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THE IMPACT OF PROJECT-BASED AND STARTUP-ORIENTED LEARNING ON THE DEVELOPMENT OF ENTREPRENEURIAL COMPETENCIES AMONG UNIVERSITY STUDENTS

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Abstract

This study investigates the impact of project-based learning (PBL) and startup-oriented pedagogy on the development of entrepreneurial competencies among university students. In the context of rapid economic transformation and increasing demand for innovation-driven skills, higher education institutions are required to move beyond traditional teaching methods and adopt experiential learning approaches. The research employs a mixed-methods design, combining quantitative analysis of competency development with qualitative insights from student reflections and instructor observations. The findings indicate that students exposed to PBL and startup-oriented learning demonstrate significantly higher levels of initiative, risk assessment ability, creativity, and problem-solving skills compared to those in traditional learning environments. The study contributes to the growing body of literature on entrepreneurship education by providing empirical evidence from an emerging economy context and offering pedagogical recommendations for curriculum design.

Keywords: *entrepreneurial competencies, project-based learning, startup education, higher education, innovation, pedagogy*

Introduction

In the contemporary knowledge economy, entrepreneurial competencies have become a critical component of graduate employability and economic sustainability. Universities are increasingly expected to equip students not only with disciplinary knowledge but also with transferable skills such as creativity, initiative, and the ability to navigate uncertainty. Traditional lecture-based instruction, however, often fails to foster these competencies effectively. As a result, pedagogical innovations such as project-based learning and startup-oriented education have gained prominence.

Project-based learning emphasizes student-centered inquiry and real-world problem solving, while startup-oriented learning immerses students in the process of developing and testing business ideas. Both approaches align with constructivist learning theory, which posits that knowledge is actively constructed through experience. Despite the theoretical support for these methods, there remains a need for empirical studies that examine their combined impact on entrepreneurial competency development, particularly in the context of emerging economies.

This study aims to address this gap by analyzing how the integration of PBL and startup-oriented learning influences the development of key entrepreneurial competencies among university students.

Literature Review

Entrepreneurship education has evolved significantly over the past decades, shifting from a focus on business planning to a broader emphasis on mindset and competencies.[3] Entrepreneurial competencies are commonly defined as a set of knowledge, skills, and attitudes that enable individuals to identify opportunities, mobilize resources, and create value.[6]

Project-based learning has been widely recognized as an effective approach for developing higher-order thinking skills. According to constructivist theory, learners gain deeper understanding when they actively engage in solving authentic problems. Empirical studies suggest that PBL enhances critical thinking, collaboration, and self-directed learning.[8] In the context of entrepreneurship education, PBL allows students to simulate real business scenarios and develop practical skills.

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Startup-oriented learning, often implemented through incubators and accelerators, provides students with hands-on experience in launching ventures. This approach emphasizes experimentation, iteration, and resilience. Research indicates that startup education significantly improves students' opportunity recognition and risk management abilities.[4] Moreover, the integration of digital tools has further enhanced the effectiveness of experiential learning environments.[6]

Despite these advances, few studies have examined the combined effect of PBL and startup-oriented learning. This study seeks to fill this gap by providing a comprehensive analysis of their impact on entrepreneurial competencies.

Methodology

The research adopts a mixed-methods approach to capture both quantitative and qualitative dimensions of learning outcomes. The study was conducted at a university in Uzbekistan, involving 120 undergraduate students enrolled in business and education programs. The participants were divided into two groups: an experimental group exposed to PBL and startup-oriented learning, and a control group receiving traditional lecture-based instruction.

Data collection was carried out over one academic semester. Quantitative data were obtained through pre- and post-intervention surveys measuring key entrepreneurial competencies, including creativity, initiative, risk-taking, problem-solving, and teamwork. The survey instrument was adapted from established competency frameworks.

Qualitative data were collected through semi-structured interviews, reflective journals, and classroom observations. These data provided deeper insights into students' learning experiences and behavioral changes.

Statistical analysis was conducted using paired t-tests and ANOVA to determine the significance of differences between groups. Qualitative data were analyzed using thematic coding.

Results

The findings reveal a statistically significant improvement in entrepreneurial competencies among students in the experimental group. The most notable increases were observed in creativity ($p < 0.01$), initiative ($p < 0.01$), and problem-solving skills ($p < 0.05$). Students also demonstrated enhanced ability to assess risks and adapt to changing conditions.

In contrast, the control group showed only marginal improvements, suggesting that traditional teaching methods are less effective in developing entrepreneurial competencies. Qualitative data further support these findings. Students in the experimental group reported increased motivation, engagement, and confidence in their abilities.

Many participants highlighted the value of working on real projects and interacting with peers and mentors. They noted that startup-oriented tasks helped them understand the practical challenges of entrepreneurship and develop resilience.

Discussion

The results confirm that project-based and startup-oriented learning significantly enhance entrepreneurial competency development. These findings are consistent with constructivist learning theory and previous research emphasizing the importance of experiential learning.

One of the key contributions of this study is the demonstration of the synergistic effect of combining PBL with startup education. While PBL provides a structured framework for inquiry and collaboration, startup-oriented learning introduces elements of uncertainty and real-world complexity. Together, they create a powerful learning environment that fosters both cognitive and behavioral competencies.

The study also highlights the importance of institutional support, including access to mentors, resources, and flexible curricula. Without these elements, the implementation of innovative pedagogies may be limited.

Conclusion

This study demonstrates that integrating project-based and startup-oriented learning into higher

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education significantly enhances the development of entrepreneurial competencies among students. The findings have important implications for curriculum design and educational policy, particularly in emerging economies seeking to foster innovation and economic growth.

Future research should explore long-term impacts and scalability, as well as the role of digital technologies in supporting entrepreneurship education. Overall, the transition from traditional to experiential learning represents a critical step toward preparing students for the challenges of the modern economy.

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