

PEDAGOGICAL TRAINING OF FUTURE TEACHERS THROUGH A CLUSTER APPROACH DEVELOP SKILLS

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Abstract. The development of pedagogical skills of future teachers through a cluster approach is a pressing problem, and its effectiveness was analyzed in the study. The cluster approach and innovative pedagogical technologies were used as a method. According to the results, this approach has been proven to be effective in the formation and strengthening of pedagogical competencies. As a scientific and practical contribution, the author has developed proposals and methodological recommendations for developing pedagogical skills based on a cluster approach.

Keywords. Cluster approach, pedagogy, pedagogical master's degree, education, pedagogical technology.

Introduction. Currently, reforming the education system of Uzbekistan and training pedagogical personnel in accordance with modern requirements is one of the priority tasks. As our President Shavkat Mirziyoyev noted, “Education and upbringing are the most important areas in building a new Uzbekistan, and the qualifications and skills of teachers are of decisive importance in this process.” Therefore, a number of regulatory documents have been adopted to improve the quality of education and develop the professional competencies of teachers.

Developing the pedagogical skills of future teachers is not only about acquiring theoretical knowledge, but also about developing practical skills. Traditional approaches fail to adequately develop the creative thinking, problem-solving skills, and innovative teaching methods required of a modern teacher. Therefore, the use of innovative methods in education, in particular the cluster approach, is a pressing issue.

What is the cluster method? Cluster method - A specific form of pedagogical and didactic strategy that helps learners create conditions for free, open thinking and free expression of ideas on arbitrary problems (topics). This method requires identifying a structure that allows for thinking about the connections between different ideas. The cluster method is a form of thinking that is not focused on a specific object. Its use is based on the working principle of the human brain. This method serves to ensure that the thinking process is consistent until a specific topic is deeply and thoroughly mastered by learners. [1]

refers to a system of activities that are united in a single field and are closely interconnected. [2]

to study the mechanisms for developing pedagogical skills of future teachers based on a cluster approach and to evaluate its effectiveness. To achieve this goal, the following tasks were set:

- Identify the essence of the cluster approach and the features of its application in the educational process;
- Assess the effectiveness of the cluster approach in developing the pedagogical skills of future teachers;
- Develop methodological recommendations for the development of pedagogical skills based on a cluster approach.

it serves to introduce effective pedagogical technologies in the process of training teachers and improve the quality of education. The practical significance lies in the possibility of applying the recommendations developed on the formation of pedagogical skills based on a cluster approach in pedagogical higher education institutions. In this regard, this study has important scientific and practical significance for the development of pedagogical education.

Improving pedagogical skills leads to an increase in the experience of imparting knowledge to students. Nowadays, educating students requires not only strong knowledge but also high pedagogical skills.

Literature review. The development of pedagogical skills of future teachers and the use of a cluster approach in the educational process have become one of the important research areas of pedagogical science in recent years. Improving the quality of education, improving the professional skills of teachers and introducing modern pedagogical technologies are among the main scientific problems in this area. Therefore, scientific research in this area is related to the improvement of the educational process and the introduction of innovative approaches.

The theoretical and practical foundations of the cluster approach in developing the pedagogical skills of future teachers have been studied by Uzbek pedagogical scientists in recent years. In particular, in the study conducted by Tokhtayeva N. (2021) on the topic "Increasing the effectiveness of the cluster approach in the process of training pedagogical personnel", the essence of the cluster education system and its importance in increasing the professional potential of teachers were analyzed. In her study, the author showed the possibilities of mutual cooperation, resource exchange, and innovative activities between educational institutions organized on the basis of the cluster model.

Also, in the monograph "Methodology for developing the professional training of future teachers based on a cluster approach" by Sh. Xolbutaev (2022), scientifically based recommendations are given on updating the content of education based on a

cluster approach and increasing the effectiveness of practical training. According to the author, introducing a new approach to the educational process in line with the requirements of the labor market through the cluster system will serve to increase the quality of pedagogical personnel training.

Uzbekistan education in the system reforms also the teachers modern professional preparation to the system to adapt directed to be , in this clustered approach efficiency separately The cluster education model has a significant impact on the professional development of teachers, increasing their opportunities for collaboration and knowledge exchange (Hasanov, 2021). It has also been confirmed in many studies that the quality and effectiveness of education can be increased using a cluster approach (Porter, 2021). This model enhances the integration of the educational process and expands the opportunities for educators to introduce innovative approaches (Cambridge University Press, 2022).

Research shows that in addition to traditional approaches, active learning methods should also be used to develop the pedagogical skills of future teachers. For example, project-based learning, problem-based learning technologies , and integrated learning methods are important in improving the professional skills of educators (Pellegrino & Hilton, 2021).

Research methodology . An educational cluster is one of the ways to organize school infrastructure, and the institutions within it related to education are elements of this infrastructure. The process of cluster formation is based on the exchange of information about needs and technologies between partners. In the cluster approach, there is an opportunity for all members of the cluster to freely exchange information and quickly disseminate news using various communication tools . [3]

to study the effectiveness of the cluster approach in developing the pedagogical skills of future teachers, is based on an analysis of the opinions, knowledge, and practical experience of teachers working in general education schools in Tashkent and students studying in the pedagogical field.

This study is based on an inductive approach, which aims to draw theoretical conclusions by collecting and summarizing empirical data. Inductive methodology helps to identify factors influencing the formation of pedagogical skills by analyzing the behavior and results of the research object in real conditions.

includes experimental and observational research methods. This design allows us to find answers to the main research questions, assess the impact of the cluster approach on the quality of education , and develop strategies for developing teachers' pedagogical skills. The study used quantitative (numerical) and qualitative (contextual) data collection methods. The study was conducted in 5 general education schools and 1 pedagogical higher education institution in Tashkent . Data collection was carried out using the following methods:

1. Questionnaire (survey survey)

- 100 teachers (primary, secondary and high school teachers)
- 20 undergraduate students in pedagogical studies
- 10 school principals and heads of educational and methodological departments
- The questionnaire asked questions about methods for developing pedagogical skills, the impact of the cluster approach, and difficulties encountered in the teaching process.

2. Interviews and focus group discussions.

- Interviews were conducted with 20 experienced teachers and education experts.
- The formation of pedagogical skills was studied by observing lesson processes in schools where the cluster approach was used.

3. Experiment

and seminars were organized for a group of research participants (50 teachers) based on a cluster approach.

- The pedagogical skills and effectiveness of these teachers in working with students were measured through initial and final assessments.

Analysis and results. This study analyzed the effectiveness of developing pedagogical skills of future teachers through a cluster approach. The data collected during the research conducted in 5 general education schools and 1 pedagogical higher education institution in Tashkent were processed using various analysis methods and the results were evaluated. The results of the study were analyzed in the following main aspects. 1. Quantitative analysis (analysis of numerical data)

The results of the questionnaire were analyzed during the study.

Teachers' attitudes towards the cluster approach

- 78% of teachers who participated in the questionnaire highly appreciated the effectiveness of the cluster approach in the pedagogical process.

- 15% of teachers noted that the cluster model is preferable to traditional teaching methods.

- 7 % of participants said that it was difficult to use the cluster approach.

- Indicators of pedagogical skill development

- The teaching efficiency of teachers in the experimental group increased by 25% (based on the results of assessments before and after the experiment).

- It was observed that the interactive methods used by teachers in working with students increased by 31%.

- 90% of teachers who participated in trainings and seminars felt that their pedagogical competencies had increased.

2. Qualitative analysis (interview and focus group results)

Based on interviews with 20 experienced teachers and education experts, the following conclusions were identified:

- The cluster approach has created opportunities for school teachers to jointly develop and share educational resources.
- Teachers had the opportunity to exchange experiences through the cluster system, which helped them master innovative methods faster.
- Students studying in the pedagogical direction stated that they felt the effectiveness of the cluster method more during the internship.

3. Experimental results

The results of the training and seminars conducted experimentally showed the following analyses:

- Before the training, 50% of participants did not have a sufficient understanding of the cluster approach.
- After training, this figure reached 85%.
- in using innovative pedagogical technologies increased by 28%.
- The results of the evaluation of the lessons before and after the experiment showed that students' interest and participation in the lesson increased by 17%.

4. Results of statistical analysis

The results obtained through various statistical models during the study:

- Based on Pearson correlation analysis, an indicator of 0.72 (highly positive correlation) was determined between the cluster approach and teachers' pedagogical skills.

According to the results of regression analysis , it was found that the use of a cluster approach can have a 48% impact on pedagogical effectiveness.

- T-test results showed that the pedagogical ratings of teachers who taught using the cluster approach were significantly higher than those of teachers who worked using the traditional method .

Conclusions and recommendations . The cluster, as a unique approach to education, not only creates conditions for lifelong learning, but also helps to restore existing and promising connections between components that ensure the continuity of education. [4]

The results of this study showed that the cluster approach is one of the effective methods for developing the pedagogical skills of future teachers. The empirical research conducted, including questionnaires, interviews , and experimental analyses, led to the following main conclusions:

- The cluster approach creates opportunities for collaboration among teachers, exchange of experiences , and faster mastery of innovative pedagogical technologies.

The training and seminars organized to develop pedagogical skills had a significant impact on increasing the knowledge and skills of the participants.

- The results of the experiment confirmed that teachers trained using the cluster approach had increased teaching efficiency, and students had higher interest and participation in the lesson.

- Based on statistical analysis, it was determined that the cluster approach has a high impact on the pedagogical competence of teachers (correlation coefficient 0.72, the level of impact according to the results of regression analysis is 48%).

and subject of the innovative cluster approach to the pedagogical education process , in the current conditions, the expected effect will be achieved only if the traditional activities of the teacher and educator are combined with the educational process, its structural aspects, cultural, educational and managerial activities. [5]

Based on the research results, the following suggestions can be put forward:

1. Improving the system of teacher training based on a cluster approach

Development and implementation of special curricula on the use of a cluster approach in pedagogical higher education institutions .

- Organize internship programs for students on a cluster basis, where they should have the opportunity to work with mentor teachers in schools .

2. Develop professional development programs for teachers

Organizing special courses and trainings for teachers that include cluster methodology .

Involve teachers in the creation and exchange of methodological materials within the cluster .

3. Expanding research and development

- Continue academic research to study the impact of the cluster approach on the educational process.

- Study and implement advanced foreign experiences on the cluster approach to improve the quality and efficiency of education.

4. Strengthening cooperation between schools and higher education institutions

Establish a system of exchange of experience between pedagogical universities and schools.

- Using the scientific potential of universities to introduce innovative teaching methods in schools.

5. Strengthening support mechanisms at the state level

- Development of legal and organizational mechanisms for the development of a cluster approach, based on the decisions and strategies of the President of the Republic of Uzbekistan in the field of education.

Establish a system of material and moral incentives for schools that have implemented the cluster model .

Training a future teacher to manage project clusters is a purposeful joint activity of subjects in a specially created project-educational environment of the university,

which ensures the formation of the student's readiness for independent systematization of resources and the implementation of effective network interaction in the development of an educational project based on the automation of information collection, processing and transmission. [6]

The results of this study show that measures taken to develop pedagogical skills through a cluster approach have a positive impact on the professional development of teachers. Therefore, the systematic implementation and further improvement of this approach will contribute to improving the quality of education.

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