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Methodology Of Formation Of Individual Educational Trajectory Based On Electronic Educational Resources In Chemistry

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Abstract: An individual educational trajectory is determined by the student's educational needs, individual abilities and opportunities, as well as existing standards of educational content. The article describes the stages of developing a state educational program, developing an individual educational program or route, and forming an individual educational trajectory in chemistry based on electronic educational resources.

Keywords: Problem, trajectory, resource, informatization, ability, material, module, need, interest, ability.

Introduction: Currently, the development of students' abilities and capabilities, the creation of conditions for the formation of an active, mobile personality is one of the priority areas of educational institutions. However, in the modern educational process, little attention is paid to taking into account and developing the individual characteristics of students. The school mainly uses the frontal form of teaching with the monologue method, which plays a passive role for students in the lesson and does not involve taking into account their individual characteristics.

Among the studies on improving the teaching of chemistry, the teaching and improvement of chemistry in the continuing education system, its philosophical and pedagogical foundations were studied by Kh.T. Omonov[4], and the organization of students' independent work in the process of teaching organic chemistry was studied by E.U. Eshchanov, Kh. Rajabov, and D. Vapoev [7].

Modern school education is characterized by a conflict between the frontal education of students in school and the needs of individuals. Reducing the number of classes is not a solution to improve the opportunities for individual attention to each student. However, with a relatively small number of students, taking into account their individual characteristics is not automatically ensured. In school practice, there are often situations when the opportunities for individualization of education in a class with a relatively small number of students are not used. At the same time, there are teachers who have managed to individualize educational work very successfully even in large classes.

To achieve this goal, it is possible to form an individual educational trajectory based on electronic educational resources, which is directly related to the individualization of the educational process.

An individual educational trajectory is determined by the student's educational needs, individual abilities and capabilities (level of readiness to master the program), as well as existing standards of educational content [5].

The concept of "individual educational trajectory" [8] has a broad meaning and includes several directions of implementation:

- content-based (variable curricula and educational programs that determine the individual's educational direction);
- activity-based (special pedagogical technologies);
- procedural (organizational aspect) [3].

Thus, the individual educational trajectory ensures the existence of an individual educational direction (content component), as well as a developed method of its implementation (technologies of organizing the educational process) [6].

The need to form an individual educational trajectory based on electronic educational resources in chemistry arises from the following considerations:

- an increase in the number of students who cannot study in the regular system due to behavioral characteristics or developmental deviations;
- communication difficulties that have arisen in a certain part of students, including inability to adapt to ordinary school life and constant reluctance to study in the classroom system, etc.

When forming an individual educational trajectory in chemistry based on electronic educational resources, the state educational program is structured as follows:

- based on the basic curriculum;
- determines the direction of a segment of education

and ensures the student's transition to the main stage;

- expands the possible methods of achieving educational goals through the use of new forms of educational work included in the programs.

An individualized route is a specific program of actions for a student and a teacher at a certain stage of learning.

An individualized educational program or route is drawn up for half a year, after its implementation, it provides reasonable recommendations for the student's transition to the classroom system.

The structure of an individualized educational program or route can be determined as follows:

- indicate a specific period of school time, which should usually be half a year;
- should take into account the accelerated or slow pace of development of students;
- should include a schedule for the implementation of educational modules, indicating control tasks, tests, exams [2].

The educational plan divided into educational modules forms the substantive basis for the formation of an individual educational trajectory based on electronic educational resources in chemistry. Each module is created in the form of an organizational-pedagogical document that can be used by all participants of the pedagogical process [1]. That is, it includes:

1. Chemistry
2. Chemistry syllabus
3. Module name
4. Number of hours covered by the module
5. Method of implementation (independent study, small group or individual lessons with a teacher)
6. Reporting form (tests, tests, exams)

It ensures the high quality of the educational process of forming an individual educational trajectory on the basis of electronic educational resources in chemistry. It includes the use of the following forms of work in the manifestation of cognitive activity:

1. Individual research projects;
2. A special system of classwork, homework and extracurricular work.

In this regard, it is fundamentally important to give the student the opportunity to choose. This can be choosing the level of difficulty of the theoretical problem, choosing the volume of work, etc. The methodology for forming an individual educational trajectory in chemistry based on electronic educational resources is unimaginable without the introduction of modern information technologies, the entire education system

from kindergarten to secondary school graduation and subsequent forms of training and retraining of specialists based on electronic educational resources.

Informatization of the school education system is aimed at forming a new generation that, in terms of its level of development and lifestyle, meets the conditions of the information society. Solving this problem should help graduates find a prestigious and well-paid job, shape their cultural image, leisure and entertainment world, develop their personal abilities to the maximum, and prepare themselves to live and work in the information world.

Domestic and foreign practice shows the prospects of modular-differentiated teaching, which is characterized by advanced study of theoretical material in expanded blocks - modules,

algorithmization of educational activities, completeness and consistency of knowledge periods. Modular-differentiated organization of the educational process allows you to modernize traditional teaching methods.

The methodology for forming an individual educational trajectory in chemistry based on electronic educational resources ranges from information control to consulting and coordination. This form of education allows for a more complete account of the needs, interests and abilities of the student, that is, it allows building an individual trajectory of his development, since the student independently plans his educational activities, sets goals for himself and achieves them.

The methodology of forming an individual educational trajectory based on electronic educational resources in chemistry includes the following stages.

Table 1

Stages of formation of an individual educational trajectory based on electronic educational resources in chemistry

Step	Teacher activity	Student activity
Installation - motivational stage (solving organizational issues)	formation of internal motivation, identification of the problem, construction of a tree of concepts, determination of ways to solve the identified problem	the extent to which he has mastered the subject matter necessary for comprehension
	Identify the problem	To what extent do I want to master this subject (OBJECTIVE)
	build a concept tree	
	defining ways to solve the identified problem	
Content-search (Installation - includes work on solving the problem identified at the motivational stage)	Dividing the material into levels	Analysis of readiness to perceive the subject
	Provide feedback that demonstrates your understanding of the issues at hand	Analysis of the complexity of the presented material
		Comparing studied material with new material
		Basic selection of the next job level
Content-search Practicing lecture material	Creating multi-level learning maps	Analysis of preparation for the lesson according to the purpose
	Advice and coordination support	Analysis of assignments
	Step-by-step control and analysis of completed tasks	Selection of tasks at a certain level
		Perform tasks according to the selected level
		Self analysis Identifying problems

Control - content stage (Primary understanding of the obtained results)	Preparation of multi-level control work	Analysis of preparation based on self-assessment
	Determining gaps in students' knowledge	Select the level of work to be performed
	Correction of knowledge	Completing tasks
Adaptive-change stage (skills to apply theoretical knowledge in practice are formed)	Preparation of educational maps	Choose a level
	Advice and coordination support	Perform work according to the selected level
Systematic - summarizing stage (Compilation of educational material, systematization of knowledge, skills and qualifications, correction of formed knowledge, skills and qualifications)	Preparation of educational maps according to identified problems	Analyze the relevance of the objectives set by the results of self-assessment and interim control
	Group and individual counseling	Identify problems
	Advice and coordination support	Reselect the next level of work
		Work with instructional maps to eliminate shortcomings and systematize the material
Control-reflective stage (Final control, checking and analyzing creative assignments, identifying problems for the new module)	Preparation of multi-level tasks	Analyze preparation for the final work
	Control of work performance	Analysis of proposed work assignments
		The final choice of the proposed job, the choice of job level

The problem of increasing the effectiveness of forming an individual educational trajectory in chemistry based on electronic educational resources has been widely studied by foreign and domestic teachers, and various achievements have been achieved in this direction. At the same time, it is necessary to introduce changes and additions to the methods and technologies created so far in order to adapt them to modern requirements, and to improve them. In this regard, it would be expedient to emphasize the formation of an individual educational trajectory of students in chemistry based on electronic educational resources.

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