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PSYCHOLOGICAL ASSESSMENT IN SCIENTIFIC CREATIVITY

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Annotation

The article discusses the issues of the psychology of creativity. The author defines the concept of creativity, its goals and purposes for personal development. The article considers the conditions necessary for the development of a creative personality in the learning process, its individual qualities and characteristics

Key words

Creativity, psychology, art, education, training, personality, thinking

By engaging in all kinds of art, a person develops a creative nature of thinking, which is expressed in independent thinking. Psychologists compare the concept of creativity with the concepts of divergent thinking, thanks to which original, non-standard, illogical, emotional solutions to tasks arise. The features of artistic and creative thinking are: plasticity (the ability of a creative person to offer many solutions, where an ordinary person will see one or two solutions to a problem); mobility (the ability of a creative person to move from one aspect of a problem to another, whereas an ordinary person is limited to one point of view on the task); originality (finding unexpected and non-standard solutions by a creative person. From the above, the question arises, is it possible to raise a creative personality from an ordinary person, is it possible to teach creativity?

Many psychologists and educators believe that certain conditions are necessary for the development of creativity. Let's list which ones:

1. Development of the knowledge base. A large amount of information gives a creative person a base

for creativity. It is impossible not to agree with this, studying the work of artists, writers, scientists, you can find that they all had a desire to work.

Passion for creativity, natural abilities, motivation for creative cognition and development, plus diligence, develop creative abilities in a person. From the pedagogical experience of teaching creative disciplines at the university, it can be said that students who entered at the beginning of their studies with a low level of preparation by about the third year of study reach certain creative heights, if the efforts to acquire knowledge, the student's need for learning is pronounced.

2. Creating the right atmosphere for creativity. At the moment, there are a number of developed teaching methods where the individual is actively involved in

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the learning atmosphere. Interactive forms of learning are increasingly being used in practice: this is a business game, cases, a round table, but for a student of creative specialties it is important to be constantly in the creative process. To do this, creative universities use classes in the form of master classes, when the teacher shows skills and techniques, for example, painting raw, you can involve students in the creative process by visiting exhibitions, museums, and organizing field events. It is necessary to surround a person with an atmosphere of creativity, so that he is constantly "fueled" by it to create his creative works and ideas.

3. Search for analogues. In creative universities, the learning process is often based on working with analogues and prototypes. When trying to solve a new creative task, it is important to familiarize yourself with various solutions to a similar problem. This stimulates the search for a new idea, gives impetus to a new solution to an old problem. Many famous psychologists: Vygotsky L.S., Leontiev A.N., Teplov B.M. addressed the problem of studying human abilities and for their study they chose works of art, not the author, but the work itself, i.e. the final result of creative activity. This way excluded the possibility of identifying psychological properties associated with the formation of creative abilities of a person. Next, B.M.Tiplov studied the creative process itself, in the center of which stands the author of the work himself, while he sees the main creative abilities in the abilities of his psyche and the type of personality itself, which form a person's impressionability. Next, psychologists turned to the psychophysical properties of personality, assuming that physiological conditions are given to a person by nature, and then abilities appear and are formed through exercise. In our opinion, creative abilities in art are formed taking into account the individual characteristics of a person, his natural inclinations, abilities, the atmosphere in which he grew up and was brought up, and most importantly, the love of creativity. By engaging in creativity, a person not only learns the beautiful, but also develops his intellect. Intelligence, in turn, gives sophistication to creativity. In the process of personal growth and development, creative abilities are not created, but released, according to many psychologists and teachers of creative specialties. Therefore, when developing creative abilities, it is always necessary to remember that creative people are eclectic, inquisitive, they prefer the new and complex to the familiar and simple. They have a special perception of the world, creative people retain for a long time the vividness of perception, the ability to surprise and admire. Independence of thought constantly pushes a person on a research path that ordinary people are usually afraid of. Taking into account all these features of a creative personality, the teacher should organize classes in such a way that the personality reveals and develops his talent. Any education system is based on conformity, as this is

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considered the most reliable way to unite members of a social group, but at the same time for a creative person it can also be a sure way to ruin the development of creative abilities and individuality.

Psychologists divide creative thinking into levels:

1. Conceptual and logical thinking: logic, intelligence, mobility (analytical components).

2. Sensory-imaginative thinking: emotional evaluation of works of art...Emotional components.

3. Visually effective thinking: choosing the most rational and reasonable solution, being able to see the end result...Creative components.

It is safe to say that artistic and imaginative thinking includes all three levels, i.e. all mental components.

"There are two huge human experiences in art. Firstly, it is the professional experience of this art and, secondly, human, emotional and moral " Scientific creativity is understood as an activity leading to the acquisition of new knowledge. In order to obtain the status of a new and scientific one, newly acquired knowledge must not only add something to the already existing data set, but also meet the formal criteria of scientific validity, i.e. be proven, justified, consistent, etc. Some scientific results can be achieved through the systematic organization of research work, while others require an extraordinary creative personality.

This corresponds to two phases of the development of science — extensive, which provides a gradual accumulation, clarification and verification of facts, ideas and concepts, and intensive, which is associated with the emergence of a fundamentally new theory or way of scientific thinking. The psychology of scientific creativity distinguishes two ways of thinking: reproductive and productive. Reproductive thinking uses ready-made schemes in relation to new conditions and objects.Productive (creative) thinking is distinguished not only by the novelty of the resulting result, but also by a non-trivial way of achieving it.

There is no insurmountable barrier between creative and non-creative activities, productive and reproductive thinking. They gradually turn into each other, and what is a creative act for one person will be a daily routine for another; and those problematic situations that require a huge effort to solve today may turn out to be quite trivial tasks available to a student tomorrow. For example, the use of an algorithm for solving inventive tasks, which guarantees the result with strict observance of the sequence of steps, deprives the process of novelty, uncertainty and risk, does not require going beyond the known methods of action and thereby minimizes creative components in its execution.

Recently, more and more often, the line between creative and non-creative

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activities is drawn according to the methods of their generation. Uncreative work is mainly set from the outside and is almost devoid of internal impulses. Creative activity is self-generating, freely forming goals, ways and means of its implementation. The most important aspect of creativity — scientific or any other — is goal setting, setting goals that, to a certain extent, set the ways to achieve them. The goal has a meaningful component — the formulation of the problem and ways to solve it, and a dynamic one, since it is a derivative of such deep personal formations as motives, meanings, values that help a scientist overcome stereotypical approaches and patterns of thinking.

The search for specific characteristics of the creative process mainly revolves around the study of the role of intuition in scientific creativity and the mechanisms underlying it. The concept of "intuition" is most often used as intuition-a guess, the discretion of the result in a "leap", without intermediate reasoning. The solution comes as an unexpected flash of lightning. Many researchers equate intuition and creativity in science. At the same time, an intuitive creative act is considered as unconscious, not obeying ordinary logic, spontaneous and not conditioned by past experience.

Researchers of creative thinking identify four stages of solving scientific and inventive tasks: preparation, incubation (or maturation), illumination, verification (verification of the received solution). At the preparation stage, a conscious study of the conditions of the problem being solved takes place, various versions regarding the strategy and tactics of its solution are put forward and tested. All this is done on the basis of existing knowledge and using familiar techniques that have been successfully used previously in similar situations. If the required solution is found as a result of this, then such a task, as well as the process of solving it, are not considered creative, since they represent a modification of already known material and methods of operating with it. If the desired result is not achieved, then the process proceeds to the next stage.

At the incubation stage, the desired solution matures beyond the control of consciousness. Outwardly, it looks like the scientist puts aside an intractable problem and switches to other things. At this time, further connection and rearrangement of ideas continues in his unconscious, i.e. an unconscious thought process, leading, eventually, to enlightenment.

Insight is the admission into consciousness of the combination that may be useful for solving a problem. This insight, which comes after incubation, is intuition — the direct perception of the truth. It is precisely this solution, which came from nowhere, that acts for the scientist himself. After all, only the result is given to his consciousness, whereas the ways of obtaining it are hidden somewhere in the depths

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of the psyche.

Each individual has huge reserves of unconscious, hidden experience. A stream of impressions is constantly coming from the outside world, which is perceived and fixed with varying degrees of clarity at some deep levels of the psyche and stored in memory. It is from these depths that the scientist draws the knowledge, images, and tools that help him solve the problem. At least one important conclusion follows from this: those who want to develop intuition and creativity in themselves should not be afraid to go beyond their field of activity. He should multiply his life experience in different spheres of life, absorb a variety of impressions, look for new forms of relations with the world and behavior in it.

Sometimes switching from one activity or from one problem to another can bring the necessary effect. It is by doing something little familiar that a person is more likely to come across an intuitive solution. That is why it is said that chance in science favors the prepared, that is, the one who keeps his eyes and mind constantly open, because it is never known where the right clue may come from.

In this generally accepted sense, creativity is a conditional term for a mental act expressed in the embodiment, reproduction or combination of the data of our consciousness in a (relatively) new form. The research began with the stage of contemplative psychological knowledge. Psychologists described the circumstances of the creation of great works of science and art in their entirety. The sources of the descriptions were biographies, autobiographies, memoirs, and literary works. The nature of creativity, the phases of the creative process, the ability to create and the qualities of a creative personality were investigated. There were signs of genius, expressed in the peculiarities of perception (intensity of attention, great impressionability, receptivity), intelligence, character, motivation and value orientation. However, there were no means of penetrating into the essence of the described phenomena. Since psychological methods of obtaining initial data were limited to self-observation, unconscious processes were recognized as the central link of creativity.

With the development of experimental approaches in the psychology of creativity, active methods of obtaining initial data began to be used — tests, questionnaires, interviews, experiments. The study of individual aspects of creative activity has become typical. Psychology investigated the phenomena of creativity from different angles, but the grounds for isolating individual elements were still subjective, disorganized. The results showed that conscious and unconscious, intuitive and rational complement each other.

Until the middle of the 20th century, psychology linked creativity with mental development. The need to determine intellectual abilities led to the creation of IQ

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tests - tests for mental giftedness. However, studies by many psychologists have shown that there is no direct dependence of creative abilities on intelligence and the amount of knowledge, i.e. there was no correlation between the IQ and the ability to create new things — creativity.

The definitions of the concept of "creativity" available in literary sources reflect many different points of view. However, considering this concept from the point of view of the manager, it is necessary to focus on the connection of creativity with the activities of the enterprise. In this case, it is defined as the ability to develop and apply new and better solutions. The definition includes the ability to go beyond the usual way of thinking and translate original thoughts into a plan of action. Attention should be paid to two features of the interpretation of the definition: the idea and its embodiment. Ideas, if they are not translated into actions according to the planned plan, are not productive. In other words, the emergence of a new idea alone is not enough for modern production. In many enterprises, there are more ideas than there are opportunities to use them. The road from a valuable idea to turning it into a final commercial product and profit is long and dangerous, and creativity can and should cover this entire path.

In this sense, premonition or intuition is not identical to creativity, although it can stimulate the creative process and is often part of it.

A premonition is a strong intuitive sense of what is going to happen or may happen. This is a common-sense prediction.Intuition is the ability to know, or knowledge gained without logical reasoning, without the help of inferences. It's thinking in a hurry, it's an innate instinctive knowledge. It was found that the creativity of the most talented people in various fields was based to a great extent on intuition. Intuition is different from deliberate judgment or insight. The difference between a deliberate judgment and an intuitive judgment is that in the first case, our opinion or conclusion is based on logic, in the second — there is no logical analysis.

Insight means the ability to see the inner nature of a phenomenon, to understand the true nature of things, or to recognize hidden truth through abstract vision or intuitive understanding. All these elements certainly represent a part of the creative process.Innovation and invention are closely related to creativity. They are also part of the creative process. When they talk about invention, they usually mean that a person has invented something, created something new, invented it. Innovation is understood as the process of translating an invention or idea into planned actions.

In commercial activity, innovation is more related to the recognition of the existing new and its adaptation to achieve practically significant goals than to the invention of a truly new one. The president of a prosperous Japanese firm said that his company's specialists notice in other people's inventions such consumer

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properties that the inventors themselves do not notice, "spice up" them with original ideas and make products in demand.

The creative role of innovation lies not in inventing something that did not exist before, but in finding the possibility of applying a new process or principle in a given situation. If such an opportunity is found, the innovation process may include "selling" the idea within the company, and then performing all the management actions necessary for the profitable sale of the product on the market. Entrepreneurship is primarily a process of finding and using opportunities. This is the essence of entrepreneurship.

Creativity, therefore, can be technical or non-technical in nature. The latter is more related to innovation in entrepreneurship. It is quite possible that a company does not engage in inventions, but acts only as an innovator. With strong engineering and marketing services, the company is able to take inventions made by others, improve them, adapt them to the needs of a particular market and thus make a profit.

Creativity, in the sense discussed above, is the main prerequisite for the success of an enterprise. It is believed that the only way to maintain the viability of an organization is to create conditions for creativity and change.

Organizations that have everything regulated, where there are no conditions for creativity, lack flexibility. Emphasizing the important role of creativity and imagination in the planning process, it should be repeated once again that stimulating the creative activity of employees in the direction of reducing costs, improving quality and meeting schedules has a very effective effect on increasing profits.

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