

RESEARCH ARTICLE

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DIDACTIC SIGNIFICANCE OF PROBLEM-SOLVING ACTIVITY IN CHEMISTRY EDUCATION

Iskandarov Aybek Yuldashevich

Associate Professor of Tashkent State Pedagogical University named after Nizami, Uzbekistan

Abstract

This article analyzes the didactic significance of solving problems in chemistry in chemistry education. It is based on the fact that chemical calculations affect the development of chemical knowledge and skills.

Keywords Chemical knowledge, skills, competence, didactics of problem solving, algorithm.

INTRODUCTION

From the point of view of the didactic purpose of chemical problems, it is a means of integrated application of knowledge and skills, providing integrity between quantitative and qualitative features of chemical language.

Solving chemistry problems should be interesting and have the same effect as the satisfaction received by fans in solving crossword puzzles. Solving problems in the educational process allows ensuring the independence and activity of students, forming solid knowledge, connecting skills and knowledge with life, as well as professional guidance of schoolchildren.

The development of problem-solving skills can only be achieved in one way - through continuous, systematic problem-solving experience. In the process of solving problems, students perform complex mental activity, which develops thinking (knowledge) and logical thinking. The closest interaction of knowledge and skills serves as the basis for the formation of various thinking techniques.

It led to an increase in students' desire to organize their thinking process, develop their abilities in solving problems, and create problem systems based on clear planning of lessons and homework.

One of the tasks set before education is the ability of students to understand the text, to structure the text, to highlight the main and minor ideas, the main idea, to create a sequence of described events, and to find the necessary information from the text and summarize it and interpret it, semantics. is to prepare the basics of reading so that they can be mastered. All this is necessary for obtaining knowledge in any field of activity.

In chemistry lessons, students must learn the symbolic language of this subject. The main component of the natural scientific method of knowledge is the use of models to describe objects and phenomena. Models of chemical processes, graphs, diagrams, transformation schemes, symbols - symbolic tools allow you to structure the material being studied, make changes, and determine the essence and sequence of

phenomena, saving time.

Solving chemical problems is an important aspect of acquiring knowledge about the fundamentals of chemistry. The educational process requires the following didactic principles of learning to solve problems: 1) ensuring the independence and activity of students; 2) achieving solidity of knowledge and skills; 3) ensuring the connection between education and life; 4) implementation of polytechnic education in chemistry, career guidance.

Problem solving helps students to acquire practical skills (calculations and experiments). Problems serve as an important means of developing pupils' thinking. In the process of solving problems, students develop diligence, purposefulness, responsibility and feelings. In the process of problem solving, interdisciplinary links are established, which show that nature and the universe have a holistic structure, which allows students to develop their worldview. The developing function of problem solving is very great, it forms the technique of rational thinking, self-control skills, develops the skills of independent activity. The peculiarity of experimental tasks is the algorithm of solving a problem situation.

The educational role of problem solving lies in the fact that calculation tasks reveal to students the quantitative side of chemistry as an exact science,

theory is connected with practice by setting and realizing tasks, chemical ideas about substances and processes are consolidated and improved in the process of their solution. .

The possibilities of organizing problem-based education on the basis of problem solving, especially qualitative analysis, will be expanded.

In the process of problem solving, students experience complex thinking activity. It determines the development of both the content of thinking (knowledge) and activity (operations, actions) to achieve it. The basis of formation is the close interaction of knowledge and activity. Knowledge used in problem solving can be divided into two types: knowledge obtained by the student when analyzing the text of the task, and knowledge related to the topic of the task, science, without which the solution process is impossible. This includes knowledge of various definitions, basic theories and laws, rules, principles, various chemical concepts, physical and chemical properties of substances, formulas of compounds, equations of chemical reactions, molar masses of substances, etc.

Solving chemical problems is an important aspect of acquiring knowledge about the fundamentals of chemistry. The teaching process requires adherence to the following didactic principles of teaching problem solving:

1) ensuring the independence and activity of students

2) achieving consolidation of knowledge and skills

3) ensuring the connection between education and life

4) Implementation of polytechnic training in chemistry, vocational guidance

Being able to apply knowledge in familiar situations means having skills (solving problems based on formulas derived from laws, theories, principles, rules (following a pattern)). Knowing, being able to apply skills in unfamiliar situations means having competence (solving problems based on changing formulas derived from laws in various forms, generating quantities whose state changes according to a pattern).

To be able to apply knowledge, skills and abilities in practice, to solve life problems means to have competence (solving experimental problems that require creativity and synthesis of knowledge on the basis of theoretical knowledge and practical skills).

There is only one way to develop problem-solving skills - to constantly solve problems. In the process of problem solving, complex thinking activity is carried out, which determines the development of meaningful thinking (knowledge) and meaningful activity (skills). The process of problem solving serves as a basis for the formation of ways of

thinking that provide the closest link between knowledge and skills.

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