

A Creative Approach to Improve Chemistry Effectiveness

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ABSTRACT

This article provides a brief analysis of the creativity concept. Opinions are also expressed on the main features of creative learning and its positive impact on the education quality. Questions of training organization based on creative approach are considered on the chemistry teaching example.

KEYWORDS: *creativity, creative learning debate, non-standard activities*

Socio-cultural and socio-economic changes observed in the world poses a lot of challenges to society in preparing school graduates who are spiritually mature, educated, creative, socially active, who can contribute to the country development. This in its turn highlighted the need for education to move to a creative learning paradigm that provides the highly conducive environment necessary for an individual to develop creatively.

Creative learning as an innovative type of education in our country is shaping the main directions such as shaping creative thinking, developing creative ability and intellectual potential, finding new approaches to solving modern problems. Creative education is education that allows an individual to understand, develop, and evaluate themselves in a creative direction. [1].

The goal of modern education is not only the knowledge quality and acquired knowledge and skills quantity, rather, it is the development of the graduate's ability to make important independent decisions in complex situations, to be mobile and competitive, and to carry out cognitive search that yields significant creative results. An educational institution student can grow up to be a comprehensive junior specialist in his or her study and profession field [2].

Revealing each student's potential is one of the main creative education goals.

The main features of creative education are as follows:

- it is a creative education type, which main direction is the creative thinking formation, the creative abilities and intellectual potential development, the search for new approaches to solving modern problems;
- it is a fundamental and forward-looking education based on looking to the future and understanding the natural development of the economy and society;
- it is a continuing education, characterized by an increase school graduates' professionalism and social responsibility.

The priority of creative education is focused on creativity and ingenuity. At this point let's briefly comment on the creativity and ingenuity concepts analysis.

No matter to what period of history we look at, ingenuity has always been valued as one of the highest qualities of the

individual. We can see that the Thoughts of Eastern thinkers, the views of Greek philosophers, researchers, psychologists and pedagogues also highlighted the creativity and ingenuity development of a person as one of the main topics. Philosophical aspects of the creativity problem in traditional and creative education were presented in the scientific researches as S.F.Martinovich (the creation values are revealed), M. Arkadev (The principle of ingenuity implementation is emphasized), F.T.Mikhailov (specific issues of creativity), A.D.Tsedrinsky and other researchers, summarizing their ideas, creativity can be described as follows:

- one of the approaches to understanding the person and his essence, in which the man essence (his view as a three-dimensional intuitive-conceptual-emotional nature) is understood through self-awareness of spiritual, mental, astral and vital abilities for creative activity (in literature - creative);
- creativity is aimed at the external world development as a means of individual self-realization, and the individual is the self-development subject, his ability to think, choose and recognize, and indirectly the society developing task;
- the ability to generate unusual ideas, deviation from the traditional, algorithmic boundaries of thinking, to think spiritually and creatively to find solutions to problematic situations;
- when acting as a self-development subject at all age levels, integrity and self-awareness of pedagogical consciousness and is the direction of individual pedagogical thinking [4].

From a social and historical point of view, ingenuity manifests itself in a person as a process that occurs at a particular time or as a process related to social relations, as a criterion for evaluating a creative product.

Ingenuity is seen as the "production" of unconventional ideas, the intellectual ability to move away from traditional schemes and to solve problem situations quickly - "ability to think, feel, communicate, to express oneself in individual activities, to represent the person as a whole and its individual aspects, products of activity, the process of their creation" [3].

Emphasizing the importance of creativity and ingenuity in the individual self-development, we consider the ingenuity development through the creative learning process in high school students.

The upper class student not only determines the ingenuity development level in himself, but also determines his vital needs level. He not only tries to understand the possible directions essence of his future activity, but also to analyze his personal meaning, to understand what this activity can give him, how his personality, creative options, skills, tendencies correspond.

The ingenuity development issue is of great importance for creative learning, where the main goal is to develop the learner's ingenuity ability. The ingenuity development in a high school student is directly related to the teacher's ingenuity level development. It is an auxiliary tool to encourage and support mutual cooperation. Creative self-development puts a number of specific tasks in front of the teacher. (Table 1)

Table 1

The educator role in the students' creativity development	Identify mechanisms of individual creative self-development of a high school student
	Orienting a high school student to the creative self-development perspective
	Encourage a creative approach to non-standard situations in life
	Encourage the high school student's analytical, constructive, and critical attitude toward the surrounding reality
	Contribute to high school students' ability development to search for new ways to act independently

The creative education content is formed on three levels: general theoretical presentation, theme and educational materials.

The study material is considered both didactic and psychological aspects. In most general form, the learning material mediates the educational content transfer from the normative social knowledge plane and experience to the individual learning plane. Its purpose is to form a general knowledge and experience for each student. [1]

Besides, it is used in the teachers and learners' activities, i.e. in the problem-solving process. Traditionally, learning materials are structured in such a way as to ensure the knowledge and skills acquisition first. However, modern conditions require a person not only to master knowledge, but also the ability to transfer it from one knowledge area to another; thinking, debating, the ability to prove his / her point and to make assumptions.

There are lots of methods used in creative education to develop the creativity of a high school student. For example, project method (project activities), research method (research activities), creative methods ("six hats of thinking", "katena", "mental cards", "mental attack", "case-method", "random stimulus") and etc. In our study, we focused on the "Project activities" method.

Project activities (project method)- is a complex, integrated process of shaping the creative personality of a high school student. Its uniqueness is that it is unprepared, untested objective knowledge, to be active and independent in solving problems that the teacher or textbook does not have a ready answer without using the instruction or activity algorithms given in the teacher or textbook. Project activities allow students to develop intellectual flexibility, the ability to apply knowledge in non-standard situations, "in the search for similarities, generalizations, in creative approaches to different situations, and so on." [5].

In our opinion, we analyze the example of chemistry teaching process in the general secondary education system. Obviously, chemistry differs from other disciplines by its components. In addition to the theoretical mastery of chemistry, students conduct laboratory work and practical classes. The students' chemical experiments conducting process in can be organized on the basis of creativity-oriented education.

Let's take the topic "Metals corrosion" given in the 9th grade chemistry curriculum. This is one of the practical importance topics. However, in the textbook, this topic is given theoretically but not related to laboratory work or practical training. We suggest doing chemical experiments on this topic during the lesson or as a homework assignment. Chemical experiments are based on a creative approach. This can be done using the "project activity" method. According to it, students choose an object where the corrosion process takes place or create corrosion in a particular metal. Students are divided into groups and conduct practical exercises on the topic, offer their own practical projects on corrosion protection of metals. A group of students who submitted a project with a non-standard, creative approach will be highly appreciated.

Thus, the pedagogical potential of creative education in the creative self-development of the high school student was manifested as a set of opportunities, manifested in the knowledge of methods, forms, means of creative education and the sensitive period of adulthood, which allows to take into account the interests of high school students. In teaching organization in accordance with the creative education principles, the available resources are used in the creative education, which contributes to the use of personal qualities and teacher's creative abilities, changing curricula and programs. It should be noted that the consequences of ingenuity level increasing lead to emotional and personal changes.

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