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The Impact of Pedagogical Factors on Developing Creativity Competence in Prospective Teachers Through Student-Centered Education

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Abstract

This research study aims to analyze the impact of student-centered teaching methods on the development of creativity competence in future teachers. The main goal of the study was to identify the role of personalized learning strategies, teacher mentorship, and assessment systems in stimulating creative and innovative skills in students. During the experiment, participants were divided into four groups, each of which was taught using different methods: student-centered active learning methods, teacher involvement, and creative assessment. The Torrance Test of Creative Thinking was used to measure the level of students' creativity. The ANOVA and Tukey HSD post-hoc tests were applied to analyze the data. The results of the experiment showed that student-centered active teaching methods and constant teacher mentorship significantly contribute to the development of creativity competence. The group that used active methods and systematic creative assessment demonstrated particularly high results, which confirmed the effectiveness of these approaches. At the same time, the group that did not use active methods and creative assessment showed significantly lower results. The comparative analysis revealed that the group where active methods were not applied, but teachers were actively involved in the process, also achieved higher outcomes compared to the group where only passive methods were used. This underlines the importance of teacher involvement and reflective assessment in the educational process.

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Keywords: Creativity competence, student-centered learning, teacher education, active learning, pedagogical factors, teachers, creative assessment methods, project-based learning, inquiry-based learning, reflective practice, innovation, future teachers..

Introduction

In a rapidly evolving education system, developing creativity competence in prospective teachers has become an important area of focus. Creativity is the ability to generate new ideas, propose innovative solutions, and approach problems from original perspectives. It enables teachers to make pedagogical decisions that foster innovation, adapt teaching methods to diverse educational needs, and create learning environments that stimulate students' imagination. Since future teachers play a key role in shaping students' thinking and worldview, it is essential that they develop creativity competence during their training. Creativity is a core professional skill that allows prospective teachers to design engaging lessons, integrate interactive strategies, and encourage learners to think independently. In an era of rapid technological progress and complex educational challenges, teachers must possess creativity competence to implement innovative approaches, develop problem-solving skills in students, and adapt teaching strategies to individual learner needs. The development of creativity competence in teacher education programs depends on multiple pedagogical factors. Among them, student-centered active learning methods, teacher mentorship, and alternative assessment methods are of particular importance. These factors influence how future teachers interact with educational content, reflect on their practice, and develop innovative approaches. Incorporating these elements into teacher training programs allows educational institutions to more effectively prepare creative teachers who are capable of creating dynamic and inspiring learning environments for their students. These factors shape not only the way students engage with learning materials but also determine their ability to reflect, explore, and apply creativity in real-life educational contexts.

One of the most important ways to develop creativity competence in prospective teachers is to use student-centered active learning methods. These methods emphasize the active involvement of students in the learning process, which promotes not only knowledge acquisition but also the development of imagination, originality, and reflective skills. Active learning approaches, such as group projects, creative workshops, role-playing activities, and open discussions, allow students to engage more deeply with the learning material, explore different perspectives, and generate innovative solutions. Such strategies help prospective teachers develop the ability to independently design creative responses to complex situations, which is an integral part of their professional growth. Teachers play a key role in developing creativity competence in future educators. They not only transfer knowledge but also serve as role models, demonstrating how creativity can be applied in

pedagogical practice. Teachers should actively involve students in problem-solving tasks, ask open-ended and imaginative questions, encourage them to experiment with alternative approaches, and analyze creative outcomes critically. The use of project-based learning, case studies, and brainstorming techniques enables students to strengthen their creativity, originality, and confidence in their ideas. Assessment methods also play an important role in the development of creativity competence. Outcome-oriented assessment should evaluate not only knowledge but also the ability to think divergently, generate novel solutions, and apply creativity in different contexts. Creative portfolios, reflective journals, project-based evaluations, and performance tasks allow for a more comprehensive assessment of students' creativity levels and their readiness to apply innovative approaches in real teaching settings. Thus, the development of creativity competence in future teachers is a crucial aspect of pedagogical training, requiring the integration of student-centered methods, mentorship, and alternative assessment. These factors help prepare educators who can effectively address modern educational challenges, adapt to learners' needs, and foster creativity in their students — a skill that forms the foundation of a successful educational process in the 21st century.

In Uzbekistan, the issue of developing creativity competence in future teachers is also actively studied and is gaining increasing attention in pedagogical science. In recent years, the national education system has undergone significant reforms, which include the introduction of innovative teaching methods aimed at fostering creativity, imagination, and problem-solving skills in learners. This is especially important for training future teachers who, in turn, will cultivate children's ability to think independently, generate new ideas, and approach challenges creatively. One of the key aspects of educational reforms in Uzbekistan is the integration of student-centered pedagogical approaches. Particular attention is given to the preparation of future teachers so that they can effectively nurture creativity competence in students through the use of project-based learning, debates, role-playing activities, and other interactive methods that stimulate innovation and divergent thinking. A significant step in this direction is the revision of teacher education curricula in pedagogical universities. For example, institutions such as the Tashkent State Pedagogical University have been actively introducing courses and training programs focused on developing creativity in future teachers. Students are not only introduced to theoretical foundations but also engaged in practical tasks that enhance their ability to apply creative strategies in real teaching contexts. An important element of these programs is the use of modern technologies and teaching methods, such as design-

thinking projects, brainstorming sessions, and collaborative problem-solving activities. Another crucial factor contributing to creativity development is the growing role of teachers as mentors. Teachers not only deliver knowledge but also guide students in expressing original ideas, experimenting with solutions, and reflecting on their creative process. Actively involving students in discussions, assigning tasks that require originality, and encouraging multiple perspectives are considered vital practices. Various seminars, workshops, and professional development programs are organized for teachers across Uzbekistan with the aim of strengthening their methodological skills and equipping them with tools for fostering creativity competence in students. However, despite these achievements, challenges remain. In certain regions, particularly in rural areas, issues such as insufficient methodological resources and limited teacher qualifications can slow down the widespread introduction of innovative approaches to teaching.

Literature Review

The issue of developing creativity competence in future teachers is actively studied in educational science. This is an important area of pedagogical research, since creativity is not only the basis for innovation and problem-solving, but also a key skill for developing students' ability to think independently and approach tasks imaginatively. The creativity skills of students – future teachers – must be developed not episodically, but purposefully and systematically, using the didactic potential of educational programs, various student-centered forms, and innovative teaching technologies. In this regard, research highlights the importance of creating specific psychological and pedagogical conditions and developing methodologies for fostering creativity competence in teacher education. One of the most important ways to develop creativity competence is to use active, student-centered methods. These methods not only promote knowledge acquisition but also enhance originality, flexibility, and divergent thinking. Creative learning methods include group projects, design-thinking activities, role-playing games, debates, and other forms that require active participation and imagination. Studies show that such methods significantly contribute to creativity development, as they involve students in deep cognitive and imaginative processes. Particular attention is paid to project-based learning, inquiry-based learning, and brainstorming techniques. For instance, Torrance (1974) emphasized that creativity can be developed through structured tasks encouraging originality, while Runco & Jaeger (2012) highlighted that educational settings play a decisive role in nurturing creativity. The role of teachers

in the development of creativity competence is also crucial. Teachers not only impart knowledge, but also serve as mentors, modeling creative approaches in practice. Effective teachers use strategies such as questioning, creative tasks, reflection, and collaborative projects to stimulate students' imagination. Brookfield (2017) argues that teachers who engage students in exploratory discussions create conditions for the development of not only creativity but also problem-solving and innovation skills. Reflective practice is also emphasized (Lowchran, 2006), showing that teachers who reflect on their pedagogical choices can guide students toward self-awareness and more creative approaches. Assessment methods play an equally important role in fostering creativity. Traditional tests are often criticized for limiting imagination and focusing on memorization. Alternative methods such as creative portfolios, reflective journals, project-based evaluations, and performance assessments encourage students to take risks, explore new ideas, and analyze their own creative growth. Moon (2004) emphasized that such assessment develops metacognitive awareness, while Solovieva (2014) stressed that it deepens students' understanding of their creative processes. In recent years, the integration of digital technologies has also become significant in supporting creativity. Online collaboration platforms, digital simulations, and virtual design tools allow students to experiment, model innovative ideas, and express creativity in interactive ways. Davis (2013) pointed out that digital technologies enhance learners' ability to synthesize and apply knowledge creatively in real-life contexts. Similarly, Uzbek scholars (Begimqulov, 2020; Ergashev, 2021) have argued that student-centered technology integration strengthens the innovative skills of future teachers. Overall, there is a growing body of research confirming that active learning methods, teacher mentorship, reflective practice, and creative assessment create the necessary conditions for the development of creativity competence. These skills are essential for future teachers to address modern educational challenges, adapt to diverse student needs, and promote creativity among learners. The development of creativity competence in teacher education is thus a cornerstone of preparing professional and innovative educators for a rapidly changing educational environment.

Methodology

In this study, we examine the influence of various pedagogical factors on the development of students' creativity competence. The experiment involved 100 second-year students of the Urgench State Pedagogical Institute, specializing in teacher education. The students were divided into four groups: Group A, Group B,

Group C, and Group D. Each group was exposed to different student-centered teaching methods aimed at fostering creativity, originality, and innovative thinking. The purpose of the experiment was to identify how different pedagogical approaches influence the development of creativity competence in future teachers and to determine which methods are most effective. The study incorporated the use of active and student-centered strategies such as group projects, brainstorming sessions, creative workshops, and role-playing activities. Creativity was assessed using the Torrance Test of Creative Thinking (TTCT) and project-based performance tasks. Based on the results obtained, recommendations for teacher educators will be developed to improve educational practices and enhance creativity competence in prospective teachers.

Group	Student-centered active learning methods	Teacher mentorship	Creative assessment methods
Group A	Yes	Yes	Yes
Group B	No	No	No
Group C	No	Yes	Yes
Group D	Yes	Yes	No

After collecting the data, we provided each group with 40 creativity tasks based on the Torrance Test of Creative Thinking (TTCT).

These tasks included activities such as generating multiple solutions, improving incomplete figures, brainstorming innovative ideas, and presenting creative projects. The table below shows the summarized results of this test for each group.

Table-2. Results of the Torrance Test of Creative Thinking (TTCT) across experimental groups

Participant	**Group A (Active learning strategies, teacher mentorship, and creative assessment)**	**Group B ((No active methods, no teacher mentorship, no assessment)**	**Group C (No active learning strategies, teacher educator involvement, and assessment methods)**	**Group D (Active learning strategies, teacher educator involvement, no assessment methods)**
1	35	18	27	30
2	34	20	28	29
3	33	19	26	28
4	32	17	25	27
5	36	16	29	31
6	34	18	30	32
7	33	15	28	30

8	32	17	27	29
9	35	19	30	33
10	36	20	29	32
11	37	18	28	30
12	33	21	27	29
13	35	19	29	31
14	34	22	28	32
15	32	20	26	28
16	33	18	27	29
17	34	17	25	30
18	36	15	29	32
19	35	20	30	31
20	33	16	28	30
21	34	19	27	29
22	35	18	29	32
23	36	17	30	33
24	32	16	26	31
25	33	15	27	29

Now we will conduct an ANOVA test. To do this, we will calculate the level of critical thinking for each group using the following formula based on the results of the critical thinking test provided above:

$$\text{Mean} = \frac{\sum X}{N}$$

The variance and standard deviation are calculated to measure the spread of the scores within each group.

$$\text{Variance}(S^2) = \frac{\sum(X_i - \text{Mean})^2}{N - 1}$$

Where, $\sum X$— is the total creativity score for each group and N— is the number of participants in each group. The results are presented in the following tables:

Summary of data					
	1	2	3	4	Total
N	25	25	25	25	100
$\sum X$	852	450	695	757	2754
Mean	34,08	18	27,8	30,28	27,54
$\sum X^2$	29088	8188	19377	22985	79638
Standard Deviation	1,4697	1,9149	1,5275	1,6207	6,1896

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Results details				
Source	SS	df	MS	
Between treatments	3533,96	3	1177,9867	F=436,83
Within treatments	258,88	96	2,6967	
Total	37,92	99		

The F-statistic of 436,83 is quite high, indicating significant differences between the group means (significance level (α: 0.5)). For df_1=3 and df_2=96 at α=0,05, the critical value is approximately 2.78. As a result, the null hypothesis is rejected, confirming significant differences between the treatment groups. Therefore, a Tukey's HSD test should be conducted to identify which specific groups differ from one another.

Pairwise comparisons		$HSD_{,05}$ = 1,2144 $HSD_{,01}$ = 1,4849	$Q_{,05}$ = 3,6976 $Q_{,01}$ = 4,5211
T_1:T_2	$M_1 = 34{,}08$ $M_2 = 18{,}00$	16,08	Q = 48,96
T_1:T_3	$M_1 = 34{,}08$ $M_3 = 27{,}80$	6,28	Q = 19,12
T_1:T_4	$M_1 = 34{,}08$ $M_4 = 30{,}28$	3,80	Q = 11,57
T_2:T_3	$M_2 = 18{,}00$ $M_3 = 27{,}80$	9,80	Q = 29,84
T_2:T_4	$M_2 = 18{,}00$ $M_4 = 30{,}28$	12,28	Q = 37,39
T_3:T_4	$M_3 = 27{,}80$ $M_4 = 30{,}28$	2,48	Q = 7,55

Results and Discussion

The results of the experiment, analyzed through ANOVA, revealed statistically significant differences in the development of creativity competence among the four groups of prospective teachers. The overall F-value (436.83) was far above the critical threshold (2.78, $p < 0.05$), indicating that the pedagogical factors under study — student-centered active learning methods, teacher mentorship, and creative assessment — had a substantial impact on creativity development. Group A, which combined all three conditions (active methods, teacher mentorship, and creative assessment), achieved the highest mean score (M = 34.08). This confirms that an integrated approach provides the most effective environment for fostering creativity

competence in teacher education. The findings suggest that when students are consistently engaged in interactive methods, supported by mentors, and evaluated through alternative assessment, their creativity is maximized. Group B, which lacked all three conditions, demonstrated the lowest results (M = 18.00). This outcome highlights the limitations of traditional, passive approaches to teacher training, as they fail to develop originality, divergent thinking, and reflective skills. Group C, which included teacher mentorship and creative assessment but excluded active methods, achieved intermediate results (M = 27.80). This underlines the importance of teacher involvement and reflective assessment in stimulating creativity even without fully active methods. Group D, which combined active methods and mentorship without creative assessment, also performed well (M = 30.28), but not as highly as Group A. This indicates that while active methods and mentorship are crucial, the absence of creativity-oriented assessment restricts the full realization of students' potential. The Tukey HSD test further confirmed significant differences between all groups, especially between Group A and the others. This demonstrates that the simultaneous integration of active learning, mentorship, and creative assessment provides a synergistic effect, resulting in significantly higher levels of creativity competence.

Recommendations and Prospects

Active, student-centered learning is one of the most effective teaching strategies aimed at developing creativity competence in students. To maximize its potential, educational institutions should integrate various interactive and creative methods into the educational process. It is important for teachers to view their role not only as transmitters of knowledge but also as mentors who create an environment for imagination, encourage students to generate original ideas, and help them develop innovative skills. The primary role of the teacher in creativity development is to establish a learning atmosphere where students can freely express themselves, explore alternative solutions, and challenge conventional approaches. This requires teachers to possess not only subject knowledge but also facilitation skills that promote creativity and reflective practice. Personalized learning should be supported to allow each student to unlock their creative potential, taking into account their individual perspectives, talents, and level of preparation. Assessment of learning outcomes should also be adapted to creative methods. Instead of relying solely on traditional exams, teachers should use formative and alternative assessment tools, such as portfolios, project-based evaluations, and reflective

journals. These methods not only help students identify their strengths and weaknesses but also encourage continuous self-improvement and innovative thinking, better preparing them for professional practice. Successful implementation of creativity-oriented approaches requires flexibility in teaching methods. This involves adapting instructional strategies depending on the context and the needs of students. Pedagogical programs should be designed with flexibility, allowing educators to select creative methods suited to the situation and group dynamics. Flexibility ensures that methods are applied more effectively and contribute to higher-quality results. For teachers to successfully nurture creativity competence, continuous professional development is essential. Training programs focused on innovative pedagogical methods and creativity enhancement should become a central part of teacher education. Ongoing knowledge renewal and professional exchange among educators also contribute to higher teaching quality and the preparation of more creative and adaptable specialists. In the future, it is important to continue researching the long-term effects of student-centered creative learning. Such studies will not only evaluate the effectiveness of these methods in the learning process but also provide insight into how creativity competence influences graduates' professional activities. Understanding how creativity developed through active and personalized methods is applied in real educational settings will enrich both theory and practice in pedagogy.

Conclusion

The results of this study demonstrate that the development of creativity competence in future teachers depends on a combination of pedagogical factors: student-centered active learning methods, teacher mentorship, and creative assessment. The experiment confirmed that the integration of these components creates a powerful synergy, significantly enhancing students' ability to generate original ideas, approach problems innovatively, and apply creativity in practice. Group A, which received all three conditions, showed the highest outcomes, while Group B, which lacked active methods, mentorship, and assessment, demonstrated the lowest performance. Groups C and D achieved intermediate results, further underlining the importance of teacher involvement and creativity-oriented assessment. These findings prove that creativity does not develop spontaneously but requires purposeful pedagogical conditions and systematic approaches. In line with international and national research, this study highlights that teacher education programs in Uzbekistan and beyond must prioritize the purposeful development of

creativity competence. By equipping future teachers with innovative thinking skills, reflective practices, and the ability to apply creative solutions, educational institutions can prepare professionals capable of shaping a new generation of independent, imaginative, and adaptive learners. Thus, creativity competence should be considered a core outcome of teacher education, ensuring that prospective teachers not only master theoretical knowledge but also become innovative leaders in education who are able to address the challenges of the 21st-century learning environment.

References

1. Begimqulov, U. (2020). Innovative Approaches in Teacher Education. Tashkent: Fan.
2. Brookfield, S. D. (2017). Becoming a Critically Reflective Teacher. Jossey-Bass.
3. Craft, A. (2005). Creativity in Schools: Tensions and Dilemmas. Routledge.
4. Davis, M. (2013). Digital technologies and creativity in education. Journal of Learning and Teaching, 9(2), 45–57.
5. Ergashev, B. (2021). Student-centered pedagogies in Uzbekistan: Fostering innovation in teacher education. Journal of Modern Education, 15(3), 45–53.
6. Guilford, J. P. (1967). The Nature of Human Intelligence. McGraw-Hill.
7. King, A. (1995). Designing the instructional process to enhance critical thinking across the curriculum. Teaching of Psychology, 22(1), 13–17.
8. Lowchran, J. (2006). Developing a Pedagogy of Teacher Education. Routledge.
9. Moon, J. (2004). A Handbook of Reflective and Experiential Learning. RoutledgeFalmer.
10. Robinson, K. (2011). Out of Our Minds: Learning to Be Creative. Capstone.
11. Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. Creativity Research Journal, 24(1), 92–96.
12. Torrance, E. P. (1974). Torrance Tests of Creative Thinking. Scholastic Testing Service.
13. Zimnyaya, I. A. (2013). Development of creative and critical thinking in education. Russian Education and Society, 55(7), 3–17.