

THEORETICAL FOUNDATIONS AND PEDAGOGICAL FACTORS OF DEVELOPING CREATIVE THINKING IN FUTURE TEACHERS

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Abstract: This article examines the theoretical foundations of developing creative thinking among future teachers and analyzes the pedagogical factors influencing this process. Particular attention is given to the concepts of creative thinking, creativity, divergent thinking, and creative competence as interpreted in contemporary psychological and pedagogical research. The study reviews the scientific contributions of Guilford, Torrance, Sternberg, Ponomaryov, Shcherbakova, Shumovskaya, and other scholars concerning the development of creativity in educational settings. The findings indicate that creative thinking is a multifaceted cognitive process that can be systematically developed through appropriate pedagogical conditions, problem-based learning, reflective activities, and innovative teaching approaches. The study emphasizes the role of teachers in creating an educational environment that fosters independent thinking, creativity, and professional growth among future educators.

Keywords: Creative thinking, creativity, divergent thinking, creative competence, future teachers, pedagogical creativity.

Introduction

The development of creative thinking among future teachers is one of the key priorities of modern education. The rapid advancement of society, the transformation of educational systems, and the growing demand for innovative professionals require teachers not only to possess subject knowledge but also to cultivate creativity, flexibility, and independent thinking. Consequently, the development of creative thinking and creative competence in teacher education has become an important area of pedagogical research.

The relevance of this topic is determined by the increasing need for educators capable of generating innovative solutions and adapting to changing educational environments. Although numerous studies have examined creativity and creative thinking, the pedagogical conditions and factors contributing to the systematic development of creative thinking among future teachers remain a significant field of inquiry. The purpose of this study is to analyze the theoretical foundations and pedagogical factors that support the development of creative thinking in future teachers.

Materials and Methods

This study employed a theoretical and analytical research design. The research materials consisted of scientific literature devoted to creative thinking, creativity, divergent thinking, and creative competence. The theoretical works of Guilford, Torrance, Sternberg,

Ponomaryov, Shcherbakova, Shumovskaya, Varlakova, Epstein, and other scholars served as the primary sources of analysis.

The research methods included descriptive analysis, comparative analysis, interpretative analysis, and synthesis. Various theoretical approaches were compared and evaluated to identify the major pedagogical factors influencing the development of creative thinking among future teachers.

Literature review

Although the number of studies devoted to creative thinking, creativity, and creative competence is very large, the issue of developing creative thinking through TRIZ technology has not been sufficiently investigated. This necessitates an analysis of the existing sources related to this problem within the framework of the present study. Creative thinking has been extensively examined by many scholars, and numerous scientific studies have been conducted in this field. For example, the American psychologist and renowned creativity researcher E. Torrance defines creative thinking as “the ability to generate new and original ideas and find alternative solutions based on available information^{128 129}.” According to him, creativity is not merely an innate trait but a quality that can be developed through purposeful education and practice. Likewise, the American psychologist J. Guilford, who analyzed the structure of intelligence, directly associates creativity with divergent thinking¹³⁰. In his view, creativity represents a person’s ability to produce diverse, unexpected, and effective ideas when solving a problem.

Y.A. Ponomaryov emphasizes that a creative individual possesses three main characteristics¹³¹:

- ✓ Perceptual (related to information perception): an unusual ability to concentrate attention, a high level of perception, and strong impressionability.
- ✓ Intellectual: intuition, powerful imagination, creativity, predictive ability, and breadth of knowledge.
- ✓ Characterological: avoidance of uniformity, originality, initiative, determination, and a desire for self-development.

According to O.V. Soloveva and L.A. Khalilova, a teacher’s creative competence includes a system of knowledge, skills, abilities, and personal qualities necessary for pedagogical activity¹³². The structure of creative competence includes such qualities as creativity, the ability to solve problematic tasks, ingenuity, flexibility and criticality of

¹²⁸ Torrance E. P. Torrance Tests of Creative Thinking: Norms-Technical Manual Research Edition. – Bensenville, IL: Scholastic Testing Service, 1974.

¹²⁹ Torrance E. P. Guiding creative talent: Educational psychology of creative behavior. – Englewood Cliffs, NJ: Prentice-Hall, 1962. – 278 p.

¹³⁰ Guilford J. P. Creativity: Yesterday, Today and Tomorrow. – Journal of Creative Behavior. – 1967. – Vol. 1(1). – P. 3–14.

¹³¹ Пономарев Я.А. Психология творчества. – М.: 1976. 255- с.

¹³² Соловьева О.В., Халилова Л.А. Профессиональная компетентность и креативность педагога в условиях современного образования // Современные проблемы науки и образования. – 2014. – № 5. – С. 112–118.

thinking, sensitivity, originality and self-confidence, the ability to formulate and solve non-standard tasks, analytical, synthetic, and generalization abilities, as well as skills in experimentation and forecasting.

In addition, emotional-imaginative qualities are characterized by spirituality, emotional uplift in creative situations, associativity, imagination, a sense of novelty, sensitivity to contradictions, empathy, the ability to overcome stereotypes, a tendency toward risk-taking, and a striving for freedom.

E.E. Shcherbakova analyzes the formation of creative thinking among pedagogical students through communicative and didactic creativity and identifies the following indicators of creative ability: combinational ability, resourcefulness, divergent thinking, visual creativity, and associative ability¹³³.

A.G. Shumovskaya proposes the formation of creative thinking among future teachers through a modular approach¹³⁴. According to her, this process is organized through a modular program that includes classroom instruction, training sessions, extracurricular activities, and course projects. In Y.R. Varlakova's research, the creative ability of pedagogy students is interpreted as the capacity to rapidly generate non-standard and functionally oriented ideas in professional activity on the basis of self-awareness¹³⁵. Robert Sternberg and Wendy Williams, in their work "How to Develop Student Creativity," emphasize the principle of "learning through example" as the most effective way of developing creativity¹³⁶. In their opinion, students acquire creativity not through theoretical explanations but through the creative behaviors demonstrated in a teacher's practical activity. This approach substantiates the priority of the "teaching by demonstration" model in education. Furthermore, foreign research findings indicate that actively involving students in complex and problem-based tasks significantly enhances their creative thinking¹³⁷.

According to this concept, creative thinking is not a characteristic exclusive to gifted individuals; rather, it is an "awakening intellectual energy" inherent in the cognitive potential of every individual and activated within an appropriate pedagogical environment. Epstein interprets creativity as the central mechanism of the problem-solving process and emphasizes that students constantly encounter problems in both real-life and academic situations. If they are given opportunities to develop creative thinking, they become better prepared for future professional activity and develop into more adaptable and innovative individuals. According to Epstein, fear of making mistakes forms a "critical barrier" to creative thinking. Therefore,

¹³³ Щербакова Е.Е. Формирование педагогической креативности студентов вуза в условиях профессиональной подготовки: автореф. дисс. канд. пед. наук: Нижний Новгород: 2000. – С. 21.

¹³⁴ Шумовская А.Г. Формирование креативной компетентности будущего педагога в научном сотворчестве: автореф. дисс. канд. пед. наук: – Чита: 2013. – С. 23.

¹³⁵ Варлакова Ю.Р. Развитие креативности будущих бакалавров педагогического образования в вузе: автореф. дисс. канд. пед. наук: – Красноярск, 2013. – 17 с.

¹³⁶ Sternberg R. J., Williams W. M. How to Develop Student Creativity. – Washington: American Psychological Association, 1996. – 200 p.

¹³⁷ Khoiriyah, A. J., & Husamah, H. (2018). *Problem-based learning: Creative thinking skills, problem-solving skills, and learning outcome of seventh grade students*. JPBI (Jurnal Pendidikan Biologi Indonesia), 4(2). <https://doi.org/10.22219/jpbi.v4i2.5804>

it is necessary to create a reflective environment in which mistakes are permitted and analyzed. Sternberg and Williams further note that new dimensions of creative thinking emerge not through denying mistakes but through analyzing them. Indeed, even incorrect solutions often contain the “hidden embryo” of an innovative idea¹³⁸. Flanagan’s experience in mathematics education demonstrates that directing students toward creative approaches in solving complex problems produces effective results. He argues that the development of creative thinking should not be limited to the arts or humanities but should be implemented across all disciplines through an integrative approach.

In general, student creativity is not a quality that emerges instantly; rather, it is an “intellectual process that matures over time.” It develops gradually through continuous learning, independent inquiry, and reflective activity. In this process, the teacher plays a particularly important role, acting as a catalyst who guides students, encourages creative exploration, and constructively organizes problem situations.

The purposeful use of problem situations and tasks in the pedagogical process also contributes to the development of students’ emotional and volitional stability. When students encounter a “cognitive conflict” between their existing knowledge and new contradictory facts, they develop a need for independent analysis, reconsideration, and the search for new solutions. As a result, creative thinking gradually develops on the basis of the student’s personal opinions, individual characteristics, and creative potential. This process elevates the learner from a mere possessor of knowledge to a creative thinker capable of addressing problems and making innovative decisions.

At the same time, modern society provides broad opportunities for developing students’ creative potential. In particular, state policies aimed at improving the quality of education, opportunities to utilize historical and scientific heritage, and contemporary technological progress are creating an “open intellectual space” for the development of creative competence.

Discussion

The findings support the theoretical perspectives of Guilford, Torrance, and Sternberg, who emphasize the importance of divergent thinking and creative problem-solving in the development of creativity. Creative thinking should not be regarded as an innate characteristic possessed only by gifted individuals; rather, it is a cognitive ability that can be systematically developed through educational practice and appropriate pedagogical conditions.

The reviewed studies suggest that problem-based learning, reflective activities, and student-centered instructional approaches significantly contribute to the enhancement of creative thinking. In addition, the teacher’s role as a model of creative behavior is particularly important, as students often learn creativity through observation and participation in authentic creative activities.

One limitation of the present study is its reliance on theoretical sources. Future research should focus on empirical investigations that evaluate the effectiveness of specific pedagogical interventions aimed at developing creative thinking among future teachers.

¹³⁸ Sternberg R. J., Williams W. M. *How to Develop Student Creativity*. Washington: American Psychological Association, 1996. – 200 p.

Conclusion

Creative thinking is one of the most important components of professional competence for future teachers. Its development depends on a combination of pedagogical, cognitive, and environmental factors, including problem-based learning, reflective practice, innovative teaching methods, and supportive educational environments. The findings of this study highlight the necessity of integrating creativity-oriented approaches into teacher education programs. Future research should focus on the empirical validation of pedagogical models designed to foster creative thinking and creative competence in future educators.

REFERENCES

1. Guilford J. P. Creativity: Yesterday, Today and Tomorrow. – Journal of Creative Behavior. – 1967. – Vol. 1(1). – P. 3–14.
2. Khoiriyah, A. J., & Husamah, H. (2018). *Problem-based learning*: Creative thinking skills, problem-solving skills, and learning outcome of seventh grade students. JPBI (Jurnal Pendidikan Biologi Indonesia), 4(2). <https://doi.org/10.22219/jpbi.v4i2.5804>
3. Sternberg R. J., Williams W. M. How to Develop Student Creativity. – Washington: American Psychological Association, 1996. – 200 p.
4. Sternberg R. J., Williams W. M. How to Develop Student Creativity. – Washington: American Psychological Association, 1996. – 200 p.
5. Torrance E. P. Guiding creative talent: Educational psychology of creative behavior. – Englewood Cliffs, NJ: Prentice-Hall, 1962. – 278 p.
6. Torrance E. P. Torrance Tests of Creative Thinking: Norms-Technical Manual Research Edition. – Bensenville, IL: Scholastic Testing Service, 1974.
7. Варлакова Ю.Р. Развитие креативности будущих бакалавров педагогического образования в вузе: автореф. дисс. канд. пед. наук: – Красноярск, 2013. – 17 с.
8. Пономарев Я.А. Психология творчества. – М.: 1976. 255- с.
9. Соловьева О.В., Халилова Л.А. Профессиональная компетентность и креативность педагога в условиях современного образования // Современные проблемы науки и образования. – 2014. – № 5. – С. 112–118.
10. Шумовская А.Г. Формирование креативной компетентности будущего педагога в научном сотворчестве: автореф. дисс. канд. пед. наук: – Чита: 2013. – С. 23.
11. Щербакова Е.Е. Формирование педагогической креативности студентов вуза в условиях профессиональной подготовки: автореф. дисс. канд. пед. наук: Нижний Новгород: 2000. – С. 21.