stage, the idea of the need for mathematical development of preschool children was put forward. Well-known thinkers of the past, such as Comenius, I.G. Pestalossi, K.D. Ushinsky, L.N. Tolstoy, M. Montassori, F. Frebel, realized that without the initial mathematical training, it would be difficult for children to master the school curriculum.

The second stage is the first stage in the formation of the theory and methodology of mathematical development of preschool children. The content, methods and techniques of working with children, the definition of didactic materials. Historically, this stage dates back to the 20-30 s of the twentieth century. Pedagogical researchers: E.I. Tikheeva, N. F. Blecher, V.L. Glagoleva, etc.

The third stage is the creation of a science-based didactic system for the formation of elementary mathematical concepts of preschool children: the definition of the content, methods and didactic materials of working with children. This stage lasted from the 50 s of the XX century. A.M. Leushina studied the theory and methodology of developing quantitative and numerical perceptions in children in the learning process.

The fourth stage is psychological and pedagogical research in the 60 s and 70 s of the XX century. The laws of development of the formation, calculation and calculation of ideas about numbers were studied. The need to teach children from an early age, starting with the perception of a series of objects, and then counting, to illuminate the relationship between numbers was justified. Didactic materials, manuals and games were developed. These were studies conducted by the following psychologists: Yablokov, Menchinskaya Lezhava, G.S. Frenkel Kostyuk. Tutor: g Leushina Baxst. Methodology (T.V. Turuntaev, V.V. Danilov, G.A. Kornilov, T.D. Richterman) Research on various issues in the 70-80 s.

The fifth stage is the current state of the theory and methodology of mathematical development of preschool children. From the 1980 s to the present. The current state of theories and methods of developing mathematical imagination in preschool children was formed in the 80-90 s and the first years of the new century under the influence of the development of ideas for teaching children's mathematics and the reorganization of the entire education system. In the 1980 s, ways to improve the content and methods of teaching mathematics to preschoolers began to be discussed. As a negative point, the focus was on developing children's subject behaviors, mainly related to counting and simple calculations, without having the right level of generalization. This approach did not provide preparation for mastering mathematical concepts in subsequent lessons. Experts stressed the need to increase the theoretical level of knowledge acquired by children, studying the possibilities of intensification and optimization of education, which contributes to the general and mathematical development of the child. This required a restructuring of the curriculum. The search for ways to enrich the content of education began. These complex tasks were considered in different ways.

Analysis and results

The main ideas of the course "Formation of mathematical concepts" are:

1. Scientific understanding of the learning process as an active process aimed at the development of the child's personality, especially mathematics.

2. The transition from a reproductive type of education to a productive, developing, creative one, which provides for the reconstruction of the entire system of educational work in kindergarten, taking into account the interests and learning opportunities of each child.

3. Variability of programs and methodological bases implies differentiation and individualization of education, state standards of education and guarantees a very high level of development of children. On this basis, the purpose of education is to ensure the development of the child, first and foremost, as an opportunity for them to acquire knowledge and use it in life.

The educator reveals to the child the means and ways of exploring the world, forming the basis of a personal culture, including a culture of knowledge. In this context, the requirements for the professional training of educators, their understanding of the nature of mathematical development of preschool children and the requirements for changes in the child's personality under the influence of education will increase significantly. Not only sound education but his alertness and dedication too are most required.

Diagnosis of the readiness of future educators to manage the mathematical development of preschool children

Theoretical substantiation of the problem of formation of readiness of each educator to manage mathematical development in children, revealing the ways of its implementation in the process of professional training of future educators allowed to determine the purpose, tasks and content of experimental work.

At this stage of the study, we set ourselves the goal: to empirically determine the pedagogical conditions needed to shape the readiness of future educators to manage children's mathematical development.

The aim of our study was to solve the following problems:

1) Determining the level of readiness of students of higher education in the field of preschool education to manage the mathematical development of children;

2) Identification of the main pedagogical conditions that ensure the successful formation of readiness to manage the development of mathematical knowledge of preschool children in students of higher education preschool education;

3) analysis of the effectiveness of the experimental work.

To solve these problems, we organized a research study that included three steps:

- 1) The first stage analytical and search;
- 2) The second stage shaping:
- 3) The third stage evaluation or control.

In the first phase of the study (analytical and research), we examined the psychological and pedagogical literature on the problem of preparing the educator to manage the mathematical development of preschool children, which allowed to hypothetically determine the main indicators of preparation for this type of activity: knowledge of psychological and pedagogical bases and ways of formation of mathematical concepts and ideas in pupils; having the skills necessary to manage the mathematical development of preschool learners, a creative approach to managing the mathematical development of preschool learners in a variety of pedagogical situations.

Based on these criteria, we identified three levels of readiness of students to manage the mathematical development of preschool children: high (optimal), medium (sufficient) and low (critical). (Table N_{2} 2)

We used these features as criteria for determining the level of readiness to manage the mathematical development of preschool children among teachers and students of preschool education.

Initially, it became an independent field of knowledge, gathering existing but significant empirical experience and a very large amount of scientific data in the field of preschool pedagogy. The system of pedagogical sciences is designed to stimulate the mental and allround development of the child, taking into account the specificity, uniqueness of the orientation to the natural potential of each child, the support of individual needs and interests.

The subject of science as a scientific field is the study of the basic laws of the process of formation and development of mathematical imagination in preschool children and the development and implementation of effective technologies of development and education that contribute to the cognitive and personal development of the child. Tasks to be solved by the concept:

- Scientific substantiation of the goals, content, forms, methods of mathematical training in the basic general education programs of preschool education, the requirements for the level of development of quantitative, spatial and other concepts of children of different age groups;

- Development and implementation of modern effective, including computer, mathematical education technologies for preschool children;

- Continuity in the formation of basic mathematical concepts in kindergarten and school;

- Development of content and technology, including computer games, training of highly qualified personnel capable of carrying out the mathematical development of children, taking into account local and foreign scientific achievements in various forms of preschool education;

- Development of scientific guidelines for parents on the development of mathematical imagination in children in the family. The theoretical foundations of the proposed concept embody the general concepts of philosophy, pedagogy, psychology, mathematics and other disciplines. These include:

- State documents on education of Uzbekistan;

- Publications reflecting the main results of scientific research and scientific research (articles, monographs, collections of scientific articles, etc.);

- programming and methodical documentation;

- methodical literature (educators, parents, articles, manuals, etc.);

- innovative pedagogical experience in the development of mathematical concepts in PE and the family, the experience and ideas of advanced educators.

This concept provides knowledge about the principles, conditions, content, methods, tools and forms of organizing the pedagogical process in kindergarten. Specific methods allow integration in preschool education: combining the theory and methods of mathematics and speech development, the theory and methods of physical education, the theory and methods of music education, etc. help the child to master mathematical concepts more fully. Preparation for the mastery of mathematics in preschool education cannot be done without being related to the method of teaching elementary mathematics. The most effective technologies are those developed in the kindergarten-school system. The teaching of mathematics should be based on the laws of development of cognitive activity, the child's personality, which is the subject of study of the mental sciences. Cognition, representation, thinking, and speech not only function, but develop rapidly in the learning process. The psychological features and patterns of a child's perceptions of objects, numbers, space, and time sets serve as the basis for developing ways to form and develop mathematical perceptions. Psychology identifies age-related opportunities for children to learn knowledge and skills, as well as ways to support an individual's individual path of mathematical development. Rational construction of the learning process is associated with the creation of optimal conditions based on the anatomical and physiological characteristics of young children. Patterns of physiological processes in preschool age serve as the basis for determining the forms, locations, and duration of activities for children of all ages.

Rational construction of the learning process is associated with the creation of optimal conditions based on the anatomical and physiological characteristics of young children. Special computer environments will be set up to teach children mathematics. The relationship with different disciplines provides a theoretical basis for the development of mathematical concepts.

The dissertation uses the advanced ideas of classical and modern pedagogy and psychology on the problems of teaching mathematics to preschool children (J. Comenius, F. Frebel, M. Montessori, E. I. Tikheeva, A. M. Leushina). Taking into account modern psychological and pedagogical research, the methodology of teaching children's mathematics has been developed in accordance with the current curriculum of preschool education of the Higher Education Institution.

In modern life, the problem of teaching mathematics is growing. Increasing the level of creative activity, the problems of production automation, modeling on electronic computers and more often means that modern professionals have a sufficiently developed ability to accurately and consistently analyze the processes studied. That is why kindergarten education is primarily aimed at accustoming children to a completely logical discussion of the environment. Learning experience shows that the study of elementary mathematics contributes the most to the development of logical thinking in preschool children. The mathematical style of thinking is characterized by comprehensibility, brevity, dissection, clarity and logic of thought, and the ability to use symbols. In this regard, the pre-school direction of higher education and the content of teaching elementary mathematics in kindergarten are being systematically reorganized. In the process of intuitive cognition, images of imaginary objects, their properties and relationships are formed. Thus, using different sets (objects, toys, pictures, geometric shapes), children learn to make connections between sets, to call the number of words: more, less, equal. Comparison-specific kits prepare children to learn the concept of numbers in the future. These are the processes that children go through with kits that form the basis of their rotation not only in kindergarten, but also in the later years of school. The idea of the set is the basis for children to understand the laws of abstract numbers, the series of natural numbers. Although the concepts of natural number, quantity, part, and whole are abstract, they reflect the connections and relationships of objects in the surrounding reality. Introducing children to different types of mathematical activities in the process of purposeful learning directs them to understand connections and relationships. The formation of basic mathematical knowledge and skills in preschool children should be carried out in such a way that the lesson gives not only a direct practical result (calculation skills, performance of elementary mathematical operations), but also a broad developmental effect. Mathematical development of preschool children is usually understood as a qualitative change in the forms of cognitive activity of the child, which occurs as a result of the formation of elementary mathematical concepts and relevant logical operations. Pedagogical research. analysis and experience Stolyar. (A.A. I.N.Nepomnyashchaya A.M.Leushina, etc.) assures that the rational organization of teaching mathematics in preschool children ensures the overall mental development of children. Introducing reasonably organized children to different types of mathematical activities in a purposeful learning process will guide them to understand connections and relationships.

The formation of basic mathematical knowledge and skills in preschool children should be carried out in such a way that the lesson gives not only a direct practical result (calculation skills, performance of elementary mathematical operations), but also a broad developmental effect.

Mathematical development of preschool children is usually understood as a qualitative change in the forms of cognitive activity of the child, which occurs as a result of the formation of elementary mathematical concepts and relevant logical operations.

Teaching measurement as an early way of knowing the quantitative properties of the environment plays an important role in the development of elementary mathematical concepts. This allows for the use of unconventional but primarily traditional measures in the measurement of masses, liquids and lengths for preschool children. At the same time, children develop the eye, which is very important for their emotional development.

Under the influence of systematic teaching of mathematics, children learn special terms: number names, geometric shapes (circle, square, triangle, rhombus, etc.), elements of shapes (side, top, base), and so on. However, the use of terms such as natural series, set, structure, set elements is not recommended.

Practicing math is especially important when it comes to developing children's curiosity and being able to demonstrate voluntary actions in solving mathematical problems. Typically, in math classes, educational tasks are solved in conjunction with educational tasks. This means that the educator teaches children to be organized, to work independently, to listen carefully, to do the work efficiently and on time. These disciplines help to develop them, and impose a tremendous amount of organization and responsibility on educators. Thus, teaching children mathematics from an early age ensures their all-round development.

Among the tasks set for the formation of elementary mathematical knowledge and the subsequent mathematical development of children, it is necessary to emphasize the main ones, namely:

knowledge of collection, number, value,

development of form, space and time as a mathematical basis;

the reality surrounding the formation of a broad initial direction in quantitative, spatial relations;

formation of skills and competencies in accounting, calculation

measurement, modeling, general education skills;

mastering mathematical terminology;

cognition, development of interests and skills, logical thinking, general mental development of the child.

The educator solves these tasks in a complex way, in each lesson of mathematics, as well as in the process of organizing different types of independent children's activities. Numerous psychological and pedagogical studies and advanced pedagogical experience in preschool education organizations show that only properly organized children's activities and systematic training ensure the timely mathematical development of preschool children.

Numerous studies (A.M.Leushina, N.A.Menchinskaya, G.S.Kostyuk, etc.) have proved that the age opportunities of preschool children allow for the scientific formation of elementary, albeit basic mathematical knowledge. At the same time, it is necessary to choose the forms and methods of education in accordance with the age of the child. In this regard, the most favorable conditions are created for the formation of certain knowledge and skills at certain age stages.

Thus, in a small group of pre-school education (fourth year of life), the main focus is on the formation of knowledge about the set. The concept of set is one of the basic and most general,

through which all the concepts of mathematics are introduced. The concept of a collection is so broad that it is not even defined at the current level of scientific development, but is introduced as an original and explained with concrete examples. In the middle group, in the process of studying the basic properties of the set, it is necessary to absorb the concept of number, and then - the first ideas about natural numbers. Understanding the basic features of a set in a preschool young math program is limited. However, awareness of its individual characteristics (equality and inequality, independence of the set strength from qualitative characteristics) is present in the preschool period.

CONCLUSION

In addition to the formation of basic mathematical concepts and concepts, the "Kindergarten Curriculum" aims to introduce preschool children to a range of mathematical connections and relationships. Thus, children are aware of certain relationships between sets (a number of ordinal relationships, natural numbers; spatial and quantitative relationships, etc.). In this case, all mathematical knowledge serves as an interaction. For example, the formation of ideas about quantity is associated with the formation of knowledge about the set and size of objects, the development of vision, the conditional determination of size and parameters, and the mastery of the relationship between objects. It is important to keep in mind that by learning numbers, children learn to abstract quantitative assessments from all others (color, shape, size).

The formation of the initial mathematical knowledge in the relationship allows each to be concretized and improved gradually and purposefully.

The dissertation introduces students to the basic mathematical concepts used in elementary mathematics for preschool children. Psychological and pedagogical concepts are also considered, without which it is impossible to teach children the elements of mathematics. The main purpose of this work is to learn to mathematically describe and clarify the meaning of all that is applied in working with students of preschool education, to teach concepts that form relevant perceptions about children. The theoretical foundations of mathematics are presented in direct connection with the elementary mathematical concepts formed in preschool children in the educational process in kindergarten. Students learn the mathematical meaning of concepts such as sets, operations with sets, size, shape, geometric shapes, and so on. In the course of seminars and practical classes, students perform simple mathematical tasks and exercises that reveal the basic rules of theory. Students will also identify the basic psychological and pedagogical concepts needed to study this course.

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