

Didactic Possibilities Of Teaching Students To Solve Problems In Chemistry Based On An Individual Approach

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Abstract: In chemistry lessons, it is advisable to simultaneously solve experimental and computational problems alongside studying theoretical material. This article discusses the issues of teaching students to solve chemistry problems based on an individual approach.

Keywords: Ability, trajectory, intensity, strategy, topic, problem, science, approach, reflex, problem-solving.

Introduction: The direction of individual education is based on the student's self-definition. The result of designing an individual approach is the student's choice of the path towards the goal.

The essence of education is not merely the transmission of knowledge, but providing the conditions for personal self-awareness. The task of an educational institution is to offer comprehensive educational services that enable the student to fully implement the "I want-I can-I am able-I must" formula.

In chemistry lessons, it is advisable to simultaneously solve experimental and computational problems alongside studying theoretical material. Usually, all problems in chemistry, by their content, first and foremost relate to theory, laws, the properties of substances, the conditions of chemical reactions, as well as the formulation of chemical equations. Regularly solving problems allows the application of knowledge gained from chemistry and related subjects in similar and new situations. All of this requires high-level reasoning and logical thinking. [2]

THE MAIN FINDINGS AND RESULTS

Teaching students to solve chemistry problems based on an individual approach involves creating an

educational environment that encourages gifted children to work in a specific direction, giving them the opportunity to become the subject of their own activities by accumulating individual knowledge and life experience, individualizing the educational process, expanding the field of activity, and organizing a space for reflection.

Teaching students to solve problems in chemistry based on an individual approach provides the following didactic opportunities:

- 1) building an individual educational trajectory for a gifted child;
- 2) increasing the pace of learning educational material;
- 3) enriching educational material in the direction of deepening and increasing its volume;
- 4) increasing the intensity of classes; that is, building the educational process in accordance with the main strategies for teaching gifted children:
 - 1) acceleration - faster learning than in lessons.
 - 2) deepening - deeper study of the material.
 - 3) enrichment - education beyond the scope of studying traditional topics by establishing connections with other topics, problems or disciplines.

4) problematicity - the use of original explanations, the search for new meanings and alternative interpretations, which help the student form an individual approach to studying various areas of knowledge, as well as a reflexive plan of consciousness.

When describing the didactic possibilities of teaching students to solve problems in chemistry based on an individual approach, it is necessary to determine what its tasks are.

Tasks:

- Development of the student's personal and professional self-determination, social adaptation abilities.
- Development of the ability and readiness to independently study chemistry, with its help self-education in various fields of knowledge.
- Gaining experience in creative activities, design and research work.

Expected result:

Formation and development of individuality, independence, creative potential of the person.

Main areas of work:

1. Information-analytical (collection and analysis of information - this is observation, conversation, study of documents);

Based on the data, a psychological and pedagogical description is compiled.

General information about the student

Social status of the student

Communication with the group

Academic activity

Personal orientation and special abilities of the student

Student's health

2. Diagnostic (diagnostics of personal potential).

The purpose of this stage is to study in detail the psychological and pedagogical aspects of the student in order to identify his personal qualities.

3. Preparation.

- acquiring the skills of scientific organization of work.
- formation of stable cognitive interest.
- research assignments, homework and optional elective assignments,
- preparation of reports, projects, research works.
- participation in competitions and Olympiads.

4. Developer.

- development and expansion of the student's cognitive interests.
- formation of research skills.
- development of the student's information culture.
- writing research papers and essays
- participation in olympiads, internet projects and contests.

A work plan for teaching problem solving in chemistry based on an individual approach

Events	Transfer time
Data collection	September
Diagnostics (questionnaire)	October
Working with a teacher	november
Individual lessons	every Wednesday at 15:00
Teaching	During the school year

Planning lessons for teaching problem solving in chemistry based on an individual approach

Subject	Tasks, methods of work	Term	Forms of control	A sign of accomplishment
Solving problems	Working with a set of problems	4.09		
Solving problems	Working with a set of problems	12.09	in class	card

Solving problems	Working with a set of problems	19.09	individual	card
Solving problems	Card	25.09	in class	work in class
Convert schemes to reaction equations. Write reaction equations	Working with a textbook	3.10	Class work	card
Solving complex reaction equations	Presentation	10.10	Individual work	Test
Solving complex reaction equations	Textbook, cards	17.10	Class work	Cards
An in-depth study of oxides	textbook	24.10	Individual work	Test
An in-depth study of the topic "oxides".	cards	14.11	Individual work	Test
An in-depth study of the topic "acids".	Textbook	21.11	Individual work	Test
An in-depth study of the topic "acids".	Cards, tests	28.11	Class work	Cards
An in-depth study of the "Fundamentals" topic	Presentation	4.12	Class work	Cards
An in-depth study of the "Fundamentals" topic	Textbook	11.12	Individual work	Test
An in-depth study of the topic "Salts".	Presentation	18.02	Class work	Cards
An in-depth study of the topic "Salts".	Test	25.02	Class work	Test
Genetic relationship between major classes of inorganic substances	Cards	3.03	Individual work	Cards
Genetic relationship between major classes of inorganic substances	Cards	10.03	Individual work	Cards
Preparation for the project in chemistry	Cards	17.03	Individual work	Cards
Preparation for the project in chemistry	Cards	7.04	Individual work	Cards
Execution of the project	Test	14.04	Individual work	Cards
Execution of the project	Test	21.04	Individual work	Test
Execution of the project	Test	28.04	Individual work	Test
Working in the park	Test	12.05	Individual work	Test
Working in the park	Control test	19.05	Control work	Test

The didactic possibilities of teaching students to solve problems in chemistry based on an individual approach are high, and through the material provided, students

acquire qualitatively higher knowledge than those who acquire it through oral explanations. The content of the didactic material can be different, they:

- 1) tasks that require an answer by analogy;
- 2) tasks requiring analysis of existing knowledge;
- 3) tasks that require certain conclusions.

The advantage of didactic material over other visual aids is that it allows the teacher to change its structure. It is used not only as an exhibition material, but also as handouts, cards.

Compilation of didactic material requires certain rules, they

- full compatibility of natural chemical elements with concepts;
- the more difficult the material is for students to master, the more carefully the selection should be carried out;
- the best conditions should be created for conducting meaningful research work by combining natural and artificial aids in the lesson, etc.

Flashcards are a set of information, tasks, and questions that contain basic information and supporting solutions, with the help of which students can perform practical work in class and outside of class, individually, in groups, or as a whole class.

CONCLUSION

The methods used during the lesson are selected taking into account the age and individual characteristics of the students, their readiness, allow predicting the results of the students' study and development, and correspond to the purpose of the lesson, the content and nature of the educational material, the level of knowledge and skills of the students, the material support of the lesson, the individual characteristics of the students, their capabilities and readiness, and the characteristics of the time budget.

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