THE CONCEPT OF METHODOLOGICAL PREPARATION OF FUTURE EDUCERS IN THE CONSTRUCTIVE EDUCATION OF CHILDREN OF THE PREPARATORY GROUP FOR SCHOOL

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Abstract. *Questions are considered in the process of designing preschoolers acquire special knowledge, skills and abilities. In the process of creating structures from building material, children get acquainted with geometric volumetric forms, study their properties, master the rules of composition in design (get an idea of the meaning of symmetry, balance, proportions). When designing from paper, children have the opportunity to clarify their knowledge of flat geometric shapes, compare their properties and features with three-dimensional forms. Here, children learn how to work with paper, which they can later use in appliqué classes. Modifying flat forms by bending, folding, cutting, gluing paper, children get a three-dimensional shape.*

Key words. *children's design, elementary mathematics, construction, construction, paperwork, mathematics, geometry, education, development, learning.*

КОНЦЕПЦИЯ МЕТОДИЧЕСКОЙ ПОДГОТОВКИ БУДУЩИХ ВОСПИТАТЕЛЕЙ В ПРОВЕДЕНИИ КОНСТРУКТИВНОГО ОБРАЗОВАНИЯ ДЕТЕЙ ПОДГОТОВИТЕЛЬНОЙ ГРУППЫ К ШКОЛЕ

Аннотация. *Рассмотиривается вопросы в процессе конструирования дошкольники приобретают специальные знания, умения и навыки. В процессе создания конструкций из строительного материала, дети знакомятся с геометрическими объёмными формами, изучают их свойства, осваивают правила композиции в конструировании (получают представления о значении симметрии, равновесия, пропорций).*

При конструировании из бумаги дети имеют возможность уточнить свои знания о плоских геометрических фигурах, сравнить их свойства и признаки с объёмными формами. Здесь дети осваивают приёмы работы с бумагой, которые они в последствии могут использовать и на занятиях по аппликации. Видоизменяя плоские формы путём сгибания, складывания, разрезания, склеивания бумаги, дети получают объёмную форму.

Ключевые слова. *детское конструирование, элементарная математика, конструкция, строительство, работы с бумагой, математика, геометрия, образования, развития, обучения.*

INTRODUCTION

In preschool education, another type of constructive creativity is design.

Construction - (from the Latin "construere") means bringing various objects, parts, elements into a certain mutual position.[17]

Children's design is one of the types of artistic and visual activity aimed at creating a variety of buildings from building sets, designers; production of crafts, toys, attributes for games from paper, cardboard, natural, waste materials. Children's construction in the course of the historical development of society and its culture was isolated from the constructive activity of an adult. The main difference is that the products of constructive activity of an adult are knowledge-

intensive, complex in their functional purpose, while the results of children's design are simple and concise both in form and in content.

However, in the activities of an adult and a child there is one common characteristic.

In both cases, the design has a practical purpose, namely, in the world of adults, it ensures the vital activity of a person, and in the world of a child, it organizes his game as one of his activities.

Play often accompanies the building process, and crafts made by children are used in games.

Types of design.

According to the materials used in the design process:

• Construction from building kits.
• Construction from constructors.
• Construction from natural material.
• Construction from waste material.
• Construction from paper and cardboard (paper-plastic):
• origami;
• volumetric paper and cardboard modeling.

By content:

• Realistic design.
• Stylized.
• Abstract.

By the nature of the children's activities:

• Individual.
• Collective.

By appointment:

• Design with a practical purpose.
• Design, which has an artistic and aesthetic purpose.

Materials and equipment.

It should be noted that the materials related to such types as paper, natural, waste materials are used the same as for working on the application. But there are also materials specific only for construction - these are building kits and constructors[5].

Building material is a set of various geometric bodies (cube, cylinder, prism, etc.). It is divided into small (table) and large. In the classroom, mainly various sets of small (desktop) building materials are used, with the exception of large collective buildings, where a large set is used.

Constructors. Today, a preschooler has the opportunity to work with various designers.

By nature of use:

• Constructors that involve one-time production of a building (they involve gluing parts, after which the constructor cannot be reused).

• Constructors limited in the content of buildings (they consist of elements (forms) that can only be used to obtain certain types of buildings).

• Constructors are universal (they are not limited either in the content of buildings or in the possibility of reuse).

Material: wooden; plastic; metal; ceramic.

Design methods:

• consolidation of parts on the basis (learning from an early age);
• connecting parts to each other (learning from an early age);
• bonding (learning from an early age);
• sealing (learning from the younger group);
• gluing (learning from the younger group);
• sewing (training from older groups);
• piercing (training from older groups);
• twisting (training from older groups);
• clamping (training from the middle group);
• creasing (learning from an early age);
• flexion (extension, arching) (learning from an early age);
• addition (learning from the younger group);
• unfolding (folding);
• twisting (untwisting);
• wrapping (training from senior groups);
• lubrication (learning from the younger group).

METHOD AND METHODOLOGY

In the process of designing, preschoolers acquire special knowledge, skills and abilities. In the process of creating structures from building material, children get acquainted with geometric volumetric forms, study their properties, master the rules of composition in design (get an idea of the meaning of symmetry, balance, proportions).

When designing from paper, children have the opportunity to clarify their knowledge of flat geometric shapes, compare their properties and features with three-dimensional forms. Here, children learn how to work with paper, which they can later use in appliqué classes[12].

Modifying flat forms by bending, folding, cutting, gluing paper, children get a three-dimensional shape. Working with natural and waste materials contributes to the manifestation of creativity in each child, since only the ability to highlight a new function in an object and an object allows you to transform it, having received a completely different constructive image.

In the design, ready-made forms can also be used, depending on the learning objectives. All types of design contribute to the versatile development of the personality of a preschooler: all types of thinking, imagination, creativity, memory, attention. This is due to the fact that the child, before completing the construction, first imagines it (mentally or on the basis of an existing diagram, picture), thinks through the shape of its parts, then correlates the image with the existing forms, determines the degree of their suitability, and then proceeds to create the building.

In the course of the construction itself, the child can make adjustments, add unplanned details, remove existing ones, include additional materials (to connect parts) or apply coloring.

Features of teaching design in different age groups.

Early age.

Tasks.

Educational:

1. Introduce materials for construction (natural, waste, construction and paper).

2. Introduce volumetric geometric shapes (brick, ball, cube, cylinder, cone, pyramid) that are part of building kits or designers.

3. Learn to place various geometric bodies in space.

4. Learn to highlight geometric shapes in familiar objects.

5. Introduce the techniques used in design.

6. Learn to experiment with paper, natural, waste materials in the process of creating elementary crafts.

7. Learn to connect parts using additional materials (plasticine, clay).

8. Learn to highlight familiar images in buildings and crafts.

Developing:

1. To form a sense of form when creating elementary buildings and crafts.

2. Develop visual-effective and visual-figurative thinking.

3. Promote the development of attention, memory.

4. To form the ability to attach the details of the craft to each other.

Educational:

1. Generate interest in constructive experimentation.

2. To develop the ability to hear the verbal instructions of the teacher, his instructions, characteristics.

3. Cultivate the ability to see beauty in designs and crafts.

Features of learning.

The design of young children is reminiscent of an experimental game in which children study the properties and features of geometric shapes and various materials. The three-dimensional volume of construction products allows children to more carefully examine all the details from which it is planned to create a structure[8-9].

In the learning process, where the leading method is the game, it is advisable not only to demonstrate various figures, but also to name them as often as possible, to give them a figurative description, which helps children quickly include the materials being examined in their own plan. It is important to activate all analyzers in order to form a more complete understanding of the design.

At an early age, children, starting from the 1st year, children are able to identify geometric shapes without naming them, but highlighting the given shape from many others. This fact indicates that three-dimensional geometric bodies can not only be objects of manipulation and play by children at this age, but also an object of study.

The ability to single out a form, and subsequently name it, facilitates the process of learning to design at later stages, where the teacher will not need to train in two directions: familiarization with the forms and the formation of the ability to create various buildings from them[12-14].

In this case, the teacher can use verbal instruction, indicating the necessary forms, rather than a detailed demonstration, explaining the significance of choosing certain forms for a particular building. After all, children are already prepared to work with these forms, because they know their properties and signs. More time is left for the creative design process itself.

Don't make it easy for something that's so easy. As practice shows, in the game, children acquire multiple skills that we, adults, do not always reasonably use for their creative development. We are constantly afraid that children will not understand, will not be able to, will

not cope. But at the same time, we even sometimes do not try to give them what they need so much[15].

RESEARCH RESULTS

Often, in order to meet the time allotted for a lesson, we try to minimize the activity of the child, and this is a radically wrong approach. You should not sacrifice the opportunity to form some kind of skill for the sake of spectacular crafts. Let the design (craft) initially have a clumsy appearance, not much resembling, perhaps, a real object, but it will testify to the path that the child has traveled. And here it is important to emphasize its achievements, pointing to the prospect of further movement.

When the child achieves the desired result himself with indirect guidance from the teacher, the skill acquired by the child in the classroom becomes part of the constructive and visual experience. Even if the lesson takes place with a subgroup of children, one should strive not to minimize their activity, but to think over its organization, in which children can, performing actions that are not complex in nature, create a simple design (craft). It is important to put emphasis on techniques and techniques, the variations of which expand the content and technical aspects of children's design products.

Junior preschool age.

Tasks.

Educational:

1. Continue to introduce materials for construction (natural, waste, construction and paper), their properties and expressive possibilities.

2. Introduce volumetric geometric bodies and architectural forms (domes, roofs, arches, columns, bridges, doors, stairs, windows) that are part of building sets or designers.

3. Continue to learn how to place various geometric bodies in space, creating a specific design.

4. Learn to highlight, compare geometric shapes with each other.

5. Learn to see the image in geometric forms.

6. Continue to acquaint with the techniques and techniques used in constructive activities.

7. Continue to learn how to create constructive images in the process of experimenting with various materials and transforming various blanks.

8. Learn to connect parts using additional materials (plasticine, clay, double-sided tape, glue, matches).

Developing:

1. Continue to develop a sense of form when creating buildings and crafts.

2. Develop visual-effective and visual-figurative thinking, imagination, attention, memory.

3. Contribute to the mastery of constructive skills: arrange parts in different directions on different planes, connect parts, correlate buildings with diagrams, select adequate connection methods.

4. Expand the child's vocabulary with special concepts: design, architecture, scheme.

Educational:

1. Generate interest in design.

2. To cultivate the ability to be guided by the verbal instructions of the teacher during the exercises.

3. Cultivate the ability to see beauty in designs and crafts.

4. Cultivate accuracy when working with various materials and tools.

5. Cultivate the ability to perform teamwork.

Features of learning.

In the process of teaching children of younger preschool age, it is advisable to use, in addition to the reproductive method, based on the repetition of the teacher's instrumental actions by children, but also partially exploratory, heuristic methods that allow children to independently transform existing experience into new situations. Of course, younger preschoolers are not yet able to fully realize their own ideas without help, because, firstly, their ideas are not stable, and secondly, their constructive and visual experience is not great. However, the possibility of choosing the material, reception, content of a constructive image forms a creative principle in children, which manifests itself at the initial stages in the ability to give their construction an individual character.

When creating a garage for a car from a building set, you can show the kids how different garages are obtained from the same parts, which are needed for each individual car. For this, it is necessary to use self-adhesive paper parts as decoration: bricks, stones, slabs, eyes (surveillance cameras), etc., buttons, corks from plastic bottles for the construction of additional structural elements: locks, handles, cornices, etc[15-16].

In the younger group, children not only try to create buildings on their own, but actively include them in the game.

Design refers to those types of activities that, in terms of content, create the most favorable conditions for the development of collective creativity. For example, when preparing decorations, gifts for the holidays, attributes for story games, performances, manuals for math classes, familiarization with the outside world, buildings in a corner of nature, etc.

Thus, children, starting from the younger age group, learn to participate in the organization of the environment in which they live while they are in preschool. This provision has a huge impact on children, therefore, in the meaningful plan of design classes, it is necessary to take this moment into account in order to implement such areas in the development of creativity as the satisfaction of personal and social needs.

At the age of three, children have a desire to show their "self". This also needs to be taken into account, it is not worth imposing a specific, planned type of construction only in order to solve a specific task of forming a separate skill. The constructive skill and the content of the building are, of course, interrelated, but not static in nature.

This lays the principle of variability in the learning process, which gives some freedom to both the child and the teacher. It makes no difference on the example of which building the baby will learn the necessary technique. The main thing is that he will master it in order to continue to use it independently.

As part of learning to design from paper, children master the techniques of folding paper in various directions (vertically, horizontally, diagonally, double folding). This makes it possible to expand the content side of children's structures.

Middle preschool age.

Tasks.

Educational:

1. To consolidate the ability to work with various materials for construction (natural, waste, construction and paper), taking into account their properties and expressive possibilities in the design process.

2. To consolidate the ability to identify, name, classify different three-dimensional geometric bodies (bar, ball, cube, cylinder, cone, pyramid, prism, tetrahedron, octahedron, polyhedron) and architectural forms (domes, roofs, arches, columns, doors, stairs, windows, balconies, bay windows), which are part of building kits or constructors.

3. Continue to teach how to place various geometric bodies in space, using various compositions that reveal the essence of constructive images.

4. Learn to create plot compositions in the design process.

5. Continue to learn to compare geometric shapes with each other and objects of the surrounding life.

6. Learn to see the image in geometric forms.

7. Learn to use various techniques and techniques in the process of constructive activity.

8. Continue to learn how to create constructive images in the process of experimenting with various materials and transforming various blanks.

9. Continue to learn how to connect parts using additional materials (plasticine, clay, double-sided tape, glue, matches).

Developing:

1. Continue to develop a sense of form when creating buildings and crafts.

2. Contribute to the mastery of compositional patterns: scale, proportion, plasticity of volumes, texture, dynamics (statics).

3. Continue to develop visual-effective and visual-figurative thinking, imagination, attention, memory.

4. Strengthen constructive skills: arrange parts in different directions on different planes, connect parts, correlate buildings with diagrams, select adequate connection methods.

5. To consolidate and expand the child's vocabulary with special concepts: proportion, scale, texture, plasticity, proportion.

Educational:

1. Arouse interest in design and constructive creativity.

2. To cultivate the ability to be guided by the verbal instructions of the teacher during the exercises.

3. To cultivate an aesthetic attitude towards works of architecture, design, products of one's constructive activity and handicrafts of others.

4. Cultivate accuracy when working with various materials and tools.

5. To develop the ability to work together with children and the teacher in the process of creating a common work.

Features of learning.

In the middle group, children consolidate their existing constructive skills, on the basis of which they form new ones. Thus, the ability to compose a certain composition of the elements of the constructor contributes to the development of the ability to plan one's work.

At this age, children learn not only to act according to the plan proposed by the teacher, but also to independently determine the stages of the future construction. This is an important factor in the formation of educational activities. Children, constructing a building or craft, mentally

imagine what they will be like, and plan in advance how they will be performed and in what sequence.

DISCUSSION

In the process of working with paper and cardboard, children learn how to fold paper in various directions, using both simple and complex types of fold. In the middle group, this type of design as paper-plastic is becoming more and more relevant. Along with building kits, paper, thanks to its expressive and plastic possibilities, allows you to create interesting designs and crafts that have both a realistic and a decorative basis.

Paper, or rather its transformation, develops the imagination of children, forms the ability to see new images in familiar forms. So, for example, a cone made of paper can, with appropriate modifications, turn into any animal, flower, vase, boat, completion for a tower, become part of a costume for a fairy-tale character, etc. There are many ways to use the cone. But in order for children to be able to transform the cone, it is necessary to show the possibilities of transformation on diagrams, pedagogical sketches. The same wonderful transformations are obtained in the origami technique, which is based on the techniques of working with paper, by bending it in various directions. Origami technique only in exceptional cases allows the use of scissors and glue. This allows us to attribute it to rather complex techniques that require great attention, patience and accuracy from the groans of children. Unevenly folded corners will not allow them to get the desired result. The initial stage of teaching the origami technique in the middle group is the mastery of the simplest initial forms by children, by varying which you can get different images.

Another type of paper plastic is the use of scissors, glue, in addition to the techniques of working with paper. This view allows you to create three-dimensional designs and crafts, using the experience of working with appliqué images. It also requires the ability to work with scissors to get the necessary detail for the design. It should be noted that in the middle group, children learn only simple ways of cutting.

They cut, cut paper and cut out elementary shapes from blanks. Along with cutting out in the middle group, plucking (to convey the texture of the building) and cutting (to convey a certain character of the image, displaying the style of the building) can be used to create a constructive image. In this case, application techniques can act as both the main means of work and additional ones.

The joint constructive activity of children (collective buildings, crafts) plays a big role in educating the initial skills of working in a team - the ability to pre-negotiate (distribute responsibilities, select the material necessary to complete the construction or crafts, plan the process of their manufacture, etc.) and work together without interfering with each other.

Making various crafts and toys for children to give to their mother, grandmother, sister, younger friend or peer brings up a caring and attentive attitude towards loved ones, the desire to do something pleasant for them. It is this desire that often stimulates the child to work with special diligence and diligence, which makes his activity even more emotionally saturated and brings him great satisfaction.

Constructive activity, thanks to its capabilities, makes it possible to practically acquaint children with such an art form as architecture. In the middle group, children not only study individual architectural forms, but also get acquainted with different styles, which has a positive effect on other types of fine art. Namely, knowledge of the features of different forms of

architecture contributes to the enrichment of the content of drawings, appliqué images of children.

In this case, constructive activity is of great importance for the education of aesthetic feelings. When children get acquainted with architecture, artistic taste develops, the ability to admire architectural forms and understand that the value of any structure lies not only in its functional purpose, but also in design.

Senior preschool age.

Tasks.

Educational: 1. Improve the ability to work with various materials for construction (natural, waste, construction and paper), taking into account their properties and expressive possibilities in the design process.

2. To consolidate the ability to identify, name, classify different three-dimensional geometric bodies (bar, ball, cube, cylinder, cone, pyramid, prism, tetrahedron, octahedron, polyhedron) and architectural forms (domes, roofs, arches, columns, doors, stairs, windows, balconies, bay windows), which are part of building kits or constructors.

3. To consolidate the ability to use various types of composition to create three-dimensional structures.

4. To consolidate the ability to create plot constructive images.

5. To consolidate the ability to compare geometric shapes with each other and objects of the surrounding life.

6. Strengthen the ability to highlight the image in various geometric bodies.

7. Improve the ability to use various techniques and techniques in the process of creating a constructive image.

8. Continue to learn how to make a construction according to verbal instructions, descriptions, conditions, diagrams.

9. Learn to independently transform materials in order to study their properties in the process of creating constructive images.

10. Strengthen the ability to select adequate ways to connect the details of a constructive image, making them strong and stable.

11. Strengthen the ability to find a replacement for some parts with others.

12. Improve the ability to bend paper of different density in different directions.

13. Learn to work according to ready-made patterns, drawings.

Developing:

1. Continue to form a sense of form, plasticity when creating buildings and crafts.

2. To consolidate the ability to use compositional patterns: scale, proportion, plasticity of volumes, texture, dynamics (statics) in the design process.

3. Continue to develop visual-effective and visual-figurative thinking, imagination, attention, memory.

4. Improve the ability to plan your activities.

5. To consolidate and expand the child's vocabulary with special concepts: substitute, structure, tectonics.

Educational:

1. Arouse interest in design and constructive creativity.

2. To cultivate an aesthetic attitude towards works of architecture, design, products of one's own constructive activity and handicrafts of others.

3. Cultivate accuracy when working with various materials and tools. Improve scissor skills.

4. Cultivate the ability to work together collectively.

Features of learning.

The constructive creativity of older preschool children is distinguished by a substantial and technical variety of buildings and crafts, due to the presence of a certain degree of pictorial freedom.

Making crafts from natural material forms in children not only technical skills, but also an aesthetic attitude to nature, art, and their creativity. However, this becomes possible only with a comprehensive and systematic approach to the learning process. It is important that the knowledge, skills and abilities acquired in the course of one type of construction, children can use in others.

As an activation of the constructive creativity of children, it is advisable to use a variety of stimulating material: photographs, pictures, diagrams that guide their search activities. As for the materials used in the course of creating a constructive image, it should be more than required for a separate building (both in terms of elements and in quantity).

This is done in order to teach children to select only the necessary parts that correspond to their plan. If a child is not able to make a choice and uses all the material provided to him in the lesson, not trying to objectively assess its significance for the implementation of the plan, then this indicates a rather low level of creative development.

It is important to teach children to analyze the material, to correlate its properties with the nature of the created constructive images. Children of senior preschool age, when creating structures, do not build in general, but with a specific purpose, i.e. in order to apply the construction (handicraft) in practical activities. This gives the design meaning and purpose.

Given the variety of materials used in the design, it is necessary to consider a system for its storage. It is most convenient to arrange the materials in boxes, depending on the type, while making it accessible to children. It is more expedient to carry out the process of classifying material together with children. Firstly, this will allow them to quickly remember its location, secondly, joint work on disassembling the material teaches children to order, accuracy, and thirdly, in the course of such activities, preschoolers indirectly consolidate knowledge about the properties of different types of material.

At senior preschool age, under the guidance of an educator, children learn new ways of connecting for them, learn to create a variety of movable structures from pictures, drawings. At the same time, special attention is paid to the special development in children of the ability to connect parts using nuts and wrenches, since this requires the participation of the small muscles of the hand, which is still imperfect in a preschooler.

Sets of building material and designers are not given all at once, but gradually, as they are mastered by children. After the children, under the guidance of the educator, have mastered one or another constructor, it can be placed in the corner of creativity so that the children have the opportunity to independently use it in free activities.

Paper is also widely used in older groups in the process of paper-plasticity, which is used as an independent type of creativity, and in combination with others, for the manufacture of

various crafts and toys. Children are given different types of paper: thick desktop, writing, glossy, semi-paper, as well as different types of cardboard.

The variety of natural material and ease of processing allow it to be used in many ways in working with preschoolers. The teacher, together with the children, prepares natural material. Replenishment of its stocks occurs throughout the year. To create a complete craft or design from natural material, you need to choose an adequate method of fastening.

In that age group, as an additional means, such as: an awl, a needle, a wire, which, due to their safety, are not recommended for use in younger groups, can already be used. However, even for older preschoolers, it is necessary to instruct them on the specifics of working with these tools, as well as to control the entire process of work.

Natural material allows you to create structures of small and large sizes. At the same time, the work will have a collective character. For example, the construction of buildings made of sand or snow on the site. In this case, children will develop the ability to work together, where you need to negotiate, find a common solution.

Artistic manual labor.

CONCLUSION

Artistic manual labor is an artistic and labor activity, which consists in the production by children of artistic, aesthetic, useful crafts necessary in various areas of the life of preschoolers.

The practical orientation of artistic manual labor contributes to the formation of labor skills in preschoolers. Children learn not only to create, inventing interesting crafts, but to organize the space of their life, create beautiful things that fill it. To do this, children need to master the necessary skills that allow them to transform materials, achieving the intended results, realizing creative ideas.

Own crafts, which preschoolers later actively use not only in the game, but also in the process of educational, labor activity, acquire a certain value for them. For example, having made a stand for a brush, children treat it much more carefully than they buy it in a store. From this we can conclude that artistic manual labor is an important means of developing the personal qualities of a preschooler: the desire for diligence, attentiveness towards others, accuracy, patience, care, etc.

The same methods and techniques are used as in the process of designing and application. The tasks are in the same direction. The main difference is that children learn to purposefully create useful things that are necessary in their practical activities.

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