WHAT ARE THE BENEFITS PROJECT-BASED LEARNING IN BIOLOGY LESSONS

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Abstract: The ability to solve problems is a most important general cross-curricular competence that a student needs to acquire in order to complete compulsory primary education in the world. This competence implies that the student is competent to engage his/her individual capacities (knowledge in different subjects, experience gained outside the school, as well as intellectual, emotional, and social abilities) and other resources at his/her disposal (various sources of information, tools, books, experiences of other students, teachers, and other persons from school and out-of-school environment, etc.), selectively and purposefully uses them, persists in solving problems, and finds an effective solution to the defined problem situations that occur in the course of learning. According to the literature, Project Based Learning is considered to be one of the teaching methods that contributes to the achievement of this competence. Project Based Learning is a problem solving method that introduces students to the processes of researching, finding and concluding, as well as keeping records of what has been done. The project should integrate and connect the contents of different subjects, connecting knowledge gained by the student through his/her own experience at the same time. Project Based Learning is an innovative model that changes the role of teachers and students. The teacher is the coordinator who encourages and directs the teaching process, while the students are the main stakeholders in the activity. All these are the reasons why Project Based Learning is a stimulating challenge for teachers, which requires their great expertise and responsibility.

Keywords: Project-based learning; Biology Education; teaching aids and methods; Education for secondary schools;

The development of the education system in Uzbekistan is bringing it to the level of world standards mostly characterized by the organization of activities in two directions. The first is to study, summarize and analyze the achievements in the field of education inside the country. First of all, it is important to determine the current state of education, the needs of society, having studied the nature and content of progress in the field of education. This allows us to determine what has been achieved in the formation of civil society and what potential opportunities exist for the future. Preliminary studies show that as a result of aligning the activities of teachers and schools by the following requirements of society, the republic has accumulated a lot of advanced experience in the field of personality formation, assessment of achievements, as well as education management. Therefore, the generalization and widespread use of these materials is important from the point of view of restructuring the Uzbekistan education system on a national basis. Secondly, the study and generalization of progressive aspects of the labour experience of developed foreign countries and their implementation, taking into account national and moral characteristics is an important problem and is distinguished by its relevance. A lot has been done in this direction in Uzbekistan in recent

years. The quality of these practices, considered as pedagogical innovations, is determined by the general level of development of the citizens of a given country, and the life skills formed in the younger generation act as necessary indicators of the general level. At the beginning of the 21st century, the reconstruction, modernization of the education system in Uzbekistan and the implementation of this work using active and interactive methods are considered a priority task. New pedagogical research is obliged to solve them. Project-based teaching is one of the most well-known active teaching methods for biology students. Currently, we are facing the task of attracting a high percentage of Uzbek youth in those fields that are usually called fundamental sciences. Project-based learning is a teaching method in which learners gain knowledge and skills by working over a long period to explore and answer an authentic, engaging and challenging question, problem. The main task of the modern school is to raise people who "learn to learn". Prospectively, the student should solve the problem, search for information, look for ways to solve the problem, analyze the solution results and improve the research activity. Project-based learning makes the educational process more efficient because the learner better assimilates the knowledge acquired and can choose the optimal set of knowledge required in life. Project-based learning is based on constructiveness. Project-based learning owes its origin to the American philosophers who belonged to the pragmatic school of philosophy. The main supporter of this method was U. Kilpatrick. He was influenced by John Dewey's principle of pragmatism. Kilpatrick defined the project as a "purposeful activity" by using these ideas. According to Kilpatrick, projects had four phases: goal setting, planning, implementation, and evaluation. Ideal progress occurs when all four phases begin and end with the students, not the teacher. In his opinion, when students use "freedom of action", they can get independence, judgment, and ability to act.

Features of project-based learning include the followings:

- Projects are student-oriented. Students have the autonomy to make decisions about all aspects of the project;
- Projects are problem-oriented. The problem plays a leading role in the organization of concepts and principles, guides and directs activities;
- The results expected are cognitive and practical;
- Students interact with the real world through projects.
- Projects are implemented within the framework of cooperation.
- Projects require working together to achieve a goal;
- Projects usually involve multiple disciplines;
- Projects take a lot of time

Examples of Biology Projects

Environmental Science: Investigating local water quality, designing a school garden with different soil types, or creating a plan for habitat restoration.

Genetics: Studying genetic variation in fruit flies or exploring DNA structure through models and digital tools.

Microbiology: Researching antibiotic resistance in bacteria or enzyme activity under different conditions (pH, temperature).

Data Analysis: Using real NASA data to understand biological phenomena

List of used literature and sources:

1.https://www.researchgate.net/publication/362239737_PROJECT-BASED_LEARNING_IN_BIOLOGY_LESSONS
2.https://ppublishing.org/media/uploads/journals/article/YSJ_7-8_p12-15.pdf
3.https://www.google.com/search?q=Project+based+learning+in+biology&rlz=1C5AJCO_enUZ1194UZ1196&oq=Project+based+learning+in+biology+&gs_lcrp=EgZjaHJvbWUyBggAEEUYOdIBCjM3OTEwajBqMTWoAgiwAgE&sourceid=chrome&ie=UTF-8&sei=zzhfafiMCY6G9u8PrPavyAk.