CREATIVE TASKS AND METHODS OF THEIR SOLUTION

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Abstract. Creative tasks are found everywhere and play a huge role in everyone's life. The creative task involves the creation of something new, unique. Creativity is closely related to cognitive activity. One of the methods for solving creative problems is heuristic methods. A creative task, unlike a mathematical one, has many correct solutions. Solutions to such problems do not have specific algorithms. When finding different solutions, there is always a creative component. The process of creativity is the process of solving a problem. Creative activity in its internal structure is free. The creative process is individual and the output is a peculiar and new product. The main means of solving creative problems are heuristic methods. These include: brainstorming method, heuristic questions method, multidimensional matrix method. The article reveals the essence, advantages and disadvantages of each method and considers non-standard forms of classes.

Key words: creative task, heuristic methods, finding different solutions,

1 Introduction

Each of us at least once in his life met a man who possesses an amazingly developed imagination. A man who surprises with his original ideas and non-standard thinking. We used to call these people creative people. Eureka (from Greek means "found") - the famous exclamation of Archimedes' joy, about the genius thought that came to mind.

Heuristics (from Greek means "to find", "to discover") is a science that studies creative work, methods used to invent new concepts, thoughts and connections between objects and sets of subjects, as well as methods of the learning process. The author of the heuristic is Socrates. This science originated in ancient Greece. Methods of heuristics began to be developed relatively recently, and at first were designed to solve industrial problems. Today they are already used in various spheres. For example, in the field of design, business, advertising, services and so on. The method of solving non-standard questions is an effective algorithm that allows to rationalize the various aspects of the search work. These methods rely on the activation of the creative activity of man and form his creative possibilities (Kiseleva & Zinnatullina 2017; Khutorskoy 2003; Kiseleva & Zinnatullina 2016; Kiseleva & Zinnatullina 2016; Panfilova 2005; Cropley, 1997; Fogler & LeBlanc 1995; Lucas, 2003; Wegerif, 2010; Starko, 2005; Nefyodov, 2013).

2 Methods

Consider the heuristic methods that are commonly used to solve creative problems. Define their advantages and disadvantages, as well as consider the forms of employment with heuristic methods of teaching.

The way of brainstorming. Here is the formulation of the method, which was proposed by an American journalist and businessman Alex Osborn. Brainstorming is one of the effective ways to solve creative issues. At its core, brainstorming is a group generation of ideas. This is when you are forming a team and jointly find a solution to a task that faces you, regardless of which area this task is from. This method has one important rule: a strict ban on criticism.

This method is divided into two stages: 1) the team gives out their thoughts, then the proposed ideas are written down, even if these ideas are complete nonsense; 2) the group evaluates and develops ideas, and in the end selects the best ideas.

Advantages of this method are: 1) all members of the group are equal to each other; 2) non-standard thinking is valued; 3) the whole team participates in finding the answer; 4) the proposed thoughts are not rejected, but refined.

Disadvantages of the method are: 1) the solution of fairly easy tasks; 2) lack of a guarantee of finding really useful ideas.

The next is the method of heuristic questions. This method is also known as the method of "key questions". The method is used to find additional data. Heuristic questions are intended for additional stimulation, formation of tactics for solving a creative problem. Who? What? Where? Why? Than? How? When? These suggestive questions guide the participant to the thought of a solution and the correct answer.

Method of multidimensional matrix. This method is also called a "morphological box". The essence of this method lies in the system analysis of the latest interrelations, manifested in the course of the matrix analysis of the problem being investigated. A new combination of popular elements of the initial data or a combination of the well-known with not yet known. There is no trial-and-error method, but only a study of relationships that can be calculated through matrix analysis. The advantage of the method is that it makes it possible to resolve complex creative problems and to find many new, unique ideas.

The way of free associations. During the emergence of associations, non-standard links are established between the elements of the problem and the details of the outside world. Creative thoughts of solving the problem arise as a result of the process of the emergence of new associative connections. In order to increase anti-conformism, every member of the team should try to offer and express their ideas and opinions.

Method of inversion. This is the method that is aimed to find solutions for creative tasks in the newest, unexpected directions. Of course, this method is the opposite of ordinary views and beliefs, dictated by logic and reason. The method of inversion is based on the belief of dualism, the rational application of the reverse operations of creative thinking. The advantages of the method is that it allows you to improve the dialectic of thinking and allows you to find a way out of difficult situations. The downside is that using it requires a fairly high level of creative capabilities (Iravani & ShekarchiZade, 2014).

Method of empathy. The essence of this method is to compare ourselves with the object and subject of creative work. When the method of empathy is used, the object is attributed to emotions, feelings of the person himself (the person defines goals, functions, abilities, pluses and minuses). It turns out that the basis of the method of empathy is the law of substitution of the studied object or process (Mwaniki & Ondiek, 2018).

Method of Synectics. The goal is to create an option based on the knowledge of each participant. The essence of the method is a careful step-by-step selection of team members, which includes an analysis of their knowledge, capabilities, skills, creativity and communication opportunities. The method of the synectics was proposed by the scientist W. Gordon. The base of the synectics includes a brainstorm. It is conducted by a professional or semi-professional team, which continuously accumulates the skill of solving problems. A small criticism is allowed in this method. In addition, we use special methods based on analogy to those methods to which belongs direct equality (investigation of ways of solving a problem similar to this problem), personal equality (the desire to enter the position of the subject of the given problem), symbolic equality (detection in two words figurative determination of the essence of the problem), fantastic equality (resolution of the given problem by invented characters). To the

pluses of the method of the synectics belong everything that is inherent in the heuristic methods on the basis of which it is developed. Its drawbacks include the fact that it does not provide an opportunity to solve specific creative problems, but provides a chance to find predominantly more unique thought solutions and in case if we use the method for a long time. The effectiveness of generating new thoughts is falling.

Heuristic ways of teaching include the following forms of lessons:

1) The Olympics. Thanks to that gives an assessment of the level of creativity of students.
2) Heuristic exercises, which involve the fulfillment of tasks by students aimed at the creative process.
3) A business game that allows to move closer to reality.
4) Interactive forms of study, which are implemented through computer programs.
5) Remote projects. Between the educational institutions arranges heuristic Olympiads, creative projects.
6) Creative activity. Students are given a creative task.
7) The way of "survival". The student tries to get involved in the subject of research, to comprehend and feel it from within.
8) The method of imagery. Students look, for example, in a flaming candle and try to notice and depict those figures that they see.
9) The way of inventing. In this case, a fresh, unfamiliar product is formed. For example, an unpredictable plot twist of some legend is invented.
10) Method of agglutination. Learners are asked to combine incompatible in reality characteristics, properties, parts of objects and display, for example, the top of the abyss, salted sugar and etc.

3 Results

Thus, one of the main methods that allow to manifest creative activity in the learning process is the heuristic method. The main purpose of the heuristic method of teaching is the formation of new type of thinking, the ability to analyze and create.

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