Obutchénie
Revista de Didática e Psicologia Pedagógica

DOI: http://doi.org/10.14393/OBv6n3.a2022-67638

Holistic Developmental Education (HDE) at the preschool level: peculiarities of the "Experimentar" Pedagogical Center[1]

A Educação Desenvolvimental Holística (EDH) no nível pré-escolar: peculiaridades do Centro Pedagógico "Experimentar"

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ABSTRACT
The article represents best practices and inventions of preschool developmental approach in content, technology, and educator-child relationship carried out in the Educational Center "Experiment." It is based on the main principles of the holistic developmental education (HDE) having its ground in the theoretical teaching of L.S. Vygotsky, B.D. Elkonin and V.V. Davydov.

RESUMO
O artigo relata as melhores práticas e invenções no desenvolvimento da educação pré-escolar a respeito do conteúdo, da didática e da relação educador-criança realizadas no Centro Pedagógico "Experimentar", da cidade de Riga, capital da Letônia. Baseia-se nos princípios básicos da Educação Desenvolvimental Holística (EDH), tendo como base os pressupostos teóricos de L. S. Vigotski, B. D.

[1] The article describes the peculiarities of Holistic Developmental Education at the preschool level at the Pedagogical Center "Experimentar," located in Riga, the capital of Latvia. A version of this article was published in English in: FLEER, M.; OERS, B. van (eds.). *International Handbook of Early Childhood Education*. Springer International Handbooks of Education, Dordrecht, The Netherlands, 2018. DOI: https://doi.org/10.1007/978-94-024-0927-7.

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DOI: http://doi.org/10.14393/OBv6n3.a2022-67638

The article covers the following themes and issues: (1) particularities of the psychological guidance of the students as well as training of psychologists and educators. (2) It presents some examples of learning tasks from lessons on math and logic for preschoolers. This material is of a methodological character and is rather a recommendation for educators and psychologists working with preschool-age children. It is highly recommended especially for those educators and psychologists who are interested in professional development, as well as in implementing innovational approaches for reaching netter qualitative results. This could also be useful for parents, in order to organize a creative free time of their children or provide them with additional developing training at home.

Keywords: Holistic Developing Education. Pedagogical Center "Experiment". Pre-school education.

Elkonin e V. V. Davidov. Aborda os seguintes temas e questões: (1) particularidades da orientação psicológica dos alunos, bem como da formação de psicólogos e educadores; (2) alguns exemplos de tarefas de estudo de lições de matemática e lógica para pré-escolares. Este material é de caráter metodológico e dirigido a educadores e psicólogos que trabalham com crianças em idade pré-escolar, que estão interessados no desenvolvimento profissional, bem como na implementação de abordagens inovadoras para alcançar resultados qualitativos relevantes. Também pode ser útil para os pais, a fim de organizar um tempo livre criativo para seus filhos ou fornecer a eles processos de aprendizagem desenvolvimental adicionais em casa.

Palavras-chave: Educação Desenvolvimental Holística. Centro Pedagógico "Experimentar". Educação Pré-escolar.

1-The historical context

The "Experimentar" Pedagogical Center was established in 1987 amid discussions about the new concept of school. It evolved from a project carried out during the two years following its establishment. Initially, the proposal was intended for implementation within the school education system. However, from 1989 onward, new approaches were developed to incorporate the Elkonin-Davidov developmental learning system into the preschool curriculum.

In 1991, the first class began with children who arrived at the Development Workshop, created by the Experimentar Pedagogical Center, at the age of five. This class graduated in 2002 after twelve years of schooling. During this period, the Pedagogical Center "Experimentar" ran two preschool institutions simultaneously: the Development Workshop (for children aged 2 to 7) and the Kindergarten. Initially, the main objective of working with preschool children was to prepare them for developmental education school.

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The process of developing new approaches and implementing new content was prompted by serious changes in the Latvian education system. These changes included alterations to the preschool and public school curricula and standards, as well as the transition from Russian to Latvian as the language of instruction. Additionally, Latvian domestic policy impacted the implementation of new approaches, which took place during the public preschool and school education system's general transition to Western standards, albeit with several changes of direction. Some of these changes, as well as other innovations, did not align with our pedagogical and psychological understanding of preschool-age child development.

Nevertheless, during the formation and implementation of the Holistic Developmental Education System, we successfully established an institution based on the main concepts of Russian psychopedagogical thinking and the Russian language. The institution provides education for children aged 15 months to three years and training to strengthen the knowledge, skills, and habits of educators and psychologists.

Implementing and developing the “Experimentar” Pedagogical Center, especially its preschool education program, has proven that high-quality results can be achieved in any educational system if it is based on key philosophical, scientific, and psychopedagogical ideas, regardless of external circumstances. The remarkable achievements of our graduates in their personal and professional development, despite already holding degrees from Latvia or other Western or Eastern universities, provide clear evidence that developmental education, which emerged in the 1980s, has a scientific basis, methodological support, and successful implementation.

The HDE system and its implementation are based on:

- Theoretical concepts of the scientific school of L. S. Vigotsky (Vygotsky, 1984, 1996; Veresov, 2004).
- Theoretical, psychopedagogical, and methodological formulations of the developmental learning system of B. D. Elkonin and V. Davidov (SADED or

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Elkonin-Davidov Developmental Learning System, ADED) (Davidov, 1996, 2000, 2005; Shchedrovitsky, 2005; Elkonin, 1989);

- Concepts of Systematic Thinking Activity (STA) and the Methodology of G. P. Shchedrovitsky and STA Pedagogy (STAp) (Akopova and Ivanova, 2006; Shchedrovitsky, Rozin, Alekseev, and NEPOMNYASHCHAYA, 1993; Shchedrovitsky, 2015).
- Conceptual foundations of the preschool developmental education project "Tropinki" ("Pathways") by V. T. Kudryavtsev (Kudryavtsev, 2007; "Standardization" of preschool education: guiding stars and pitfalls. http://obruch.ru/index.php?id=8&n=76&r=2).
- Original developments by educators at the "Experimentar" pedagogical center (Zeltserman, 2007, 2002; Zeltserman & Rogaleva, 2000).

The fundamental difference between traditional teaching and developmental education, implemented at the “Experimentar” pedagogical center, is described by V. T. Kudriavcev (KudryavTSev, 2007):

> The diagnosis for traditional preschool education, formulated by B. D. Elkonin and V. V. Davidov, accurately describes the traditional preschool curriculum. The content and working methods of educators used in traditional early childhood education are not relevant to children's development, as they essentially replicate experiences that children have already had (or should have had) in their everyday activities.

This article is based on the best practices and experiences of the Experimentar Center's methodologists, psychologists, and educators, reflecting the center's approach to content development, didactics, and relationships with children in preschool education. It presents the psychological and pedagogical foundations for developing the practice, excerpts from methods and exercise instructions, and summaries of lesson notes, as well as various parts of transcripts from lessons or exercises.

Before describing the practical aspects, we will focus on the peculiarities of training educators and psychologists working in the HDE early childhood education network.

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Professional training in psychology and education

To fulfill their roles in the HDE system, educators must participate in advanced professional training to learn about the system's peculiarities. In addition to basic psychological training and an understanding of the fundamental principles of developmental education, educators must possess the necessary knowledge, skills, and habits to work in the HDE system, as well as a good sense of humor. From a didactic perspective, HDE perceives participants in the educational process as equal partners (student-educator). Rather than passing on knowledge to a child, an educator should engage in play with the child, allowing the child to acquire new knowledge, tools, experiences, and so on.

2.1 Designing study sessions as project workshops

Educators working in various fields and with different age groups participate together in these types of workshops. During these workshops, common issues in preschool group development are discussed, and a holistic system of tasks/lessons for promoting creativity or pair or group work is developed, which individual educators then implement systematically during their learning organization time. How to explore and expand a task will be described later through tasks such as “A boy and a painting easel,” “Fairy tales,” etc.

Another important aspect of these workshops is the development of interdisciplinary (cross-curricular) lessons aimed at acquiring communication and group work skills in different age groups (4-6 years). Leading educators from different related fields, i.e., mathematics-logic-science (the development of cognitive activity) or dance-music-sports-visual arts, participate in the design and implementation of these types of study sessions.

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It is also possible to combine other subjects of study if this is essential to achieving an educator's goal when working with a particular group of preschool children.

Special attention is paid to the use of various fragments of the pedagogy of systematic thinking activity (STA) for the development of interdisciplinary lessons, since an educator must clearly understand the correlation between the goal of their lesson, the psychological and pedagogical challenges, the didactics, and the peculiarities of age psychology.

It is necessary to mention that the principle of "project workshops" applies not only to the teamwork of educators in the development of interdisciplinary lessons, but also to the individual development and design of developmental education programs. In this case, the "master-apprentice" approach is used, where a "young educator" (less experienced) works on a project together with a "master" (more experienced educator).

2.2 Workshops for analyzing classroom videos

These activities involve in-depth discussion of the psychological and pedagogical aspects of a study session. This procedure is mandatory for any new educator or approach to acquire a skill for using any new didactic or innovation developed in project workshops.

During the video analysis workshop, extra attention is paid to analyzing the lesson design (its objective, challenges, and planned results), as well as the psychological and pedagogical situation of the lesson itself. The educator's actions and behavior, as well as the techniques they use, are analyzed, as are the students' acquisition of new skills.

After the analysis, a psychological and pedagogical reflection is conducted to detect shortcomings in the theoretical approach or model of the study session. After further interaction, a new study concept is developed.

Each educator in the HDE system must understand the fundamental elements of the pedagogy of systemic thinking activities (STA), including

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organization and participation in communication, identifying one's own and others' understanding, self-reflection, and reflection on others.

During training, special attention is paid to acquiring the aforementioned skills, particularly among psychology and pedagogy professionals. Only after completing pedagogical and psychological training are educators entitled to develop and implement individual educational projects and games. Thus, a transparent program of visual arts (from third to eleventh grade) and creative and intellectual extracurricular events was created.

3 Psychological counseling at the preschool level

One of the main features of our holistic preschool developmental education system is psychological guidance. This guidance aims to provide psychological support to children ages one and up, as well as to educators, throughout the educational process. It is worth mentioning that our psychological support not only helps with task completion, but also manages the psychological aspects of education. This type of management requires special training in psychological problem solving and personality development for both children and educators. In this case, the psychologist acts as a specialist and counselor.

Monitoring focuses on the educational process, with the main theme being child development. Child development is understood as a system of relationships between the child, their parents, peers, and themselves.

This article discusses the link between diagnosing and correcting psychological difficulties to manage this aspect in education. The main feature of this approach is projecting an activity (Zeltserman & Rogaleva, 2000). Thus, the first stage of working with a preschool group involves diagnosing the group's activities and the children's individual development. Next, the group is divided according to each child's individual developmental peculiarities based on the results of the diagnosis. This type of group division enables the creation of challenges and the development of appropriate approaches for group activities.

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Children develop the desire to work in different groups and their skills in this type of psychological activity.

During our classes, children play various games. Pursuing the objective of the game becomes the key aspect of development and allows players to set their challenges. For example, older children playing "train" define the purpose of the game as an opportunity to learn "to play together" and "to be sensitive to each other."

4 From socialization to productive communication

The development of socialization and communication skills is particularly important in the HDE system for preschoolers. Learning socialization and communication techniques is a universal meta-challenge, applicable to any situation involving interaction between preschoolers, both inside and outside the learning process.

A program called "The ABCs of Socialization" has been developed to support preschoolers in the area of social interaction. The program guides children into the sphere of interaction, fostering motivation for socialization and the intention to communicate. This eliminates the problem of children adapting to a rapidly expanding social world.

Initially, their social sphere consists of their family (mother and father). As they grow up, it expands to include their peers, new adults, new social conditions, and relationships with other people.

Thus, during the first lessons, children face the new situation of getting to know their classmates and teacher. The educator suggests that each child introduce itself and that the others introduce it with a kind name. This way, children have the opportunity to become familiar with each other and memorize names, as well as recognize their name and receive a new socialization experience in an unfamiliar situation.

In addition to becoming familiar with their new social world, children acquire a sense of belonging to a group during classes. They also develop a positive

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attitude toward themselves and others, which enriches their emotional well-being. Furthermore, these activities develop social and cultural behavior skills, promoting empathy and compassion. For instance, the game "Animal Piano" fosters a sense of belonging, encourages emotional awareness, and enhances the ability to interact with others.

In this game, children sit in a row, each imitating a piano key that makes an animal sound. An educator plays the role of pianist and gives each child a piano key that makes a certain animal sound. When they press their key, it should make the sound of the animal they represent. Through these activities, children also gain experience with social communication.

In one lesson, an educator uses toys to tell the story of two hedgehogs who find a green apple but cannot decide if it's sweet or sour. Gradually, their conversation turns into an intense argument and a fight. The children are asked to describe the hedgehogs, predict the consequences, and resolve the situation in the best way possible (by asking questions such as, "What is happening between the hedgehogs? What could happen if the fight doesn't stop?" Through this activity, children develop their own approaches to conflict resolution. For example, they might suggest letting the hedgehogs taste the apple or tasting it themselves and describing the taste to the hedgehogs.

In the process of resolving a study situation, an adult helps the child apply familiar modes of action to a new situation. Often, a new approach is needed, so the child tests different solutions under the guidance of an educator who helps evaluate which solutions are appropriate and which are not. Exchanging opinions is usually essential for children. One possible technique for discussion is pair work.

In this case, the educator asks a question that everyone can answer. The children try to answer and are given time to discuss. "Face each other, and if you know the answer, share it with your partner." If they agree, nod your head and take their hand to show that you are ready to answer the question together. If they disagree, ask for their opinion because you may be wrong, and they could help you."

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To be more successful in our system, children are encouraged to think independently, discuss, and defend their opinions in preschool. They are also encouraged to ask questions and initiate the acquisition of new knowledge. Consequently, individual work guided by an adult is insufficient; working in groups is essential.

Disagreements among children with different approaches to solving tasks are necessary for addressing fundamental questions with the educator. However, for the disagreement to be meaningful, the children involved must be able to:

- Formulate your point of view;
- Discover the opinions of others;
- Distinguish between your opinion and the opinions of others;
- Resolve contradictions through argumentation, avoiding bringing the conflict into the realm of interpersonal relationships.

To establish the primary coordination of actions, the etiquette of a fair dispute is introduced:

> After expressing your opinion, ask others, “Do you agree? Do you care? What do you think?” If everyone agrees, you can take action. If there are different opinions, ask each other, “Why do you think that? Can you prove it?”

Here is an example of peer work:

> You have in front of you an image of a human being performing an unusual job. Please try both you and your partner, to negotiate and dress this individual in a specific uniform. Then you will exchange your drawings with another pair who will try to guess that person's occupation.

The establishment of creative dialogue is a necessary condition for any activity. As a common issue for interaction, implemented in a joint activity between children, we suggest tasks for the development of imagination. In our

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system, unique dialogues are implemented as an equal dialogue between a child and an educator as well as a specially organized dialogue about creative activity between children.

4.1 Teamwork

Teamwork is organized using special recommendations developed at the center. In accordance with the objectives of group work, these recommendations include socialization skills and tools from STA pedagogy (Zuckerman, 2000; Shchedrovitsky, 2005; Tancerev, 1997). Various approaches to group formation are used to develop facilitator skills and help children learn to work in groups. Groups (teams) can be formed according to their participants' wishes. Thus, the main goal of the team could be the creative result of the group facilitators.

The educator usually selects a child to be a group facilitator if they seem to have a penchant for facilitation and are respected by their peers at the end of the preparatory training. Children are divided into groups by playing "mirror." This is the most complicated way to do so. The leader turns his or her back to the class while the educator points to one of the students. The leader calls out a number. The group forms randomly. The main objective of the group is to organize communication. According to gender, girls are in one group and boys are in another. It is essential for children to acquire teamwork skills here (Zeltserman & Rogaleva, 2000; Tancerov, 1997).

4.2 Imagination is central to mental growth in preschool age

According to L. S. Vigotski and V. V. Davidov, creative imagination is a central psychological "achievement" of preschool age. Forming it through various childhood activities establishes a child's mindset. Throughout preschool, it is actively developed through specialized activities such as games, artistic expression, interpreting fairy tales, and creative writing.

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According to V. V. Davidov and V. T. Kudryavtsev's hypothesis, productive imagination and creative thinking form the basis for continuity between preschool and school developmental education (Davidov & Kudryavtsev, 1997). However, imagination cannot be developed sporadically because it requires constant work and special attention within the learning process. This process is emphasized in our HDE system.

The prototypes of learning activities do not develop at the preschool level, but rather their universal psychological prerequisites. One of the key assumptions of preschool developmental education is the development of productive imagination, which represents the core of a preschool child's creative potential and relates to a child's theoretical thinking during the early years of elementary school (Kudryavtsev, 2007).

Imagination is not only a central mental process during the preschool years, but also a common feature of consciousness. It is a "universal ability" (E. V. Iliénkov) and consequently a fundamental attribute of the human personality. Psychological and pedagogical literature uses different terms to describe the development of imagination. Recently, the term "creativity" has been widely used for this purpose in Latvia. In this article, we use "creativity" to describe activities that develop imagination, imaginative ability, and creative thinking, as well as activities related to dreams and creativity.

We have collected and organized more than 300 activities to develop creativity. This selection includes concepts by J. Renzulli (Gatanov, 1998; Crutchfield, 1966; Renzulli, 1986; Torrance, 1965), O.M. Dyatchenko (Venhur; Diatchenko, 1989; Diatchenko, 2007), and V.T. Kudriavtsev (Kudryavtsev, 2007); the development of imagination (Akopova, 2005; Akopov & Ivanov, 2006); verbal games (Zeltserman & Rogaleva, 2000); and fantasy (Kudryavtsev, 2012; Rodari, 2011). These activities differ in technique and mentality but share the common goal of fostering creativity. This collection is organized into a system that can be used in any area of knowledge.

The “Mosaic” selection consists of various types of tasks and assignments:

- Complete the drawing;

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- Verbal associations;
- New ways of using words;
- Construction;
- Unbelievable situations.

During the “Complete the Drawing” activity, children are intensely involved in “transforming a smudge.” "What do I see as I transform a smudge into something good/bright/beautiful/...?

Verbal development games are implemented during classes to train speech and, at the same time, promote not only speech improvement but also creativity development. Fairy tales are the best way to practice speech and creativity using different tasks:

> misquoting a fairy tale,
> copying a fairy tale,
> a new version of an old fairy tale,
> a fairy tale turned upside down,
> as well as
> inventing a new ending to the story,
> creating a new middle for the story,
> inventing a new beginning for a story.
> The game “Fairy tale misunderstanding”
> Objective: Development of imagination and speech.

Instructions:

> You all know the fairy tale “Little Red Riding Hood.” Now listen to how an old man might tell J. Rodari's version of the fairy tale.
> Once upon a time, there was a little girl named Little Yellow Riding Hood.
> It's not yellow; it's red!
> Oh, you're right! It's a red hood. One day, her mother called her and said, “Dear Little Green Riding Hood...”
> No! She's Little Red Riding Hood! Of course!
> She has a red hood.
> “Go to Aunt Dionmira and bring her some potato peels...”

It is obvious that he had completely misquoted the fairy tale. Please also try to misquote the fairy tale, i.e., tell it with some changes in events and names of

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heroes or even mixing them up. Meanwhile, the others should sit and listen carefully and correct the storyteller.

The following well-known Russian fairy tales can be used for misquoting:

A spotted chicken
A palace ("Teremok")
A gingerbread house
A rabbit's house
Swans
The three bears

The following tasks are used for activities for different ages as a warm-up procedure.

Instructions: The activity can be divided into several stages: in the first stage, the educator addresses the children with the question, "What do you see when you look at the figures (a circle, a triangle, a rectangle, a curved line)?" (Fig. 1).

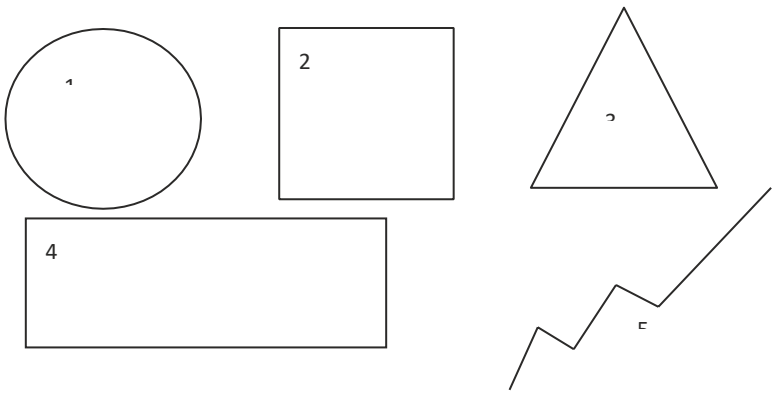

Fig. 1 Examples from Figure 1

In future classes, he can ask participants to complete the picture. For advanced or older groups, he can suggest that they draw something unique.

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This exercise is used for diagnosis.

Instructions: In two minutes, draw as many figures as you can or a comic strip (Fig. 2).

This exercise is used with different age groups, and the sequence of tasks depends on the group's level and social situation.

Instruction: Look at the photo, think for a moment, and tell us what the boy is thinking. If objects could think, what would an easel, a sheet of paper, paints, a brush, toys, and birds behind the window think? (Fig. 3).

The above provides an overview of how various activities incorporate exercises that address different aspects of creativity suitable for various age groups.

Some exercises are assigned to children of different ages within a broader context, which allows us to observe individual and group development dynamics.

Developing new activities for different age groups and areas of knowledge is a special trend within educators' activities. One of the main characteristics of creativity development activities is incorporating elements from the school curriculum for older children to prepare them for school.

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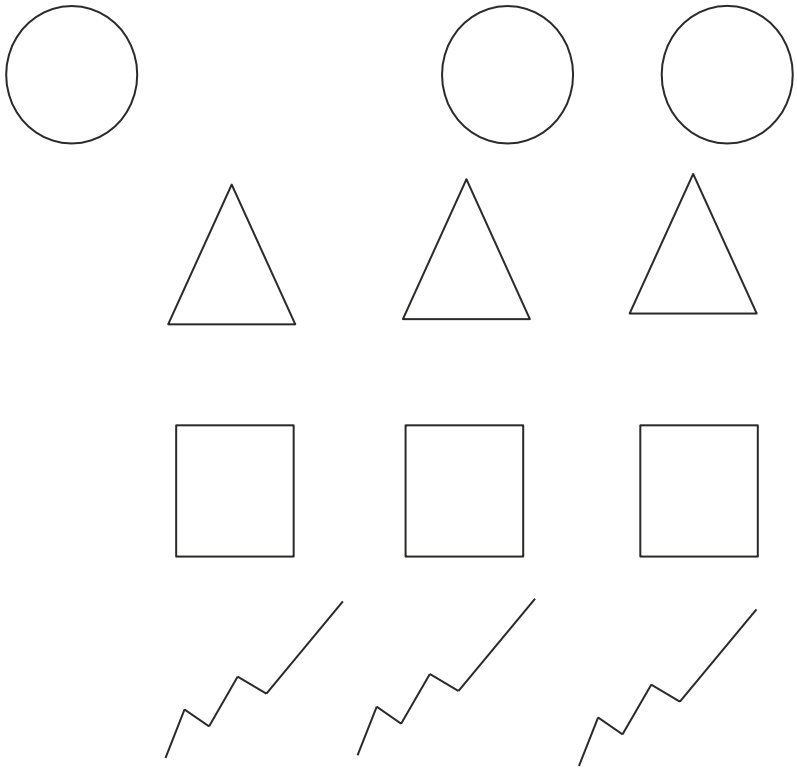

Fig. 2 Examples from Figure 2

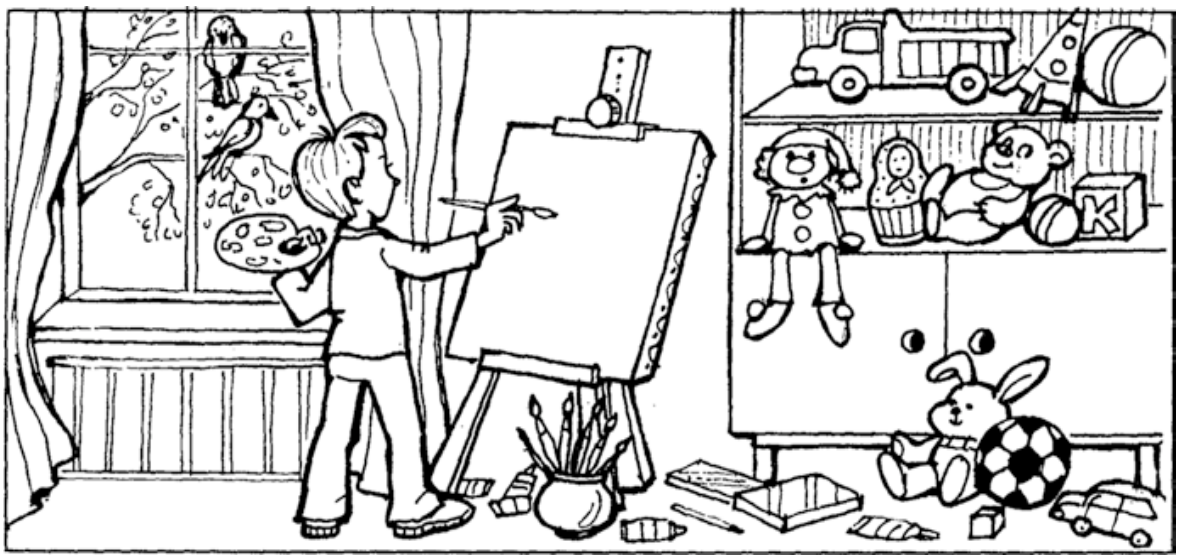

Fig. 3 What is the boy thinking?

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4.3 Development of Study Activity Elements for Preschoolers

One of the most important tasks is developing didactic procedures to introduce study activities in various subject areas to older preschoolers. The goal is to facilitate the transition from preschool activities to school studies and to analyze the psychological and pedagogical conditions that enable this transition. Additionally, the goal is to teach “study skills."

The ability to learn is a self-transforming skill. It is demonstrated by a child's ability to set specific goals, recognize their limitations, independently find tools to solve problems, and adopt a sequence of steps to achieve results.

These elements of study activity are developed during our preschool programs. One such program is creative thinking development, which includes elements such as planning, analyzing conditions, planning actions, modeling, controlling, and evaluating actions. Individual and group activities, as well as games, are also incorporated into the programs.

We have defined the main approaches for developing study activities in class.

The educator pays attention to how the study task is formulated to check if the preschoolers understand it and can transform it into an individual task.

In all cases, the educator should use various modes and transformations with different sign systems.

Different types of work organization, such as pair or group work, should be used during activities to develop productive communication skills among preschoolers.

Various developmental educational research techniques should be used for the children's work.

Each class should end with an attempt to develop the preschoolers' ability to reflect on the results of their thinking and activity.

Assessment of understanding of an assignment:

Please draw a small triangle and a large circle underneath it in your notebooks. Now, add several details to the drawing to complete the picture. Please explain what it is and name it.

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Action planning (or story plot):

Children, here are three pictures. Look at them carefully and try to invent and write a story. You can ask the parents in the room for help. Now, please tell us your story.

Model Construction:

Please imagine that today is a sunny summer day (or a rainy autumn day). Now, draw your desired activities for the season or weather in your notebooks.

Define groups of characteristics when creating an image or action.

Today, we are going to fly to a fairy planet inhabited only by children. On this planet, everything is made for and destined for them. What do you think we might find there, and what would it be like?

4.4 Evaluation and self-evaluation

Assessment and self-assessment occur during lessons when children finalize their creative work in the form of drawings, models, and texts. There are no wrong answers to creative tasks, and educators should accept all answers with gratitude. They should also encourage children to independently evaluate their results and recognize the merits and shortcomings of their work, as well as their courage and fidelity to their principles.

Implementing these approaches allows for the practice of various aspects of study activity development, such as planning, analyzing assumptions about a task, planning actions, modeling, controlling, and self-evaluating. In this case, a child's imagination and its development become the focus. All activities are developed while preserving preschoolers' main activity, through which they learn by playing.

4.5 The Peculiarities of Cognitive Development

Our experience working with preschoolers in the HDE system has shown us that cognitive development is the foundation for successful learning in

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school. The organization of the learning process within the school would be ineffective if children did not reach an age-appropriate level of cognitive maturity. Consequently, our education system begins developing cognitive activity at a very early age, starting at one-year-old. At this stage, mothers are encouraged to transform their children's chaotic attempts to explore the world around them into meaningful and thoughtful cognitive experiences. This approach is based on the peculiarities of age-specific development because it is precisely at this stage that children become curious about the outside world and begin to notice colorful objects and different sounds. Thus, children acquire primary orientation activities that form the physiological basis for cognitive development.

Our main innovation in developing cognitive activity among preschoolers is implementing the "Together with Your Mother" program. The educator's goal is to share approaches and tools for developing the main characteristics and skills of the child's age group, such as sensorimotor movement, inner speech, and physical development.

In this case, an activity involving a multicolored pyramid would be useful. The mother places the pyramid in front of her child and points out that it is made up of different colors. Then, rings of different colors, such as red, yellow, green, and blue, are placed on the stick. The mother should encourage her child to name the colors of the rings. If the child has difficulty, the adult provides an answer and asks the child to repeat it. Then, the mother encourages her child to place the rings in descending order on the stick. "Show me the biggest ring!" the adult says, offering to place it on the stick. The child takes a larger ring and places it on the stick. When the mother collects a ring, the child names its color. They create a pyramid with the largest ring at the bottom and the smallest ring at the top.

Cognitive development begins early through interaction with different objects. This age-related characteristic is considered when planning developmental activities for young children. During these activities, children learn to differentiate between the shapes, colors, and sizes of objects, as well

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as their quantities and orientations in space. In early childhood, cognitive development builds on a child's interest in the external aspects of the surrounding world.

By the age of three, children become interested in the hidden aspects and connections of the world around them. This is a significant, active perception of a new aspect of the world. Children take their toys apart to investigate the unknown and analyze objects and their purposes. The more they discover, the more they want to continue researching and exploring. We use this pattern during our classes for each child's play activities. This developmental peculiarity allows us to create a field of research and experimentation. Additionally, it allows children to develop their worldview based on their experiences and observations.

In one activity, an educator presents a group of children with several closed boxes and explains that three of them contain different objects, but one is empty. The educator gives the children a clue on how to find the empty box: "Shake the box to hear the sound." The children find the box that makes no noise, and the educator explains, "It means it's empty." In the second part of the activity, the children must identify the contents of a box based on the sound it makes. Which box contains a ringing bell, a rattle, or stones? Through this activity, the children learn that they can identify the contents of a box by the sound it makes.

Based on our experience with preschoolers, using familiar toys can also be productive. These toys are used in playful activities that simulate cognitive situations.

During class, the children are visited by Masha the doll and Mitya the teddy bear. When the doll sees a mirror, she asks, "What is that shiny object?"

The children or Mitya the bear, who knows everything, can answer the question: "It's a mirror." The doll asks herself, "Is it showing me?" "No," a child or the bear replies, "it's just your reflection!" Then, the children look at themselves in the mirror, explore the peculiarities of their appearance, and conclude that everyone is different.

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By the end of preschool, children can demonstrate self-control and self-regulation in their cognitive activities. This is evident in their ability to set goals, develop strategies, manage their activities, and evaluate their results independently. Children begin to show initiative in completing tasks or controlling their behavior. Our experience with preschoolers shows that children this age can define their creative activities and implement their ideas, interests, and needs.

Older preschoolers are interested in more than just a new object. Children aged four, five, and six want to know about its structure, purpose, function, and background. This cognitive interest is the reason children manipulate objects. This cognitive attitude is revealed through the peculiarities of children's questions. A four- to five-year-old child will always ask, "Why?" Thus, they develop an attitude of questioning the outside world. This developmental peculiarity, which varies by age, can be effectively used in activities organized as independent research, which requires children to find their own way to complete a task.

During the lesson, two images depicting two different objects are presented to the children. One picture shows two kittens sitting at a table. There is a bowl on the table containing a sprig of mimosa. The kittens are drawing a card for their mother. A window with an icicle and sunlight shining through it is behind them. The second image shows two kittens playing on a lawn full of dandelions. The educator explains that these images depict spring and asks the group to name the springtime characteristics they see in the photos. The children are usually surprised because the two images are entirely different. They are then divided into two groups to discuss and learn about the characteristics of spring. By the end of the lesson, the children have discovered that the images depict different phases of spring: early March with melting snow and icicles, and late May with blooming dandelions. Thus, they learn that each season consists of three months.

It's important to note that when children ask and answer questions with their peers or an adult, they analyze familiar facts and learn to generalize from

DOI: http://doi.org/10.14393/OBv6n3.a2022-67638

them. Preschoolers are usually exempt from specific task requirements, so they tend to come up with logical, generalized solutions.

The most effective way to develop cognitive activity in this age group is to provide conditions that allow children to take an active role in their activities and interactions with adults and peers. This practical experience allows children to recognize their abilities, which provokes their initiative in cognitive activity and creativity.

4.6 Development of Intellectual Skills

Children aged five to six develop their intellectual skills through various types of games.

Games that develop manual skills use methodological and didactic selections of Montessori materials (n.d.).

Verbal games are developed based on a sequence of games aimed at speech formation (Zeltserman & Rogaleva, 2000).

Game "The Dragon":

For children aged five.

Objective: Develop imagination and the ability to analyze information in a text and use it to further develop its content and form.

Once upon a time, there was a belligerent rooster. He was proud of his strong beak and sharp spurs. Because of these qualities, the other birds in the yard called him "Belligerent." He offended someone every day by pecking a duck or pulling a feather from a chick's tail or pushing chickens away from their food bowls. The other birds tolerated this behavior for a long time. However, they finally got together and decided to do something about it.

4.7 Games for Mental Development (Thinking)

The Cause and Effect Game

Objective: Develop the ability to identify and express cause-and-effect

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relationships through syntactic structures. Promote open-mindedness, creativity, and communication.

Instructions: I will describe a situation (an event that has already occurred), and your task will be to explain or guess why it happened.

A task for 5-year-olds:

1. A girl or boy asks her or his grandmother for forgiveness.
2. A boy or girl got sick.
3. All the birds flew away.
4. It's cold outside.
5. There is a shower of flowers.

The Connection Game

Objective: Develop the ability to analyze and synthesize different characteristics of an object, as well as define and compare them, while promoting creativity. Objects are brought into the classroom. The task is to find an object with similar characteristics. For example, the connection could be between a car and a shovel. The missing link is an excavator because it is both a car and a tool for digging.

Here is a task for 5-year-olds:

Shoes and an umbrella,

Shoes and a rope,

Printing machine and a calculator.

4.8 Development of Intellectual Skills through Computer Games

Even at the preschool level, the Study Center widely uses information technology. Children aged three to three and a half are beginning to learn how to use a computer. They learn a selection of games designed to develop children's intellectual skills and implemented as computer games (ZAK, 1994, 1996).

Our extensive experience has shown us that using computer games and an age-appropriate process arrangement technique provides for individualized development.

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When children play computer games at an early age, they realize that the objects on the screen are not real but rather symbols of real-world objects. This allows for the development of children's symbolic consciousness, i.e., their understanding of the outside world as consisting of different levels of objects, images, and real schemes.

Computer practice awakens children's interest in play and consequently in studying. This interest serves as a basis for developing important structures such as cognitive motivation, voluntary memory, and concentration. These characteristics are all essential to a child's psychological maturation process at the beginning of their studies.

The implemented approaches provide conditions for developing children's theoretical thinking and problem-solving skills.

They develop basic PC skills, spatial models, and an understanding of object characteristics for children aged three to four.

The development of skills to understand tasks, question assumptions, and plan activities; analyze results; and provide constructive dialogue by listening, hearing others, and defending one's standpoint with arguments is promoted for children aged 4 to 6.

The general approach to describing a problem and the activity technique range from a collective review of the task (explanation) for a group to individual guidance for solving typical tasks. These approaches have been methodologically tested and tried out.

After reviewing, explaining, and writing the task-solving approach on the blackboard, it is necessary to clarify to the children how to "tell" the computer the solution.

The educator must demonstrate these steps on the computer while explaining.

All solutions offered by the children, whether right or wrong, are reviewed.

It is important to ensure that children who give incorrect answers realize their mistakes.

Each child completes the computer task at their pace.

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If a child is having difficulty, an educator can help by asking appropriate questions.

Start with general questions, such as "What could be the right solution?" and "What should be done?" Then, gradually move toward solving the task by asking, "What have you done so far?" What should you do next? Would it be possible to do it this way?"

At the end of the class, it is recommended that you reflect on the activity and provide feedback, which should help the child understand their goals and record the actions to be taken. For example, there is a game in development called "How a Caterpillar and an Ant Were Visiting Each Other" (ZAK, 1996).

Objective: Develop skills to explore the formulation of a task and plan and control one's own activities.

To start the first activity, you can say:

> Once upon a time, there was a caterpillar and an ant. They loved visiting each other and solving riddles. Today, we will meet the caterpillar and try to solve some of its riddles.

The following drawing should be provided on the blackboard (Fig. 4):

> Here is the house inhabited by: one stick, two sticks, one circle, and two circles. The caterpillar travels through the house, visiting each of its inhabitants. To solve the puzzle, always remember that the caterpillar only moves in straight lines, i.e., it can move to the next square, up, down, right, and left. Here is the first puzzle (Fig. 5).
> I, says the caterpillar, visited the stick. Where did I go next? What figure should we draw in an empty box? Whom is the caterpillar visiting? The first square in the scheme above shows where the caterpillar was, but the second (the empty one) shows where it went next. What figure should we draw in the empty square? Where did the caterpillar go?

I	I I
o	oo

Fig. 4 The caterpillar puzzle 1

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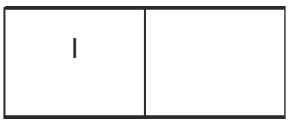

Fig. 5 The caterpillar puzzle 2

All the children's suggestions are recorded on the blackboard and discussed later. Students can come to the board to explain why a solution is right or wrong if they wish. The educator can only move on to another type of task after ensuring that all students understand how to solve the previous one.

Then, students can move on to the second and third types of task solutions. In this case, we know where the caterpillar has been and whom it has visited. The child must find the correct answer and mark it with a "+" or "-" if it is incorrect. In the third stage, the child independently creates the caterpillar's route. Similar tasks exist for an ant, which can move not only to the next cell but also diagonally. In the fourth type of task, the caterpillar and the ant act simultaneously. These tasks are a diagnostic test to ensure that the child understands the rules of the game, can analyze the objectives of the task, and can plan actions to solve it.

While the child is solving the tasks, the educator should observe the process and provide assistance if necessary. They can help by asking certain types of questions. What is going wrong? What should be done? What are you doing? Why? They could also ask, "What are the rules?" and so on, thus helping the child find the solution "by themselves."

At the end of the lesson, we asked the children:

"Did you learn anything new during the activity?" Was it difficult to find the solution, and why or why not?

Did they enjoy solving the tasks, and why or why not?

Because of regularly participating in activities like this, children aged 3 to 6 can now:

- Accept and solve a study task;

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Construct a discourse;

- Plan their activities according to the task at hand and the conditions for its implementation.

- Include rules in the planning and control of actions;

- Compare by independently choosing the basis and criteria for logical operations;

Correct actions after they have been carried out according to the assessment of mistakes made.

Provide arguments for your position.

Ask questions.

The main result of including computer games in the curriculum is the ability to individualize the learning process.

4.9 Development of Mathematical Concepts in Preparation for Developmental Education

The peculiarities of learning mathematics, including elements of logic aimed at developing logical thinking and an understanding of mathematical concepts, are emphasized in the curriculum for children aged six to seven. According to our research, prior training is necessary to ease children into the developmental education system.

Training preschoolers in mathematics consists of structured activities that stimulate the development of their thinking and are appropriate for their age. The program for introducing mathematical concepts includes topics such as "Reverse Divisor" ("Quantity"), "Shape A," "Spatial Orientation," and "Knowledge of Time."

We would now like to discuss the main issue in mathematical preparation, as described by Davidov (2000).

Learning the concept of "Quantity" as a fundamental concept in the mathematics curriculum can be divided into three stages.

(1) Introduce children to the concept of measuring quantity. At this

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stage, children develop an understanding of the main concepts of dimension and measurement, as well as how to find an appropriate measure for an object. In this case, children use the application and posture method.

(2) Teach children about indirect correspondence and the comparison of object sizes. Here, children compare objects that cannot necessarily be compared with each other.

(3) By developing the concept of number as a basis for measurement and relying on their abilities to measure according to conventional standards, children learn to group objects in a given area. They also learn the unity and separation of different elements of plurality, starting with the basis of counting.

During an activity, children learn to compare two objects using a third object as a standard.

An educator places a piece of paper on the blackboard. The paper has Christmas trees on it. One is in the upper-left corner, one is in the lower-right corner, and one is in the lower-left corner. The trees differ in height by 1 to 1.5 cm. The educator asks the children whether the trees are the same height, or if one is taller or shorter.

After hearing their answers, he told them a fairy tale. "Once upon a time, a treasure was hidden under a Christmas tree. Two kind dwarves wanted to help a prince find it. A fairy revealed to them that the treasure was hidden under the tallest tree. But the dwarves could not decide which tree was taller." The children get involved, but none of their methods of determining height is applicable, as the trees are stuck to the blackboard. Consequently, they realize they need a new way to measure the trees. After a long discussion, they agreed to use new methods. They conclude that if something cannot be applied or attached, its size can be determined by measurement.

During another activity, the children learn to use a measurement equal to a part of an object that can be filled in several times. They have two strips of paper on their desks that are the same width but different lengths—one strip is twice as

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short as the other is. The teacher says, "We are all tailors. We have to cut out patterns and sew napkins. Each of us has a piece of fabric, and each piece is a strip. Each measurement is a napkin. We have to measure how many napkins we can make with our fabric." It is important for children to be able to determine and correctly implement the sequence of measurement rules.

Since children usually work independently or in pairs after a joint discussion, they often fail to respect the rules. For example, they may apply the edges of the measuring device and the material in a disjointed manner, mark the size of the measurement incorrectly, or take measurements that they forget to label. As a result, they obtain different results after handling other objects. This moment is crucial for development because they now have the opportunity to analyze their activity and find out what happened and why.

The organized process of developing mathematical concepts enables children to transition successfully from preschool-level to school-level mathematics within developmental education.

4.10 Development and Artistic Activity among Older Preschoolers

One of the center's innovations is complex, thematic, creative activities.

While playing games, children simulate adult social behavior and experiment with imaginary roles. Kudryavcev (2007) identifies two primary forms of psychological development in preschoolers that are closely linked and influenced by play: an orientation toward the perspective of others and creative imagination.

These two forms can be considered two sides of the same inclination of children toward creativity.

Throughout history, humanity's universal ability to perceive the whole before its details has been cultivated primarily through art (E. V. Iliénkov).

Every child perceives the world through three main channels: analyzing and storing information. They see what is happening around them, imagine various images, hear different sounds, and experience various feelings, smells,

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and tastes. The important factor is which of the three channels (visual, auditory, or kinesthetic) a child uses most often because they primarily perceive information through that channel. Which is more important for a child: to first see and imagine, then hear and taste, or to first experience and then imagine what it is like?

Our experience shows that, in the early stages of creative development, it is essential to provide children with opportunities and tools for creative activities through their primary channels of perception.

What conditions should we provide according to each child's specific needs? How can we predict varied creative child development? How can we provide tools for creating holistic creative products?

To find answers to these questions, the psychologists, and educators at the Experimentar Pedagogical Center developed a methodology for complex, thematic creative activities. These activities include music, arts and crafts, movement, dance, and other similar creative activities.

The main goal of these activities is to create conditions that foster the development of individual creative abilities and provide tools for developing individual and group creative products, such as dances, drawings, texts, crafts, etc.

If an educator has a culturally rooted understanding of the process of developing individual creative abilities, enriching a child through their experience in different artistic fields and interaction with other children, they will be able to achieve unique team and individual results in their professional activity. It is essential to offer each child an opportunity for individual development.

In addition, this section provides various elements of activities for children aged 5 to 6. These children are already familiar with the main forms of imagination and creative thinking. They already have some experience and understanding of the processes taking place in the outside world, which they can use as a basis for imagination and creativity to complement existing patterns and build their own models and visions.

The technique for planning and implementing complex thematic activities:

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> When planning complex thematic activities, it is important to choose a thematic vector that is appropriate for developing the imagination of the age group. On the one hand, this depends on the average level of development of the group and its type (logical, empirical, creative, etc.), and on the other hand, on the educator's understanding of the psychological process of the child during the performance of different creative tasks.

There are a few logical approaches to issue-related activities:

> If the group of children can follow the content/plot, the thematic activities can be based on fairy tales or well-known stories. In this case, the educator can offer to transform (change) the original plot of the famous fairy tale or story, or even suggest creating their own plot/story/fairy tale.

When choosing a path, it's important to be aware that imagination can be replaced by memory and the restoration of the original storyline. During the activity, children should use their imagination and memory. They should create their own images and express them orally. They should not reproduce images and storylines previously created by an author.

If most of the children in the group are visual thinkers, they can reflect on the outside world, which is full of unpredictable and unique natural phenomena. Themes such as "an underwater world," "a magical forest," "a heavenly adventure," "a white and snowy winter," etc. could be used for the activity.

This gives children a greater opportunity to engage their creativity, as they use their experience and imagination to fill in the gaps in their perception of natural phenomena. Additionally, the risk of resorting to memory rather than imagination is much lower.

One of the main features of planning creative activities with complex content is that they are based on a modified thinking activity scheme proposed by Shchedrovitsky (2005). This broad scheme is often used by educators and psychologists at the Pedagogical Center to facilitate productive group communication and the creation of shared creative products (Fig. 6). According to

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the scheme, an educator's role is to create a safe space for teamwork, where he or she can establish a culture of content development and facilitate the group's creation of a shared product. In this case, both the educator and the children must go through three stages.

The first stage, which we call "creating and facilitating a common space for group work," involves the educator doing the following: (1) introduce the rules of communication and teamwork, (2) formulate a creative task for the group, and (3) motivate and involve the children in problem solving.

The second stage (thinking-communication) is intended for communication, i.e., the exchange of opinions among the children regarding task solving and the development of creative products. Here, the educator should follow and examine the logic and culture of the content and concepts used. At the same time, they should keep in mind that productive communication about developing the creative product should result in participants acquiring new knowledge.

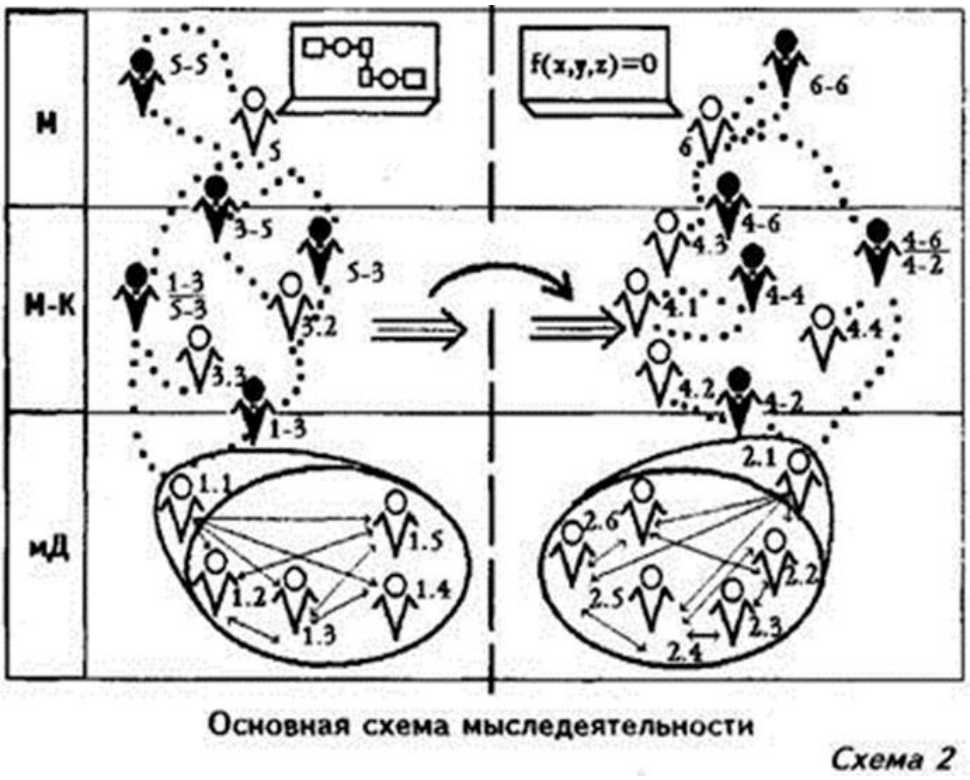

Fig. 6 General model of the systematic thinking activity (STA) methodology

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The third level (thinking) is the final stage of discussion and development of the common creative product, as well as the right space for recording collective and individual results.

Here is an example of the planning and implementation of a complex thematic activity on the theme of the underwater world. It consists of several autonomous but interconnected thematic modules, such as:

> The main objective of the dance module, which incorporates music and movement, is to develop the ability to express a message through movement. When performing a given thematic task in the complex activity, children have the opportunity to express themselves through music—creating or reproducing an image or natural phenomenon with a special selection of music—and movement—creating an image or hero with various movements.

Some examples of activity assignments presented as part of a first-step facilitation technique (providing a creative space):

> Greet the children and invite them on a journey to an underwater world […] ask them to close their eyes because in a few seconds they will hear music, and each one will go on their journey. Also ask them to remember the most interesting and exciting sights, events, and creatures they encounter in the underwater world, so that later they can share them with their classmates.

Select a gentle piece of classical music with changes in its flow and play it for 15 to 30 seconds. Depending on how the children react, you can play compositions by Paul Moriah or classical music performed by a symphony orchestra. Children often report seeing fish, rocks, shells, plants, and so on. After the first immersion, ask the children to dive into the underwater world again and pay attention to its mood. Play alarming music that resembles a storm or fast-flowing stream.

After the second immersion, the children reported feeling worried about the waves. Follow up on the theme of waves by suggesting that the children dance like waves. This allows them to interact with the waves, changing the

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general atmosphere of the underwater world due to the music. Show the children some wave movements and guide them through the activity.

You can also prepare additional material for the group, such as giving each child a "wave" (a blue silk scarf attached to a stick that resembles a wave when moved). If all the children are doing well and following the music while simulating waves, invite them to become a big wave. Give them a large piece of blue silk fabric that they can hold and move to create a wave.

After ensuring that all children are engaged in the general theme, the educator can suggest that they build their own imaginary underwater world, moving from the first stage to the second. During the second stage, children must discuss and collectively create a product based on the shared mood and established thematic and creative space. Invite them to discuss the atmosphere of the underwater world and play music of your choice. Ask them to choose characters and find rocks, shells, plants, etc., since they already have an immersive experience.

After the second stage and an appropriate discussion, before moving on to the third stage, which aims to conclude the activity, invite the children to immerse themselves collectively in the underwater world once more. Each child should become a creature of their choosing. Remind the children that the atmosphere of the sea and its inhabitants depends on the music and waves.

If you notice that the children are willingly undergoing the transformation and diving into the underwater world, try changing the music. Observe how deeply the children can experience the mood and reflect it in movement.

After developing the collective creative product—in this case, a dance of the underwater world—suggest that the children discuss the common and individual results. What did they like or dislike, and what would they like to try next time? This is the third stage: developing a shared product, a new result of group work. These reflections are useful for educators to understand the level of the children's results and prepare the task for the next class.

The dance block promoted the children's development.

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Ability (sense, feeling) to convey a message through music or movement
Ability to use music and movement as additional means of enhancing the expression of a hero or the creation of an entire image or character.

The development of music and dance is a powerful tool that can lead to a more profound understanding of an image or natural phenomenon. It offers more opportunities for self-expression. Through dance or movement, children acquire tools for creating an image. They can transform themselves into a created image or help others develop theirs.

Children develop a creative perception of music and movement, which is revealed in the following sequences of products.

image – message (text) – music
music-message – movement

The Creative Block, which includes visual arts and crafts, aims to provide tools for developing an understanding of images and natural phenomena through visual art.

After exploring the underwater world, children are asked to describe it through visual art. The entire process is accompanied by music.

One of the branches of the program is a space transformation activity, which is a decorative activity aimed at developing the ability to reflect the theme in spatial drawing.

Suggest that children transform the classroom into an underwater world using available materials.

This creative activity allows children to develop a more holistic perception of the common theme of an image or natural phenomenon. Through this activity, children can express themselves and develop their perception of space, decoration, and the interrelationship of text, message, magazine, character, plot, and so on. They learn to see and perceive the message and space as a whole. Thus, creative perception of space develops as a product of

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the message (theme, subject, content, idea, or image text) and creative drawing (a product of creative activity).

The defining feature of complex activities is the absence of time constraints. Experience has shown us that it is nearly impossible to predict the pace of creative activities for individuals or groups. It is unacceptable to "take children out" of the process of creating imaginary scenarios.

Complex activities can be organized using various techniques:

Synchronous: A common task is given to the whole group, which is then divided into individual tracks according to each child's inclinations, with the opportunity to change tracks.

Consistent: A group takes on each block of the complex activity. For example, every two days, children have "creative workshops" on certain blocks of the complex activity.

The important factor in complex thematic activities (or series of activities) is the final creative product.

The results of complex activities:

> Each of the thematic blocks mentioned above creates its own creative space, where every child can find an opportunity for the individual development of its creativity. While immersing themselves in a collective creative activity, they can acquire tools for the development of creative products from various creative spheres.

Note that you can view the products received in each block independently. For example, you can view a dance, text, or drawing.

You can bring them together into a "perception" as a collective product of the age-dependent group.

For instance, children aged five to six acted out the fairy tale "A Palace" ("Teremok") by dressing up as different animals and performing movements that distinguished them, such as walking. They also supplemented the original text and, guided by the art teacher, decorated the stage for the performance.

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This clearly shows that modifying thinking activities with educators in specific fields can develop creative products in specific subjects and subject complexes.

It is an absolute fact that, to achieve higher-quality creative development in children, it is necessary to implement a scheme for creative activities.

5 Conclusion

Implementing methodological practices and recommendations for various aspects of preschool education includes training in the psychological and pedagogical monitoring of preschool students, using computer games, and developing creativity.

These practices prepare children aged 5 to 6 for the study process in the HDE system (1st grade) and promote the development of essential study skills for future academic success.

Despite the prevalence of traditional concepts and the establishment of new schools and preschool education traditions, many scholars, educators, and psychologists still disagree about the preschool education system. Recently, parents, as the main subjects and clients of education, have joined the discussion. Our 25 years of experience could improve the quality of preschool education and prepare children for the school study process.

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Received in June 2022.

Approved in September 2022.