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ISSUES OF DEVELOPING RESEARCH COMPETENCE IN STUDENTS BASED ON THE PROJECT METHOD

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Abstract
Currently, effective use of innovative technologies, advanced methods of world pedagogy in the educational process are urgent issues, and the project method incorporates advanced methods of education. The project method has the important task of mastering the existing experience and applying it at all stages of education during the training of a biology teacher. This article is devoted to the issues of development of research competence in students using the project method in the educational process.

Keywords: innovative technology, project method, research, assessment, independent thinking, independent decision-making, presentation, design methods, project passport, technological map, project expertise.

The design method is the activity of determining the method, method and means of providing the educational information to the student, creating a model of the future activity of the educator, choosing methods and tools during the time set in the existing conditions, determining the stages of achieving the goal, knowing how to set the goal correctly, forming separate tasks based on them. Organization of biology education on the basis of the project method makes it possible for the student to carry out complex training that involves practical application, analysis and evaluation of knowledge and skills.

If the design method is compared to the use of other teaching methods, learners, that is, students, in the process of mastering a new subject, actively participate in its planning, organization, analysis of existing results, and self-evaluation during the performance of the task assigned to the lesson. The method of educational projects teaches students to easily understand the subject by solving specific tasks in the lesson. A design approach can be interdisciplinary, within a discipline, or within a discipline.

Designing is carried out in two ways - on an individual and group basis. Both directions have their own positive and advantageous features. The use of design methodology in biology classes increases the quality and effectiveness of education in the educational process, directs schoolchildren to independent activity for a specific purpose when working on a project based on a specific plan. Ultimately, the following characteristics are formed during the research work carried out by students within a specific project in biology classes:

Currently, the introduction of such technologies and methods in the educational system not only helps students to learn the subject easily, but also serves to organize an individual approach of teachers to students. Now, according to the new educational standards and curriculum, the content of the textbooks, students focus more on developing the skills of learning to work on themselves,

independent preparation of practical activities in the classroom and extracurricular activities. In this sense, while teaching students to work on themselves in biology classes, they are guided in the form of small studies to choose an interesting topic and study the problems directly related to it.

Small studies of this form directly allow the student to acquire modern methods of information search, processing and use, to master some methods of scientific and research activity, to determine his research position, to continue his small research, and to bring research skills to the level of competence over time.

In the literature related to education, the concept of competence is presented by many scholars' research opinions. Competence is the ability to use acquired theoretical knowledge, practical skills and competencies in solving practical and theoretical problems encountered in everyday life and to be able to apply it in practice. Competence (Latin: competences – capable, capable) is the level of real compatibility of a person's knowledge, skills and experiences with his socio-professional position and the fulfillment of his tasks and problem solving [6].

There are different approaches by scientists to understand the essence of research competence, one group of them[1] emphasizes the acceptance of research competence as the main component of competence, and the second group of experts [2,6] the knowledge and skills necessary to organize research activities are one they believe that it is the whole set. In this regard, we recommend the following working definition for the research process in our study.

Research competence can be defined as personal skills that are formed in the process of research aimed at independent knowledge based on the goals and tasks of solving the chosen problem. The main idea of the research is to attract students who are capable of seeing, formulating and solving current scientific problems, finding new creative solutions and implementing them in practical activities, and developing their continuous innovative training system within the framework of scientific research activities.

The transformation of skills into competence in the right school students seems to be a somewhat difficult matter, and the acquisition of direct research competence by school students is a gradual process. That is, the student always needs spiritual support and attention from his teacher, as the student conducts small researches, researching the object being studied, directing it to scientific activities such as independent study, research, reading literature, sorting internet information, etc., is done in cooperation with the teacher.

In this, the abilities and skills of the students are determined, that is, what kind of research work they have been engaged in during their studies in the classroom, in general, until they reach the current educational stage, and also whether they have motivation to complete small projects or not.

After that, they will be informed about the following types of research activities, which can be participated in the educational process by a general secondary educational institution or can be performed independently, and the preparation of a research project will be planned.

There is an understanding that the completion of the project is directly dependent on one's own work, which creates a high sense of responsibility in the student;

During all stages of the design process, from the birth of the idea to the final reflection, students gain experience;

becomes a fully controlled process in the development of students' most important knowledge and skills (research, evaluation, independent thinking, independent decision-making, presentation).

The methodological passport of the educational project is a brief description of the intended purpose of the educational project, its place in the educational program. The methodological passport of the educational project reflects the following:

- topics in the curriculum of the subject;
- educational, educational, developmental goals of the subject;
- educational and pedagogical tasks;
- an educational project assignment based on the age characteristics of the students;
- the duration of the project and the mode of operation of the educational project.

Below we present the technological map of the lesson prepared for the educational process.

The technological map of the educational session using the project method

Stages and contents of work	Educational activity	
	Teacher	Student
The stage of preparation or preparation for the educational process	Defines project topics and purpose. Introduces learners to the essence of the design approach. It offers a number of topics, provides information about the content of the project, forms its scope, lists the types of work, their results and evaluation criteria	Students join a group, choose a project topic and discuss it. They will receive additional information when necessary. They determine the goal, discuss the results of work on the project
1st stage planning	Offers ideas, makes suggestions. Recommends the source of information and methods of its collection and analysis. Defines the work order and evaluation criteria for intermediate steps and the process as a whole	They choose an action plan: they formulate tasks, determine the direction and stages of execution, they determine the order, distribute tasks among group members. They agree with the teacher on the method of analysis of the results (form of report).
2 - a thorn research	He observes, advises, helps to find a source of information, is a source of information himself	They do the research. They collect information, solve intermediate tasks
3 - stage Information analysis. Forming conclusions	Manages the entire process, keeps feedback	They analyze the received information and form conclusions
4th stage report	Listens, becomes a regular participant, asks targeted questions, empowers and motivates	They give an account. The results of work are presented in the form of: oral report with presentation of oral report materials, written report in the form of a project
5th stage Evaluation of process and results	Evaluates comprehensiveness of problem solving, group action strategy, learner strength, quality of resource use, creative approach, continuity of work, quality of reporting, etc.	Through team discussion, they defend and evaluate the work results and its progress, including the degree of completeness of problem solving and the strategy of action.

After the selection of the topic and individual work with the student-teacher, a public presentation of the research topics is held, where the students present the goals and objectives of their future project work and talk about their work plan. This kind of activity psychologically causes students to form their personal "I" correctly, to develop their interest in being able to show their achievements.

During orientation to research, it is appropriate to select the topics of project work in advance, taking into account the personal interests and capabilities of students, based on the characteristics of career orientation. In this regard, it is necessary to develop the skills of students to perform work and

demand a responsible approach to it. Teachers constantly monitor the progress of students in the implementation of project work and monitor the development of their skills.

The stages of implementation of design activities are analyzed:

- Preparation stage:

a) the topic of the project is selected, its relevance and the problem to be solved are formulated.

b) the purpose, subject, object and tasks of the project are defined.

c) types of design activities and tasks to be solved are prepared, methods and means of solving them are selected.

g) get acquainted with the literature and information sources on the subject of the project.

Based on the results of the selected subjects, an individual plan is drawn up for each student. Based on this plan, students will find the necessary biology literature, study and analyze it with the teacher, organize experimental work, set up requirements for use in laboratory rooms, set up experiments, observe and record the results, and copy the results of the research into a notebook. Also, biology teachers are working on teaching the student to write abstracts, articles, and research work.

- Stage of planning educational activities.

a) the sequence of achieving the goal is developed.

b) A work plan is drawn up (designation, formalization of the project, its preparation for presentation, distribution of tasks among the participants for the preparation of the report, the deadline for their completion and completion is determined).

Weekly meetings are organized based on the individual plans of the student working on each project. The organization of research work is carried out at the expense of the student's activities outside the classroom and in clubs, provided for in the curriculum. However, at the same time, which is one of the urgent tasks of directing students to scientific activities, it is appropriate to allocate separate hours for research work, and in this regard, it is appropriate to properly evaluate and encourage the activities organized by teachers with talented students.

- Project execution stage.

a) the necessary information is collected, brought into the system and analyzed.

b) the process of formalizing research results (will be brought to a ready state).

c) a report on project activity is prepared in accordance with the guidelines.

In the upper classes of general secondary schools, they formulate a project implementation plan as follows.

Work plan for project implementation

Participants	Assignment	Type of activity	View of the finished product	Fulfillment term
*	Identifying the participants within the project, defining the task of each participant	A list of participants is drawn up, depending on the capabilities of the participants, the items in the accounting policy of the enterprise in the field of activity selected for the project are distributed among themselves.	A project implementation plan is formed	**

	Formation of project subject information bank	A database reflecting the specific characteristics of the selected project topic is formed	Project passport	
	Formalization of the project	Collection of results of project work	The project is ready	
	Preparation of a report on the results of design activities and project presentation	To justify the relevance of the topic and the problem, to indicate the goals and objectives of the project, etc	Report	
	Preparing a project presentation in MS Power Point	General formalization of the presentation and double-checking its content, adding new slides, etc	Presentation	

Note:

* participants in each group and F.I.S. of the participants based on the existing situation are determined;

** deadlines are determined on a case-by-case basis, depending on the selected project direction and the situation in the group.

- Preparing the project for presentation.

a) Prepare a project presentation using the presentation preparation guide in MS Power Point.

b) tasks are defined among the group members in the oral presentation of the project.

c) public presentation, project defense and assessment

In order to prepare a report on the project work, the student should organize his activities based on the following guidelines:

a) expression of conclusions (on the basis of text no more than 1 page) proving the implementation of the proposed and recommended project.

b) based on the problem you want to solve (in 5-6 words).

c) the purpose of the project: it is indicated why it is created, what the final product will be and who it is aimed at (through 1-3 proposals).

g) the tasks of the project are expressed (short and unambiguous).

d) the work plan of the project is described.

e) the results of the task solution and the work performed in the project are shown.

j) conclusions confirming the possibility of implementing the proposed project product are formed.

z) the list of resources used for the completed work is shown.

A clear system of project expertise not only determines the winner objectively, but also creates an objective assessment of the quality of the project, monitoring of elements of work on the project.

An expert commission will be established for expert evaluation of the project. Parents, teachers of higher educational institutions, school teachers who have the necessary qualifications can be included in this commission. In the process of evaluating the results of the completed educational project, attention is paid to the quality of the project, the process of working on the project, the effectiveness of the work, difficulties and ways to overcome them.

At the end of the training, the project portfolio - the students prepare a report summarizing the documents, data, visual aids collected during the implementation of the project and place it in the project portfolio. At the end of the training, the topic of the upcoming training and independent tasks for its preparation will be given.

After all, junior researchers in general education schools, tomorrow, when they go to vocational colleges, academic lyceums, and higher educational institutions, first of all, their research skills should be turned into competence, and in order to develop them, students should have all-round knowledge and skills in class, extracurricular and extracurricular activities. the main foundation must be poured. In such conditions, orientation to science not only interests students to participate in Olympiads, various step-by-step competitions, but also teaches them to use their free time productively.

Another stage in the development of research competence of high school students is to teach the student to write a research paper, first of all, to explain and implement the art of writing small scientific articles on the result of his scientific work. This method of engaging students in research activities allows them to acquire research work skills, teach them to present their work, and ultimately develop the skills of self-management, real demonstration of acquired knowledge and skills based on presentation.

A didactic system will be developed within the framework of the research results achieved by the students on the basis of the formation and development of research competences in biology. That is, students will be given the opportunity to carry out research work in the existing forms of education in general secondary schools. In order for the student to continue his research work and develop his interest in it, showing his achievements and results in various contests, showing them as an example, and frequently being recognized by the school administration and teachers also make a great contribution.

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