

## FORMATION OF CREATIVE ACTIVITY OF STUDENTS IN THE PROCESS. PROFESSIONAL TRAINING IN THE STUDY OF CHEMISTRY

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One of the main tasks of teaching a modern school is the formation of a creative personality capable of self-determination in a rapidly changing, dynamic world. In the article, the author shares his experience in developing the creative (creative) abilities of a child with the help of elective courses in chemistry as part of the profile training of students. The courses developed by the author are focused on the manifestation of chemistry in various professions and serve as one of the methods for developing students' creativity.

We live in an era of global restructuring of society. Our time is marked by profound transformations in all spheres of people's lives: material production, social relations, and spiritual culture. The grandiose tasks of the coming century will be solved by those who sit down at the school desk today. A new social order has arisen in society: instead of an obedient performer working according to an established tradition, a person has become in demand who is able to quickly navigate the situation, creatively solve emerging problems, understand and take full responsibility for his decisions.

In this regard, the school is required to develop in students such traits as flexibility of thinking, ingenuity, a sense of the new, a sense of choice. They are characteristic of a person with creative thinking. It is quite natural that cardinal changes have also taken place in the educational system over the past decade. If earlier the main task of education was the formation of students' knowledge, skills and abilities, today the main task has become the task of forming a creative personality capable of self-determination in a rapidly changing, dynamic world. The main conditions for such self-determination are: the ability to creative, non-traditional solutions to emerging problem situations; the ability to predict the consequences of their actions; the ability to flexibly change the strategy and tactics of their behavior, taking into account emerging changes. The ability to be creative appears when a person begins to realize his peculiarity and, thus, becomes a personality. In the process of self-improvement, a person goes beyond social norms and skills, thereby becoming more open to creativity.

Education should be an incentive to creativity. Teachers and psychologists consider creativity as the most important mechanism for personality development. Since the school years are the years of the formation of the

personality, the main task of the teacher is to provide conditions for the formation of the creative individuality of students. Many domestic scientists and teachers consider one of the central principles of modern education to be the principle of creativity (creativity) [1; 2].

It consists, first of all, in the development of the creative abilities of the individual. Creativity is the ability to detect and pose problems in unregulated conditions of activity, as well as to generate a wide variety of original ideas for their theoretical and practical solutions [3].

Profile training is aimed at the implementation of a student-oriented educational process. At the same time, the possibilities for building an individual educational trajectory by the student are significantly expanded [4]. Determining the profile in grades 10-11, students most often focus on the profession they choose. Preparation for most of the professions currently popular with graduates does not include the study of chemistry, so they either study it at a basic level or prefer "natural science" to chemistry. The approach of high school students to the choice of subjects has become rigidly pragmatic.

This means that the motivation to study chemistry fundamentally changes, students do not see the applicability of the chemical knowledge gained at school, either in everyday life or in further work. In the textbook N.M. Magomedova "Differentiated approach to teaching and educating schoolchildren: Problems. Prospects" the author proposed a methodology for studying the cognitive interests and inclinations of students [5].

We used it to monitor students over the past three years. The analysis of the obtained data revealed that the majority of students have no interest in studying chemistry. But, as you know, chemical knowledge forms the basis of modern science and technology, chemical methods are widely used in various industries, agriculture, medicine and pharmacy. The achievements of modern civilization are inconceivable without chemical science. It is used to solve applied problems not only in chemical, but also in a wide variety of fields of technology.

Underestimation of the role of chemical knowledge formed by the secondary school will lead to a significant decrease in the level of training of specialists in many fields, including those that are very far from chemistry. In addition, elementary chemical illiteracy of the population will inevitably lead to dangerous situations in everyday life and affect the ecological situation in the country.

Chemical education contributes to the development of environmentally competent, safe human behavior. It is this that creates in schoolchildren a clear idea of the role of chemistry in solving raw materials, energy, food, and medical problems of mankind. That is what is needed to solve them. Chemistry is not only

a science, not only an academic discipline, but also a very significant branch of production, which occupies a special place in the modern world. The basis of such seemingly non-chemical industries as mechanical engineering, metallurgy, food, perfumery and pharmaceutical industries is chemical technology.

A minimum knowledge of chemistry is also necessary to develop a critical attitude to the flow of advertising received by a person from the media. The flexible system of specialized education adopted in the concept of modernization of education provides for the possibility of various combinations of training courses mastered by high school students, including elective ones. It is with the help of elective courses that students can be given an idea of the chemical component of their chosen profession.

From the point of view of domestic psychology, the classification of professions developed by E.A. Klimov in accordance with the object of labor: - man - living nature. Representatives of this type deal with plant and animal organisms, microorganisms and the conditions of their existence. Examples: master horticulturalist, agronomist, livestock specialist, veterinarian, microbiologist; - man - man.

The subject of interest, recognition, service, transformation here are social systems, communities, population groups, people of different ages. Examples: grocery seller, hairdresser, production engineer, doctor, teacher; - man - sign system. Natural and artificial languages, conventional signs and symbols, numbers, formulas - these are the subject worlds that interest representatives of professions of this type. Examples: phototypesetter operator, programmer, draftsman-cartographer, mathematician, editor of a publishing house, linguist; - man - technology. Workers deal with inanimate, technical objects of labor. Examples: assembly fitter, mechanical technician, mechanical engineer, electrical fitter, electrical engineer, catering technologist; - man - an artistic image.

Phenomena, facts of artistic reflection of reality - this is what occupies representatives of this type of profession. Examples: decorator, restorer, musical instrument tuner, concert performer, ballet dancer, drama theater actor [6]. Given this classification, we have developed elective courses in chemistry for each type of profession.

They are aimed at introducing students to the chemical component of their chosen profession. These are such elective courses as: "Chemistry and Man", "Chemistry and Art", "Chemistry in Nature", "Chemistry in Industry". One of the important tasks of these courses is to help students realize the serious role that chemistry will play in their life. This is necessary for them to be able to independently and competently perceive modern technological and

environmental problems related to the development of science and industry that they will face.

The main sections of the course program cover fundamental concepts and terms, theoretical and practical tasks, which allows the student to expand the knowledge gained in the main school. All teaching is focused on the manifestation of chemistry in various professions. The development of creative qualities is facilitated by a brief acquaintance with the history of the profession, in particular, with issues related to the history of discoveries, the creation of various industries, and the personalities of prominent people. For example, the course "Chemistry and Art" looks at the development of painting techniques.

And when studying the program "Chemistry and Man", schoolchildren independently prepare research on the history of some chemical discoveries and episodes of biographies of prominent scientists, for example, Linus Pauling. This not only broadens the horizons of students, but also shows the logic of the development of chemical science in general. Elective courses were offered to schoolchildren studying chemistry, both at the basic and specialized levels, as well as those who study the subject of "Natural Science".

The courses have not only theoretical, but also practical, universal significance, which allows students in the learning process, on the basis of their life ideas and experience, to show creative activity, causing interest in the chosen profession. This is facilitated by the creative work of students, which they perform on their own, turning to the teacher only for advice. Students are not limited in their choice of topics. For example, when studying the course "Chemistry in Nature", they perform the following creative work: compiling an atlas of soils in the Samara region, recycling household waste, and chemical reactions in space.

Conducted classes form in students a conscious need for an independent search for knowledge, teach them to think rationally and critically, instilling self-education skills, develop creative abilities, as well as the need for chemical knowledge. Students get acquainted with social problems, which cannot be competently resolved without mastering the basic base of chemical knowledge. Elective courses include both theoretical classes that introduce students to chemical knowledge in their chosen profession, and practical work that allows them to consolidate their knowledge in practice.

Almost half of the study time is devoted to experimental work. Students who have chosen the course "Chemistry and Nature" independently separate the dyes contained in green plants using paper chromatography, simulate the formation and consequences of acid rain, and learn to identify substances contained in tap water. During the course "Chemistry in Industry", schoolchildren experimentally

study various types of corrosion and offer their own methods of dealing with it, they assemble a galvanic cell with their own hands and use the resulting electrical energy.

In elective courses, time is allotted for intellectual and practical trainings. We pay attention to the formation of thinking skills not only of the first order, but also of the second order - creativity and the ability to evaluate. We conduct trainings in various forms: lectures, conversations, individual theoretical and research experimental tasks, seminars, work with scientific and reference literature. In the process of activity, various ways of knowing chemical phenomena are actualized, chemical abilities, reflection are developed, oral and written speech is improved. Each course ends with a defense of the creative work done by the students. In these classes, they publicly present the results of their work, learn to act as an opponent and defend their point of view.

The development of creative abilities simultaneously serves as a diagnostic tool. The experiment at school was carried out by us for three years. Before starting the elective course chosen by the student, they filled out the modified creative tests by F. Williams [7]. This testing was repeated two more times: in the middle and at the end of the study of elective courses. An analysis of the test results showed that the asymmetry and complexity of students' drawings increase, which indicates an increase in the level of creativity.

The experience of conducting these elective courses shows that they provide for students of "non-chemical" classes, first of all, the necessary minimum of knowledge about the material components of their current and future environment. Students who attended elective courses show a significant increase in interest in the study of chemistry upon re-survey. Some schoolchildren showed an increased interest in the subject of chemistry. Of these, a group of students was formed who expressed a desire to study chemistry at the profile level. There was a steady increase in creative qualities among students in grades 10-11.

### References:

1. Leontiev A.N. Selected psychological works. - M., 1983.
2. Kuverina O.A. The concept of education: a modern view / O.A. Kuverina, L.G. Peterson. -M., 1999.
3. Snmonovsky A.E. Development of the ability for intellectual creativity in younger students. - M., Publishing House of the Moscow Psychological and Social Institute; Voronezh: NPO MODEK Publishing House, 2003. - 272 p.
4. Decree of the Government of the Russian Federation No. 1756-r dated December 29, 2001.

5. Magomedov N.M. A differentiated approach to teaching and educating schoolchildren: Problems. Perspectives. Tutorial. - Samara, Samara University Publishing House, 1993.-251 p.

6. Klimov E.A. Developing man in the world of professions. - Obninsk, 1993 - 344 p.

7. Tunnik E.E. Modified Williams creative tests. - St. Petersburg: Speech, 2003. - 96 p.