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THE IMPACT OF INTERACTIVE TEACHING METHODS ON THE DEVELOPMENT OF STUDENTS' CREATIVE THINKING SKILLS IN HIGHER EDUCATION

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Abstract: The development of creative thinking has become an important objective of contemporary higher education. Universities are expected not only to provide students with theoretical knowledge but also to prepare them to analyse complex problems, generate original ideas, make independent decisions, and apply knowledge in unfamiliar situations. In this context, interactive teaching methods offer opportunities to transform the learning process from the passive reception of information into active intellectual engagement. This article examines the influence of interactive teaching methods on the development of students' creative thinking skills in higher education. Particular attention is paid to problem-based learning, project-based learning, brainstorming, case-based learning, group discussions, and collaborative learning. The article analyses the pedagogical mechanisms through which these methods may support originality, flexibility, fluency, critical analysis, and independent thinking. It argues that the effectiveness of interactive learning depends on the purposeful selection of teaching methods, the lecturer's facilitation skills, a supportive educational environment, and the use of assessment approaches that value both the learning process and creative outcomes.

Keywords: creative thinking, interactive methods, higher education, student engagement, problem-based learning, collaborative learning, creativity, innovative pedagogy.

Introduction

The transformation of higher education in the twenty-first century requires a reconsideration of traditional approaches to teaching and learning. The rapid development of science, technology, digital communication, and the global labour market has increased the demand for graduates who can respond creatively to new challenges. Professional competence is no longer determined solely by the ability to remember and reproduce theoretical information. Students are increasingly expected to interpret information independently, identify relationships between different phenomena, develop alternative solutions, and make reasoned decisions in changing circumstances. Consequently, the development of creative thinking has become one of the essential priorities of modern university education. Creative thinking can be understood as the ability to produce ideas, approaches, or solutions that are both original and appropriate to a particular situation. It involves several interconnected intellectual abilities, including fluency, flexibility, originality, elaboration, and the capacity to reconsider established assumptions. In the educational process, these abilities are developed when students are encouraged to ask questions, investigate problems, express different viewpoints, experiment with ideas, and reflect on the results of their activities. Creativity should therefore not be regarded as an isolated personal characteristic possessed only by exceptionally talented individuals. Rather, it can be cultivated through appropriately organised educational experiences. Traditional lecture-centred instruction often places the lecturer at the

centre of the learning process and positions students primarily as recipients of information. Although lectures remain valuable for explaining theoretical concepts and presenting structured knowledge, their exclusive use may limit opportunities for independent exploration and creative participation. Interactive teaching methods provide an alternative by involving students directly in the construction, discussion, application, and evaluation of knowledge. These approaches create conditions in which learning becomes a process of intellectual cooperation and purposeful problem-solving.

The purpose of this article is to examine the pedagogical potential of interactive teaching methods in developing students' creative thinking skills in higher education and to identify the educational conditions that contribute to their effective implementation.

Literature Review

The relationship between education and creativity has been widely discussed in international pedagogical and psychological research. Guilford (1950) emphasised the importance of divergent thinking, which involves generating multiple possible responses to a problem rather than searching exclusively for one predetermined answer. This perspective established an important theoretical foundation for understanding creativity as a multidimensional cognitive process. Torrance (1974) subsequently developed approaches to assessing creative thinking through indicators such as fluency, flexibility, originality, and elaboration. These concepts remain relevant to educational research because they provide a framework for understanding how students generate and develop ideas. Vygotsky (1978) highlighted the social nature of learning and the importance of interaction in intellectual development. From this perspective, students develop their abilities through communication, cooperation, guidance, and participation in meaningful activities. Classroom interaction can therefore contribute not only to the acquisition of knowledge but also to the development of more complex forms of reasoning. When students explain their ideas, respond to opposing arguments, and work collaboratively, they encounter different perspectives that may stimulate new interpretations and solutions. Contemporary research also connects creativity with active and student-centred learning. Sawyer (2012) explains creativity as a process that can emerge through collaboration, shared knowledge, and the interaction of different ideas. Similarly, the work of Hmelo-Silver (2004) demonstrates the educational value of problem-based learning, in which students develop knowledge while investigating complex and authentic problems. Such approaches are particularly relevant to higher education because they encourage learners to integrate theoretical knowledge with practical reasoning. The theoretical foundations of interactive learning are also consistent with the principles of constructivist education. Students do not simply receive information but actively interpret it in relation to their previous knowledge and experience. Prince (2004), in a review of active learning research, identifies the educational significance of involving students in meaningful learning activities. Although the effectiveness of particular methods depends on their implementation and context, active participation can provide opportunities for deeper understanding and intellectual development.

In the context of Uzbekistan, the modernisation of higher education has increased attention to student-centred instruction, independent learning, innovative pedagogical technologies, and the development of professional competencies. These priorities create a favourable context for the systematic application of interactive methods. However, their effectiveness should be evaluated not merely by the frequency with which lecturers use group activities or digital tools, but by the extent to which such activities encourage students to formulate independent ideas, justify their opinions, and develop original solutions.

Methodology

This article is based on a theoretical and analytical examination of pedagogical approaches to developing creative thinking through interactive teaching methods in higher education. The analysis draws on established research in creativity, active learning, constructivist pedagogy, and problem-based education. The selected approaches were examined in terms of their instructional characteristics and their potential contribution to the development of students' cognitive and creative abilities. The analysis focused on the relationship between interactive learning activities and the principal dimensions of creative thinking, including fluency, flexibility, originality, elaboration, and independent problem-solving. Particular attention was given to the conditions under which interactive methods can be integrated into university courses. These conditions include the lecturer's instructional role, the relevance of learning tasks, the quality of student collaboration, the availability of learning resources, and the alignment of assessment with intended educational outcomes.

The article has a theoretical and analytical character. It does not report an experimental intervention or claim statistically measured improvements among a specific student population. Its conclusions are therefore intended to provide a pedagogical interpretation and a conceptual basis for further empirical investigation.

Results and Discussion

Interactive teaching methods can contribute to the development of creative thinking by changing the nature of students' participation in the educational process. Instead of concentrating exclusively on memorising and reproducing information, students become involved in activities that require them to interpret knowledge, compare alternatives, formulate questions, and construct their own conclusions. This change creates opportunities for the development of intellectual independence and creative problem-solving.

Brainstorming is one of the interactive methods that can stimulate students' ability to generate ideas. During brainstorming activities, students are encouraged to propose different solutions to a particular question without immediately judging the value of each suggestion. This approach can support the development of fluency because learners practise producing a relatively large number of ideas within a limited period. It may also encourage originality when students move beyond familiar answers and consider less conventional possibilities. For brainstorming to be effective, the lecturer should establish a respectful atmosphere in which students feel comfortable expressing their opinions. Premature criticism may discourage participation and restrict the emergence of new ideas.

Problem-based learning provides another important opportunity for developing creative thinking. In this approach, the learning process begins with a problem that requires investigation and the application of knowledge. Students identify what they already know, determine what additional information is necessary, examine possible explanations, and develop solutions. Unlike tasks that require only the reproduction of previously presented information, problem-based activities involve analysis, interpretation, and decision-making. Hmelo-Silver (2004) explains that problem-based learning can support the development of flexible knowledge and problem-solving abilities. In higher education, this method can be particularly valuable when problems are connected with real professional situations and require students to integrate knowledge from different disciplines. The use of interactive methods can also contribute to students' confidence in expressing independent opinions. In traditional learning environments, some students may hesitate to participate because they fear making mistakes or receiving negative criticism. Interactive

learning can reduce this barrier when lecturers create a supportive atmosphere in which mistakes are treated as opportunities for reflection and improvement. Students gradually become more willing to propose alternative solutions, defend their ideas, and participate in intellectual discussions. This confidence is an important condition for creative activity because the generation of original ideas often involves uncertainty and the possibility of failure. The lecturer's role is essential in ensuring that interactive methods produce meaningful educational outcomes. In a student-centred learning environment, the lecturer does not simply transfer information but organises activities, formulates stimulating questions, provides guidance, and supports reflection. Effective facilitation requires an understanding of students' educational needs and the ability to select tasks appropriate to their level of preparation. If an activity is too simple, it may not create sufficient intellectual challenge. If it is excessively complex or poorly explained, students may become confused and lose motivation. Therefore, interactive tasks should be designed to provide an appropriate balance between challenge, support, and independence. The integration of digital technologies can further expand opportunities for interactive learning. Online discussion platforms, collaborative documents, virtual simulations, educational applications, and digital research resources can enable students to exchange information and develop projects beyond the physical classroom. These tools may be especially useful when students need to compare information from different sources, prepare joint presentations, or investigate complex issues. Nevertheless, the presence of technology does not automatically guarantee creative development. Digital resources become educationally meaningful when they are used to support inquiry, collaboration, experimentation, and the creation of original work rather than merely to reproduce conventional teaching practices in electronic form.

It is important to recognise that no single interactive method is equally effective in every subject or learning situation. The choice of method should depend on the course content, learning objectives, students' prior knowledge, and the nature of the professional competencies being developed. For example, case-based learning may be especially appropriate in law, medicine, management, and teacher education, while project-based learning may be valuable in engineering, information technology, and design-related disciplines. Brainstorming and structured discussions can be adapted to a wide range of academic subjects. A combination of methods is therefore more appropriate than relying exclusively on one instructional technique. For higher education institutions in Uzbekistan, the systematic integration of interactive methods may help strengthen the connection between theoretical instruction and practical competence. Students should be given opportunities to investigate issues relevant to their future professions, analyse local and international experiences, and propose solutions to authentic problems. Such activities can make learning more meaningful and encourage students to understand knowledge as a resource for independent professional activity. However, successful implementation requires appropriate lecturer training, methodological support, sufficient learning resources, and assessment practices that recognise creative contributions.

Conclusion

Interactive teaching methods have considerable pedagogical potential for developing students' creative thinking skills in higher education. By involving learners in active discussion, collaborative investigation, problem-solving, project development, and the analysis of real-life situations, these methods create opportunities for the development of originality, flexibility, fluency, elaboration, and independent reasoning. Their educational value lies in encouraging students not merely to reproduce existing knowledge but to interpret, question, apply, and transform it. The analysis indicates that brainstorming, problem-based learning, project-based learning, case-based

learning, and collaborative discussion can contribute to different dimensions of creative thinking. However, their effectiveness depends on purposeful instructional design, the lecturer's ability to facilitate learning, the relevance of educational tasks, and the creation of a supportive academic environment. Assessment should also move beyond the evaluation of correct answers and consider the originality, diversity, and quality of students' ideas.

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