



## CREATIVE EDUCATIONAL ENVIRONMENT AS A FACTOR OF FORMULATION OF NATURAL SCIENTIFIC LITERACY IN STUDENTS

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**S.Abdurizaeva**

Doctoral Student At Uzsrps Named After Kari Niyazi, Uzbekistan

### ABSTRACT

The article describes the general characteristics of a creative learning environment, compares traditional and creative learning environments, and also analyzes the types and levels of tasks of the PISA International Assessment Program, by creating a creative learning environment in the educational process and their application in practice.

### KEYWORDS

Creative environment, creative thinking skills, innovative technologies, laboratory and practical classes, human capital.

### INTRODUCTION

Modern innovative economy in accordance with the implementation of the decision of the President of the Republic of Uzbekistan dated April 29, 2019 "On approval of the concept of development of the public education system of the Republic of Uzbekistan until 2030" No. PF-5712

ensuring the participation of students and achieving high results in the international PISA, TIMSS, PIRLS programs that meet the requirements.

On the basis of the "Concept of Development of the Public Education System of the Republic of Uzbekistan until 2030", the issue of participation in these programs has been further strengthened. According to the target indicators of the concept, in the ranking of the PISA assessment program, Uzbekistan will be among the first 30 advanced countries by 2030 access goals are advanced.

The creation of a creative educational environment in educational institutions is an important necessity today, which is comprehensively developed in general

secondary schools, inculcated in the mind and heart of the ideas of the national ideology, acquires special and mega competence in the base, science, is ready to continue education and independent life in a highly developed information society. creates a foundation for the development of a person.

The creation of a creative educational environment requires the systematic organization of the information and communication space, which allows students to acquire knowledge, skills, competences, support, special and mega-competence related to science, as determined by the DTS.

The goal of creating a creative educational environment in general secondary schools is to expand the space for students to choose their own educational trajectory (direction and speed), to have the opportunity to use modern educational resources, and in certain cases, to eliminate the barrier between the educational institution and the world education system.

The creation of a creative educational environment for parents implies the expansion of the educational opportunities of their children, the reduction of obstacles arising due to competition in the educational market, the transparency of the educational process and the continuity of control, the creation of communication with the participants of the educational process.

Forming a creative educational environment for the teacher, in the application of information and innovative technologies in the educational process, reducing bureaucratic burdens in the preparation of documents necessary for pedagogical activity, due to the automation of the educational process, the

process of monitoring and evaluating the performance of educational tasks by students in academic subjects will be eased, educational and educational the organization of monitoring of the educational process will be facilitated, new opportunities will be formed in the organization and management of the educational process, a new opportunity will be created for the development of students' educational motivations, and the conditions of individual work with students will be renewed.

Considerable research is being carried out in the republic to improve students' natural-scientific literacy. In particular, in the research conducted by the scientist M.Ergasheva, the Testing platform was developed, which is an electronic system aimed at forming students' skills in working with assignments within the framework of international assessment programs (PISA, TIMSS, PIRLS), video manuals, various international publications and test assignments. is an innovative platform that includes According to the statistics of the testing platform, the average overall assessment result of 15-year-old schoolchildren in all regions of our republic on PISA reading, natural-scientific literacy was 8.8%.

This is a very low indicator, not limited to monitoring and evaluation, but taking into account the general characteristics, goals and tasks of the international assessment program PISA, the formation of a creative educational environment in accordance with the taxonomy of B. Bloom's educational goals in the process of biological education, the knowledge previously acquired by students , it is necessary to teach them to creatively apply their special competences in terms of skills, competences, support and science in new unexpected situations.

The international assessment program PISA monitors and evaluates students' acquired knowledge, skills, competences, knowledge and scientific literacy in a six-step 1000-point system.

Students who have achieved level 1 have achieved the knowledge learning goal of B.Bloom's taxonomy of learning goals, and they:

- Uses basic knowledge with everyday content in explaining simple scientific phenomena;
- Carrying out research elements in accordance with the given instructions with the participation of no more than two objects;
- Determining and interpreting simple cause-and-effect or correlational connections that require low-level skills in pictorial and visual data;
- Should choose the answers given for the scientific explanation of the problem related to the personal, local and global context of the familiar situation. (0-335 points)

Level 2 learners have achieved the Comprehension Learning Objective of B. Bloom's Taxonomy of Learning Objectives, where they:

- Scientific explanation and interpretation of data based on everyday content and basic methods, knowledge of problems solved through simple experience;
- Being able to make an adequate conclusion from a simple set of data based on natural scientific knowledge;
- He should demonstrate his knowledge of basic knowledge through familiarity with the questions

studied by means of scientific methods. (336-410 points)

Students who have achieved level 3 have achieved the application learning goal of B.Bloom's taxonomy of learning goals, and they:

- Relying on simple knowledge to explain and determine the structure of objects in a familiar situation;
- Explain unfamiliar or somewhat complicated situations using key words;
- Carrying out simple experiments covering specific issues based on some elements of knowledge;
- Must be able to distinguish between scientific and non-scientific questions and provide evidence for scientific conclusions. (411-484 points)

Students who take level 4 have achieved the analysis learning goal of B. Bloom's taxonomy of learning goals, which is:

- Uses sufficiently complex or abstract knowledge to explain complex or new situations and processes;
- Conducts experiments covering specific issues on two or more independent objects, substantiates an experiment plan based on knowledge methods and methods;

He should be able to interpret simple or familiar information, draw conclusions based on data analysis, and justify his conclusions. (up to 485-559 points)

Students who achieve level 5 have achieved the synthesis learning goal of B. Bloom's taxonomy of learning goals, which is:

- To abstractly explain the task about events, events and processes, which are unfamiliar to students, the level of severity is complex, the content of which includes several causal connections, using natural-scientific ideas, laws and concepts;

- Apply complex knowledge of scientific knowledge to interpret and evaluate different methods of conducting experiments and justify their choice, apply theoretical knowledge to interpret information and form hypotheses;

- It is necessary to evaluate various methods of conducting research in connection with the given task from a scientific point of view and to determine the limitations of the data in the interpretation of the facts, to identify the errors and inaccuracies of the scientific evidence in the information. (up to 560-633 points)

Students who achieve level 6 have achieved the final learning objective of B. Bloom's Taxonomy of Learning Objectives, which is:

- In formulating or predicting a hypothesis about a new phenomenon, events and processes that are relative in terms of content, based on the content,

Student status

Traditional environment

Student status

Creative environment

Acquires information



Makes a sound decision

Does not affect the person



It affects the development of the personality

procedure and methods of scientific knowledge from the interrelated natural-scientific ideas, laws and concepts in the fields of physics, biology, geography and astronomy;

- To be able to distinguish between relevant and irrelevant information in the interpretation of facts and scientific evidence, to be able to independently apply the knowledge acquired outside the school program and to rely on this knowledge; Be able to distinguish ideas based on scientific facts and theories from ideas based on other sources;

it is necessary to evaluate the modeled system by proposing an alternative option and to justify its choice. (up to 708-1000 points)

In order for students to successfully complete the tasks of the International Assessment Program PISA, to achieve the intended goal, a creative educational environment should be formed in the process of biological education.

The advantage of creative learning environment compared to traditional learning environment is clear.

Traditional environment

Creative environment

He studies with everyone.  
Frontal education



He studies according to his  
personal plan. Person-  
centered education.

Tasks of the same complexity  
are performed



He studies according to a  
customized curriculum based  
on tasks of varying complexity

Everyone will be treated the  
same



Individual education

Only the teacher knows the  
learning goal



Students B.Bloom's taxonomy  
of learning objectives will be  
introduced to all students

Answers to questions on  
educational material only  
during the lesson.



The student finds answers to  
his questions at a convenient  
time

Graded by teacher only



The student can evaluate  
himself and determine his own  
progress whenever he wants.

Traditional environment

Creative environment

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Education is carried out by working individually with the textbook.



Lessons are conducted in small groups in cooperation with students.

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The content of the subject is conveyed through the teacher's information or story.



The content of the subject is mastered through independent educational tasks

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Motivation is weak

Motivation is powerful

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The student cannot determine the results he/she has achieved



The student will quickly determine the results he has achieved

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Interdisciplinary and intra-disciplinary integration is partially implemented



Interdisciplinary and intra-disciplinary integration is carried out at all stages of the lesson

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Motivation is powerful

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There is no focus on developing skills and competencies



Skills are observed to become proficient through repeated practice.

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The choice of educational content is limited



There is an opportunity to freely choose the content of education

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Knowledge is delivered in the form of ready information.



New knowledge is acquired through independent study of the context.

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The content of education changes every 5 years.



The educational content is regularly updated.

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The educational content is designed with the average learner in mind.

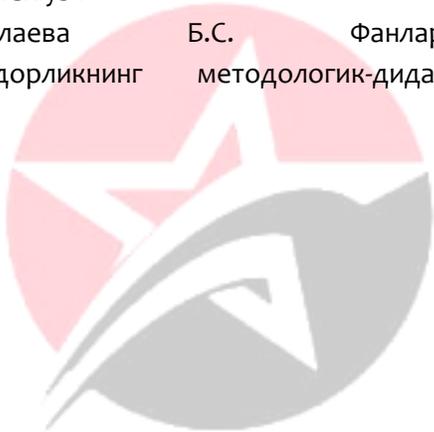


When choosing the content of education, the interests and needs of students are taken into account

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It is clear from the analysis that it is necessary to create a creative educational environment in order to gain the level of natural-scientific literacy of students through the tasks of the International Assessment Program PISA.

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