

## Possibilities Of Using Tips - Technology In The Development Of Cognitive Abilities Of Preschoolers

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### Abstract:

The article reveals some recommendations for TRIZ - teachers - the formation of creative thinking in children, i.e. education of a creative personality, prepared for the stable solution of non-standard tasks in various fields of activity. The possibilities of TRIZ technology in the process of developing the creative personality of a preschooler are considered; in the formulation of the question, in the methods of its solution, in the presentation of the material.

**Keywords:** TRIZ - technologies; preschool children; forms of educational activity; educational content; cognitive abilities; educational games and exercises; independent manifestation of initiative; children's creativity.

### 1. INTRODUCTION

The introduction of innovative technologies in the work of a preschool institution is an important condition for improving the system of preschool education. The development of a kindergarten cannot be carried out otherwise than through the development of innovations, while the content of education should focus on the individuality of each child and the development of his abilities. Theory of Inventive Problem Solving (*TIPS*) technology is a universal methodological system that combines cognitive activity with methods of activating and developing thinking, enabling the child to solve creative and social problems using the necessary methods and techniques.

**There are three basic approaches to solving problems of any kind:**

- *Trial and error;*
- *Activation of sorting options;*
- *Strong decisions without solid busting options (TIPS).*

Scientists F. Bacon, R. Descartes, A. Osborne, F. Zwicky, J. Gordon and others, synthesizing philosophical and mathematic approaches have tried to improve the trial and error type. So there appeared methods as brainstorm (A. Osborne), sinekgiki (J. Gordon), multidimensional arrays (F. Zwicky), etc.

Weak sides of activation of sorting options are lack of criteria solutions sought in a low handling and process – governance solutions; the driving contradictions saves the time when searching for solutions to various options but losing in evaluating gained options.

Theory of Inventive Problem Solving regularly appeared in the second half of XX century as means to resolve this contradiction. Analysis of tens of thousands of patents of invention allowed to the former of TIPS, G.S. Altshuller make after – blowing conclusion that technical systems evolve by objectively existing laws that are known, identified and offered conscious performing of old and new systems. Invented by the scientist

and his followers the system of laws of development of technical systems formed the basis of TIPS.

**Prospects of development of TIPS in the sphere of education are as follows:**

- *Visual and remote seminars for teachers and distributing the literature;*
- *Develop programs and teaching methods of individual behavior and coordination them together;*
- *Creation of cross – cutting programs of continuous learning in preschool organizations and school.*

There is a trend of the escalating TIPS theory to the artificial systems development theory, creative personality, other private spheres, for example, methods of mathematical development.

**We define the basic concepts of TIPS, used in children's mathematical development.**

**Algorithm of inventive problem solving** is step by step performing of mental operations, based on objective laws of development of technical systems and suggested to analyze technical problems and find the most effective solutions.

**An algorithm for solving problem situations** is modification of an algorithm of inventive problem solving, based on objective laws of artificial

systems development and designed to analyze problems and find their most effective solutions.

**The system** is a set of elements that form when combining the new property, which does not have a single element is designed to perform a specific function.

**The ideal system** is the structure of the system tends to zero, but the ability to perform its functions at the same time does not decrease (in other words, the system does not exist, but its function retains and works).

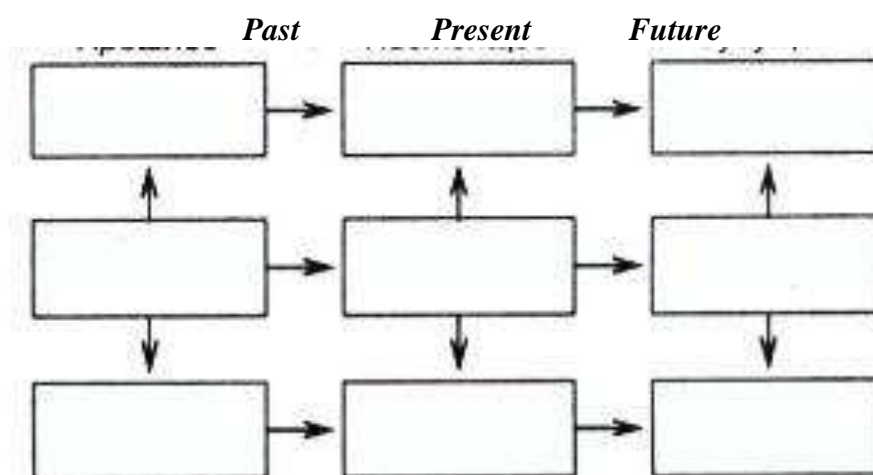
**Super system** is the union, in which the system itself, considered to be a constituent part.

**Subsystem** is a part of the system.

**Element of the system** is a trivial part of the system (the trivial degree is conditional, and is corrected within the meaning of the concept of subsystem).

**System Operator**—3-,9- or 18-screen diagram of powerful thinking. Let us explain: every subject, the object or phenomenon of environment or of the world can be considered as a system, which is a super – system, being one of its parts; interacting with other parts, the system is composed of the cooperating parts – the subsystems (Figure 1).

**Figure 1. The whole scheme of System Operator.**



### **Games using TIPS – technology based on known fairy stories** **Little House (Mansion)**

*The goal:* to develop analytical thinking, the ability to allocate common signs by comparison.

*Equipment:* pictures of different objects, such as: Guitar, teapot, little house, bag, tree, apple, pencil, etc. (for each child – one figure); Mansion – purely arbitrary object: cabinet, carpet, or just part of the room).

*Preliminary work:* remember the fairy tale “The Mansion”, suggest children to play a fairy tale differently.

#### **First – Option**

Each child receives a picture and plays a role of drawn in it subject. Lead shall appoint one of the child host attics, other children at a time suitable to him and lead the following Dialogue:

- Knock, knock, who lives in this little house?
- I ... (call themselves – for example, guitar). And who are you?
- And I ... (call themselves – for example, an apple). Let me come into the Mansion
- If you say, what you’re like me, you may come in.

“Guest” compares both patterns, identify common features and name them (for example, and guitar and apple has similar feature – a stick); after entering the chamber’s and turns to host the next party games.

And so, while all will not be included in the little house. If someone cannot answer the owner, other children will help.

#### **Second option**

Dialogue is the same as in the first embodiment, but the host is constantly changing – it becomes a guest entered, and the former owner goes to the “honorable”. And so, while playing all take part in the “rotation”.

#### **Third option**

Presentation of one, and a few attics, respectively hosts will be several.

Alternately, each guests visit little house.

**Notes.** Play “The Mansion” is possible not only in the group, but also with the individual child. In this case, the master and child time by time become host and guest attics, and instead of drawings, you can use around household objects.

The game will be interesting if you have a little preparation of children in the naming of the properties of different objects. Educators of courses based on TIPS is usually first introduce children with the concepts of “system function, the properties of objects”.

**The challenge:** how to change the game, the children were forced to seek common super – stem?

#### **Masha – rasteryasha**

*Objective:* To develop logical thinking, to train attention, the ability to see the problem – solving resources.

*Preliminary work:* to acquaint children with the functions of various items like a spoon, door opener, etc.; tell (with corresponding terminal) of the inconsiderate people who are confused and lost; induce provide friendly assistance such Masha – rasteryasha.

#### **First – Option**

Leading person takes on the role of Masha – rasteryasha and accesses remained children:

- Oh!
- What’s wrong?
- I lost ... (called an object - such as a knife). What am I going to ... (he calls the function of the lost object – for example, cut the bread)?

Playing lists resources for the implementation of this function (e.g. chainsaw, ax, fishing line, line, and break off with your hand). Masha-rasteryasha can provide good advice for a small reward.

#### **Second option**

Dialog is the same as in the 1st embodiment, but the role of Masha – rasteryashi provided by one of the game to all the participants. Lead can before the

game to ask children to make come true the lost object, then assigns Masha – rasteryasha one child and answer his neighbor. Then, after a successful choice of defendant becomes Masha – rasteryasha and turns to the next party in the chain of the game.

This approach ensures that the activity of each child, but sometimes kids get bored waiting for their turn.

### **Third option**

Respondent cannot appoint, and the question of Masha – rasteryashi meet everyone, after which it moves to the role of chain player. But in this case not all will actively participate in the game.

You can combine two options: the first is to answer the neighbor, for example, and the remaining complement. Then Masha – rasteryasha replies answers and chooses the best; who gives the best answer becomes Mashey – rasteryasha.

### **Complication**

1. The development of the game with the transition to the ideal final Result – IFR. Starting point is the same as in the 1st or 2nd option, but after offered answers Masha – rasteryasha suddenly begins to speak as Emilia from the famous fairy tale: “And now, as if by magic, in my volition, I would like to ...” – the function of the lost object is performed by itself (for example, bread was cut itself).

The rest children have to offer, how to do it – for example, bread is pre – cut to the bottom of the crust.

2. Development of the game with the transition to contradictions. Leading person follow children in contradiction, created by

a) As a result of the nomination IFR (e.g. bread should be cut in the store in order to make it easier to the buyer not to have to cut it, and bread should not be cut completely, so as not to split into more pieces in the shop) – the decision by receiving joining: selling bread in deep plates, tie his bow, wrapped in paper.

b) As a result of the shortcomings of the proposed solutions

(for example, the line has to be sharp to cut the bread, and to be blunt, so as not to injure your fingers) – the decision by receiving a separation in space: the middle of the fishing line is sharp and the ends are blunt, wrapped in cloth.

Children can form or solve contradictions on their own or with the help of leading person, depending on their abilities at this stage.

### **Little Red Riding Hood**

*Objective:* To develop logical thinking, imagination.

*Equipment:* paper and markers.

*Preliminary work:* remember, along with the children the fairy tale “Little Red Riding Hood”, in particular the episode where the heroine is surprised to see a wolf disguised as a grandmother; offer to play the episode in a modified form: the grandmother having learn about the treachery of the wolf turns into any subject, to avoid the sad fate.

\* \* \*

The leading person names to children the subject, in which grandmother has become (has turned into) a (for example, clocks, glass, shower, screen, boots, guitar, candle, etc..), and requests to call its properties (for example, the glass is transparent, empty ; then draws her grandmother, linking those parts of the body with the object of transformation and using the named properties (e.g., “my grandmother is glass”: instead of torso is glass, over it there is a head in the scarf, at the bottom and on its sides – there are hands and feet). One girl plays the role of Little Red Riding Hood. She comes near to “grandmother” and asks:

– Grandma, Grandma, why are you so (calls one of the properties – for example, transparent)?

The other children have to answer on behalf of the grandmother (for example, to see how much I ate). And they do so, as long as they proved all the strangeness of her grandmother.

Then we discuss how Grandma could be prevented from the wolf (e.g.,

throw him the contents of the stomach or involve the hands, feet, head into the glass, to tie his scarf and hide).

**Note.** Some twists and turns in the game can be used for educational purposes, for example, “Grandma is a guitar” plucking the strings, changing their mood; in this case it should be told the children about the necessity of managing your mood and give available examples for their understanding.

### Conclusion

Thus, we can conclude that the use of TRIZ technology in the work allows you to reveal the child's personality, activate creative thinking, increases the likelihood of seeing the versatility of the world around him, its inconsistency and patterns of development. TRIZ makes it possible to understand that anyone can learn to think creatively and always find optimal solutions to the most complex problems.

In addition, *TIPS* helps in solving the following problems:

- implementation of a systematic approach in familiarizing children with a person and the world, preparing them for solving non-standard tasks in various fields of activity;
- formation of interest in one's own discoveries through search and research activities;
- education of ecological culture.

TRIZ as a universal toolkit is used in all types of educational process in a preschool organization. This allows you to form a single harmonious, scientifically based model of the world in the mind of the child, to carry out heuristic training. A situation of success is created, there is an interchange of results, the decision of one child activates the thought of another, expands the range of imagination, stimulates its development

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