THE EFFECTIVENESS OF THE DEVELOPMENT OF CREATIVE THINKING IN FUTURE TEACHERS THROUGH PROJECT-BASED LEARNING

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Pedagogical thinking is increasingly expanding ideas, research and innovations for modern education by professionals capable of self-development, self-awareness as a subject, responsibility and flexibility, as well as the environment for their formation. The new attitude of the practical pedagogical environment to the importance of progressive, actively changing functions confirms the need for teachers who are able to think, be creative, understand problems, design their solutions, and actively participate in innovative processes.

After all, these approaches represent the main link of educational reforms as a real process. Our opinion is based on the priority of the education system in the "Message to the Oliy Majlis of the Republic of Uzbekistan and the people of Uzbekistan" dated December 20, 2022 by the President of our Republic Sh.M.Mirziyoyev "Free and creative thinking among students" it is necessary to form teamwork and communication skills. One can argue with the task "What kind of environment should permeate our schools"[1].

The analysis of 152 normative documents aimed at the educational results of the countries with the most developed education system by experts of the Asia-Pacific Regional Bureau of Education of UNESCO and the "National Center for Educational Policy" of the University of Colorado is crucial. He showed that attention is paid to the development of new methods for assessing the quality of necessary skills in the 21st century, such as thinking, creativity, problem solving, communication, cooperation, teamwork. Research reports show that these skills are crucial in the 21st century and that educational goals should be focused on them. [4]. Therefore, creative thinking is intended not only for people with certain talents or abilities, but is one of the basic skills that each person should develop in order to survive in the modern world.

The pedagogical goal is considered as a pedagogical task at the stage of preparation for the organization of the pedagogical process. The success of pedagogical activity depends on understanding the essence of various tasks one after another [5].

At this point in the encyclopedia "Pedagogy", "a project is a plan, a goal, an idea. The design of pedagogical activity is the idea of a teacher, a targeted idea of using innovations introduced in the field of education in their activities. Each project should be created with a deep thought ...", "the design method is a teacher who, based on a pragmatic approach, designs practical tasks that he puts before students in the educational process, and demonstrates his knowledge and skills in the process of their implementation by students. it should be noted that such definitions are given as a teaching method that provides [2: p.217].

In the research of our republic, you can observe a lot of research on design technology. In particular, O. Tolipov "the design of the pedagogical process is the creation of a project that serves to fully express the general essence of pedagogical activity, which is organized on the basis of the triad project-content-activity. Analytical activity, which is carried out by the teacher consistently and ends with diagnostics: such creative activity as foresight and design is manifested in projects" [5: p. 106], - the researcher M.H. noted. Makhmudov and a number of scientists, the development of the design problem in the theory of pedagogical education put forward views expressing that it is inextricably linked with the concept of "activity" and consists in creating indicative options for

activities and diagnosing their results [3]. Especially when Professor O'tolipov applies pedagogical technologies in education, each task, stage of the pedagogical process design technology, the role of the teacher, laws, principles, strategies for designing the educational process, design in general secondary education details the levels and their content [5].

There is a need to develop creative thinking of future primary school teachers, theoretical study of the problems of vocational training, determination of the situation in practice, scientific substantiation of the model developed during the study, verification of the effectiveness of the proposed ideas. as an experiment. As a result of the implementation of organizational and pedagogical conditions for the development of proposals and recommendations for the development of creative thinking of future teachers by means of project-based learning, as a result of the implementation of organizational and pedagogical conditions, the popularization of advanced foreign experience in universities, increased motivation of students, creative and activation of innovative thinking, a change in conscious attitude to professional training, understanding of the mission, tools used to achieve educational goals and development of reflexive abilities .

It goes without saying that students of the pedagogical faculty of the university are future teachers. In addition to developing creativity, mastering its tasks, they should be able to instill in their students enthusiasm and desire to participate in the processes of creativity, research, creativity, self-presentation. To this end, it was considered appropriate to analyze the knowledge, concepts and views of future teachers regarding creativity and give the necessary methodological recommendations aimed at developing creative thinking.

The process of research aimed at developing proposals and recommendations for the development of creative thinking of future teachers by means of project-based learning was carried out mainly in two directions:

1. To determine the current knowledge of students about project-based learning technology, to determine their attitude to its implementation, to increase the level of active use of this technology in their professional activities.
2. Analysis of changes in scientific and methodological processes for the development of creative thinking of future teachers.

In this regard, future teachers should have creative thinking, creativity, the introduction of new ideas, openness to news, a clear idea of themselves in the pedagogical system, the use of internal capabilities, goal + task + creativity + tool + project + design + management. + content + mastering + learning during the project + learning in the process + methodological forms + understanding the consistency of the tool + the result and positive impact on changing attitudes to the project technology of training and the development of creative thinking, the implementation of the algorithm of actions for secret surveillance was identified as the main factor.

According to the analysis in this direction, along with the manifestation of the development of creative thinking of students, we are faced with wonderful proposals and requirements that we need to adjust in our further research.

As a result of the analysis of the content of the experimental work aimed at the development of creative thinking of future primary school teachers, the following conclusions were made:

it is impossible to postpone the achievement of the necessary experiments by introducing into the methodology of pedagogy new technologies of content and forms, project training, foreign methods, the creation of textbooks, textbooks on their essence, the expansion of their application;

the creation of the program as a result of the analyses obtained at the beginning of the study, their adaptation to the needs of students created the basis for obtaining positive effectiveness at the end of the experiment;

it is noted that project–based learning technology is a technology that develops creative thinking not only theoretically, but also after application in practice, especially by respondents;

the level of development of students' creative thinking and their ability to correctly perform critical analysis became known.

Evaluation of pilot studies requires the establishment of specific aspects, specific criteria, indicators and levels of achievement to obtain results. To do this, based on the purpose, objectives, object and background of our research, we have determined the following criteria for the development of creative thinking of future teachers by means of project-based learning (Table 1).

Table 1.

Criteria for the development of creative thinking of future teachers through project-based learning

Criteria	Description of criteria
Attitude to creative activity as a value	The ability to understand, appreciate and enrich the content of their conscious actions and creative actions, which is characteristic of the teaching profession.
Interest in creative activity	The presence of creative inspiration, a strong desire for creativity
Precision and skill	The ability to generate as many ideas as possible for a given period of time, analyze each element of them, be sensitive to non-standard situations
Flexibility and originality	The ability to express ideas in a wide and diverse way and create new and non-standard ideas
Specificity and associativity	The ability to connect ideas, identify connections and give them the appearance of perfection, completeness or perfection in their thoughts.

The high, medium and low levels were determined on the basis of clarifying the criteria that determine the development of creative thinking of future teachers by means of project-based learning (Table 2).

Table 2

High, medium and low levels that determine the development of creative thinking in future teachers by means of project-based learning

Levels	Explanation of levels
High	He is able to show a high level of speed and accuracy, creative thinking in conclusions and decision-making, show independence in creative thinking, use the knowledge gained in practice, fully understand the essence of the process, show associative activity
Middle	Creative thinking in conclusions and decision-making, manifestation of independence in creative thinking; use the knowledge gained in practice, fully understand the essence of the process, show associative activity
Low	Demonstrate independence in creative thinking; use the acquired knowledge in practice, fully understand the essence of the process, show associative activity

Mathematical and statistical methods were used to determine the effectiveness of experimental work and to process the results. As mentioned above, a total of 380 students of Samarkand State University (130), Bukhara State University (120) and Jizzakh State Pedagogical University (130) took part in the pedagogical experiment. Based on the criteria established in the experimental work, the skill levels are presented in the following table for comparison between the experimental and control groups (Table 3).

Table 3.

The number of students who took part in the experimental work and the indicators of mastery

Experimental group

Experimental sites	Number of participants	Level		
		High	Medium	Low
Samarkand State University	130	45	46	39
Bukhara State University	120	39	48	33
Jizzakh State Pedagogical University	130	40	44	46
Total	**380**	**124**	**138**	**118**

Control group

Experimental sites	Number of participants	Level		
		High	Medium	Low
Samarkand State University	121	15	39	67
Bukhara State University	123	17	43	63
Jizzakh State Pedagogical University	122	16	37	69
Total	**366**	**48**	**119**	**199**

In the generalized comparative analysis of the results of activities at the landfills in the experimental control groups, the following situation appeared:

in the experimental groups at the beginning of the experimental work, i.e. at the diagnostic stage, 80 (21.1%) of students showed high grades, 113 (29.7%) of students-average, 187 (49.2%) of students-low and at the end of the trial work 124 (32.6%) students were high (11.5% increase), 138 (36.3%) students reached the average (6.6% increase), 118 (31.1%) students reached the low (18.1% decrease) level;

in the control groups at the beginning of experimental work, i.e. at the diagnostic stage, 53 (14.5%) students showed a high level, 112 (30.6%) - average, 201 (54.9%) - low, and at the end of experimental work 48 (13.1%) - high (decrease by 1.4%), We see that 119 (32.5%) students changed to medium (growth of 1.9%), 199 (54.4%) students changed to low (decrease of 0.5%) levels (Table 4)

Table 4.

Comparative analysis of the results of activities in experimental control groups in the generalized case

Experimental group

Experimental sites	Level	At the beginning of the experiment		At the end of the experiment	
		Number of participants	As a percentage	Number of participants	As a percentage
Samarkand State University	High	80	21,1	124	32,6
	Medium	113	29,7	138	36,3
Bukhara State University	Low	187	49,2	118	31,1
Jizzakh State Pedagogical University	**Total**	**380**	**100**	**380**	**100**

Control group

Experimental sites	Level	At the beginning of the experiment		At the end of the experiment	
		Number of participants	As a percentage	Number of participants	As a percentage
Samarkand State University	High	53	14,5	48	13,1
	Medium	112	30,6	119	32,5
Bukhara State University	Low	201	54,9	199	54,4
Jizzakh State Pedagogical University	**Total**	**366**	**100**	**366**	**100**

In the experimental work, within the framework of the research goal, the popularization of advanced foreign experience at specified sites, increasing the motivation of students, activating creative and innovative thinking, changing their conscious attitude to professional training, understanding the mission, observing the positive impact on the means used to achieve learning goals, the development of reflexive skills are determined.

The process of research work aimed at developing proposals and recommendations for the development of creative thinking of future teachers within the framework of project training was mainly conducted in two directions:

identification of students' existing knowledge about the technology of project training, attitude to its implementation in practice, increasing the level of active use of this technology in professional activities;

analysis of changes in scientific and methodological processes carried out with future teachers for the development of creative thinking.

Introducing into the methodology of pedagogical science technologies that have acquired a new content and form in foreign methods, such as project training, creating textbooks, methodological

manuals on their essence, expanding their application, it is impossible to postpone obtaining the necessary experience.

It is noted that the technology of project-based learning, not only theoretically, but also after application in practice, in particular by respondents, is a technology that promotes creative thinking.

Thus, the statistical analysis made it possible to conclude that methodological activities for the development of creative thinking within the framework of project-based training of future teachers at experimental testing sites organized at Samarkand State University, Bukhara State University, Jizzakh State Pedagogical University have yielded positive results, the methods used in experimental groups are effective, as well as about opportunities to popularize the results achieved in other higher educational institutions. creates a foundation.

USED LITERATURE

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