

PSYCHO-PEDAGOGICAL PROBLEMS OF WORK WITH CREATIVELY GIFTED STUDENTS

Andrey DAVIDENKO, doctor of pedagogical sciences, professor, professor of the Department of General Technical Disciplines and Drawing at Taras Shevchenko National University “Chernigov Collegium”, professor of the Department of Natural and Mathematical Disciplines of Konstantin Ushinsky Chernigov Regional Institute of Postgraduate Pedagogical Education

Summary. Based on the completed scientific research and his own pedagogical experience, the author examines important problems of the development of the growing generation in modern conditions. He draws attention to the importance of the correct use of concepts in pedagogy. Here he significantly expands views existing up to this time about the methodology of the development of students' creative abilities. According to the author of the article, solving of the ready-made problem is the lowest level of creativity manifestation. A high level of creativity begins with a feeling of disharmony in the surrounding world (system), which over time leads to the formulation of the conditions of an own problem/task with its subsequent solution.

Keywords: creativity, giftedness, inclinations, abilities, giftedness development, task, inventive task, disharmony, problem.

ПСИХОЛОГО-ПЕДАГОГИЧЕСКИЕ ПРОБЛЕМЫ РАБОТЫ С ТВОРЧЕСКИ ОДАРЕННЫМИ УЧАЩИМИСЯ

Резюме. На основе выполненных научных исследований и собственного педагогического опыта автор рассматривает важные проблемы развития подрастающего поколения в современных условиях. Он обращает внимание на важность корректного использования понятий в педагогике. Здесь же он существенно расширяет существующие до этого времени представления о методике развития творческих способностей учащихся. Решение готовой задачи – самый низкий, по мнению автора статьи, уровень проявления творчества. Высокий уровень творчества начинается с ощущения в окружающем мире (системе) дисгармонии, которое со временем приводит к формулированию условия уже собственной задачи с последующим ее решением.

Ключевые слова: творчество, одаренность, задатки, способности, развитие одаренности, задача, изобретательская задача, дисгармония, проблема.

For some time, we believed that education of post-Soviet society is the best in the world. As an argument that confirms this idea, numerous examples were given that our students coped quite easily with test tasks for their peers in the most developed countries. And we were proud of it, because our students, in comparison with students from other countries, knew much more. However, later it turned out that graduates of our schools and higher educational institutions have a large amount of knowledge, but far from always can use this knowledge in their practical activities. For example, the following is considered as one of the important practical directions in the use of knowledge in practice during physics training - when students solve problems from numerous collections of problems. In no other country in the world there are so many collections of problems! But how many school graduates will subsequently have to solve a problem, for example,

on the movement of the body along an inclined plane? If you analyze, then such problems are necessary only for better memorization of formulas, that is, their use is also focused on mastering knowledge. It turns out that the practice, again, existed for obtaining knowledge, and not for obtaining knowledge for its use in practice.

Not many can realize it even now. Our young people really know a lot, but as it turned out, high-tech devices are being created in other countries. Personal computers, mobile communication portals, the best refrigerators, cars and other are not created by us (assembly, manufacturing is not a creation). What is the matter? Perhaps our education is not oriented that way? Perhaps this is how we perceive the brain of a child only as a store of information?

The author of the article adheres to just such an opinion. This is reflected in his main publications [1-8], as well as in his doctoral dissertation [9]. It is already becoming obvious that more attention should be paid to the development of the student's other abilities, and not only to his ability to memorize information. It should be noted that the importance of developing various abilities of a child has long been declared in all directive educational documents (concepts, programs, etc.).

However, there are reasons that impede its implementation. One of them is that modern teacher training does not allow the development of the child's abilities. The second is the difficulty in assessing the achievements of the child, that is, the level of development of his abilities. With knowledge everything is simple: you can conduct an oral survey of students, conduct a written exam, or testing is now common. What about evaluating other abilities?

Therefore, the problem of developing the child's abilities is currently very relevant. And I would like both our academics and teachers know about what has been accumulated by the psychological and pedagogical sciences. We have long had a theoretical base that allows us to solve many problems of our education. Yes, our views on the solution of this problem may differ in many respects from those that have formed in other countries, in particular, Western countries. But it should be so. After all, there are differences in the views of even individual scientific schools in the same country. Moreover, views/opinions could not be identical in countries, which had different socio-economic formations.

Now we move on to the interpretation of the concept of giftedness, which will be used by us in the article text. I want to point out right away the existing problem in the use of terminology in the so-called non exact sciences, which include pedagogy, psychology, sociology, etc. If we talk about the exact sciences, for example, about mathematics, then it has its own concepts.

The sine of the angle of a right triangle is the ratio of its opposite side to the hypotenuse. This is the only way! Just one definition! Not a single person who has knowledge of mathematics will take the responsibility to give another definition, because

all further trigonometry is based on this initial concept. And any inaccuracy in the definition of a psychological or pedagogical concept leads them out of the category of science! This, in particular, concerns the problem of the concept of “giftedness” of a child (for convenience, we will continue to write this word without quotes).

Under the giftedness of the child should be understood only the presence of congenital inclinations to a certain type of activity. An inclination is exactly that initial gift that a child gets from parents at the genetic level. This is where the word giftedness comes from. On the basis of a person’s inclination, he can develop the corresponding ability.

An ability is a mental property, in the presence of which a person successfully copes with a certain type of activity compared to those people who do not have such a potential. The ability on the basis of an inclination can develop not by itself, but as a result of the corresponding activity of a person in interaction with other conditions, especially with the social environment. Based on this, it is believed that the initial differences between people from nature do not consist in abilities, but in inclinations of a specific type of activity.

Obviously, the ability is a more complex concept in relation to the inclination. Inclinations are a necessary but not sufficient condition for a person to successfully carry out certain activities. It should also be remembered that it is impossible to talk about the giftedness of the child, without indicating to what type of activity he inherited inclinations. That is, a mathematically gifted expression is not correct enough. You can study mathematics, you can win at the Olympics, but not become a person who develops this science. The excellent student in one of the subjects at school is far from being the one who will implement his knowledge in the course of later life. We are already familiar with this...

This problem is relevant and is in the field of view of scientists and educators of all developed countries [10-13]. This is due to the fact that the scientific, technical and cultural potential of the development of a particular society depends on the level of study of this problem and the subsequent implementation of the results in pedagogical practice.

Without touching on special types of giftedness (graphical, musical, etc.), we will focus only on those types of mental giftedness of a child that can be developed into appropriate abilities in the process of teaching natural-mathematical disciplines. However, our reasoning with a certain approximation can be transferred to the educational process in other subjects.

It should be said right away that our educational system is successfully coping with the development of the child’s intellectual abilities. The function of human intelligence is that it is able to remember a large amount of information and can adapt on the basis of this to the environment. As already mentioned above, our education system copes with the solution of this problem successfully. For this, there are a significant number of

techniques and the corresponding didactic tools. Pedagogical universities are able to prepare the appropriate personnel.

If a person is capable of a purposeful comprehensive study of the properties, characteristics, features of a particular object or phenomenon, knows how to formulate conclusions on the basis of the results obtained, then we can say that he has research abilities. As a result of research, humanity gains new knowledge about the world around it.

Creative abilities are such abilities of a person, in the presence and use of which, he is capable of creating an original product. They are also developed on the basis of inherited inclinations for creative activity. It is thanks to creative activity that mankind has got vehicles, communications, architecture, works of art, clothes, etc.

Speaking about the importance of inclinations for creativity and the corresponding abilities, it is necessary to know that the latter (abilities) have no development limit. This allows us to apply the general expression “creative giftedness” in the future.

The difference between the activities of the researcher and the creator is that the researcher reveals what already exists, and the creator creates a new product. Ernest Rutherford, for example, performed experimental studies, as a result of which he discovered the atomic nucleus and built a model of the atom. Let's pay attention, the nucleus was before that - Rutherford only opened it, thereby expanding people's ideas about the structure of the atom.

A creator, for example, an inventor or a poet, creates something that did not exist yet. John D. Laud invented, for example, a ballpoint pen, Nobel - dynamite, and Salvador Dali - painted his surrealist paintings. These differences must be used in pedagogical practice.

In his doctoral dissertation, the author proposed a methodology for the diagnosis and development of creatively gifted students in the educational process in physics. For this, he developed a system of creative (inventive) problems/tasks. The following are examples of several of them.

1. **“Hazard/danger warning device”.** Hearing impaired people may not notice a threat to their safety in time if its source does not fall into their field of vision (cars, aggressive animals, etc., approaching from behind or from the side). Offer a device that will warn people of danger.
2. **"Indicator of fatigue."** While working at a computer, especially at a later time of the day, a person's performance decreases, and in some cases he simply falls asleep in a sitting position. Offer a device that would detect a person entering such a physiological and psychological state and suggest that he go to rest.
3. **"The energy of descent from the mountain."** Everyone knows that moving on a road that goes up, he gets tired more than during horizontal movement.

From the point of view of physics, moving up requires a lot of energy from a person. However, when the road goes steep enough downward, a person again has to spend his energy in order to restrain movement (a person “slows down”). Create a device that allows a person to go down without "braking" and even such that it allows you to receive electricity.

4. **"Wind farm without a rotor."** Wind farms typically consist of a wind wheel and an electric generator. The wheel rotates under the influence of wind, rotates the rotor of the generator that generates electricity. There are different designs of wind wheels and two types of their orientation relative to the horizon - horizontally or vertically. One of the drawbacks of such wind wheels is that during their rotation infrasounds harmful to humans and animals arise. Suggest a wind farm that does not contain a wind wheel.

We propose to use similar problems/tasks on lessons and in extracurricular work in physics. Their solution allows students to show the practical value of this science and, of course, contributes to the development of their creative abilities.

At the same time, as our further studies have shown, the solution of a ready-made problem/task assigned by someone does not have a high potential for the development of a person's creative abilities. This is the lowest level of creative activity. Its highest level occurs when a person independently sees disharmony in the world around him, finds what it creates (contradictions), formulates the problem on the basis of this, and makes up the problem condition, as a result of which the detected disharmony is eliminated (the system is brought into a state of harmony) In this was a new product or technology appears.

The author also proposed a new form of extracurricular work with schoolchildren - the All-Ukrainian (open to other states) tournament of young inventors and rationalizers. This is what was introduced into teaching practice while working on a doctoral dissertation. This is an annual event, the purpose of which is to summarize the inventive activities of students. It is held during business games. Each team is given the opportunity to play the roles of Inventor, Patent Examiner and Technologist based on previously solved inventive tasks. The tournament lasts 5-6 days. In November 2019, the 22nd such event is planned.

We have seen the usefulness of such an inventive movement, the effectiveness of our methods for developing students' creative abilities. Many students received patents for inventions with their subsequent implementation in practice.

What conclusions can be drawn on the basis of the above, as well as what we have obtained in the course of research on creativity?

You need to clearly understand what creativity is. This is just such a human activity, during which an original product is created.

Inclinations for creative activity are inherited genetically.

Creative abilities develop and manifest only in activity.

Developing a person's creative abilities in the process of teaching one subject, for example, physics, we achieve that a person shows creativity in another branch, for example, in art (if there are corresponding inclinations, of course).

Creative giftedness requires constant attention and support from society. We can say that it should be evaluated by it. Creativity results not accepted by society can turn into a tragedy for the creator.

Do not assume that all children are gifted. To the greatest extent this relates to the inclinations of creativity. This talent is not so common that you can hope that you can come to a society of creators. The main thing is not to miss a child who has inclinations to creativity.

Human creativity is focused not only on creating an original product that society will use. Equally, it is also a means of self-realization of the individual.

You should not expect that the computer will be able to create. He can only speed up the search for options among what a person has already done, and offer them to him for evaluation and decision making. A computer is able to work only for a program that a person created.

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