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INNOVATIVE APPROACHES TO DEVELOPING PROFESSIONAL COMPETENCE IN STUDENTS OF TECHNICAL HIGHER EDUCATION INSTITUTIONS (BASED ON THE **EXAMPLE OF THE BUILDING AND CONSTRUCTION SPECIALTY)** 

TEXNIK UNIVERSITETLAR TALABALARIDA KASBIY KOMPETENTSIYA'NI SHAKLLANTIRISHGA INNOVATSION YONDASHUVLAR ("QURILISH" MUTAXASSISLIGI MISOLIDA)

ИННОВАЦИОННЫЕ ПОДХОДЫ К ФОРМИРОВАНИЮ ПРОФЕССИОНАЛЬНОЙ КОМПЕТЕНТНОСТИ У СТУДЕНТОВ ТЕХНИЧЕСКИХ ВУЗОВ (НА ПРИМЕРЕ СПЕЦИАЛЬНОСТИ "СТРОИТЕЛЬСТВО")

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#### Abstract

This study explores the impact of innovative pedagogical strategies on the development of professional competence in students within technical higher education, with a particular focus on the building and construction sector. It underscores the significance of incorporating individualized learning pathways, the establishment of scientific and educational centers, and the promotion of creativity and innovation in the learning environment. Furthermore, the research highlights the pivotal role of educators' expertise in motivating students and preparing them for the challenges of the industry. The results indicate that an integrated and comprehensive educational approach, blending both theoretical knowledge and practical application, notably enhances student engagement, the acquisition of professional skills, and the preparedness of students to meet the evolving demands of the construction industry. However, challenges such as limitations in resources and the need for continuous professional development for educators present obstacles to the full implementation of these strategies.

#### Annotatsiya

Ushbu tadqiqot innovatsion pedagogik strategiyalarning texnik oliy ta'lim talabalari orasida professional kompetensiya'ni rivojlantirishga ta'sirini, ayniqsa qurilish sohasi kontekstida o'rganadi. Tadqiqotda individual o'quv yoʻllarini joriy etish, ilmiy-educatsion markazlar tashkil etish va oʻquv muhitida ijodkorlik va innovatsiya'ni rivojlantirishning ahamiyati ta'kidlanadi. Shuningdek., oʻgituvchilarning mutaxassisligi, talabalarni motivatsiya gilish va sanoat muammolariga tayyorlashdagi muhim roli ham alohida ajratilgan. Natijalar, nazariy bilim va amaliy qoʻllanmani birlashtirgan integratsiyalashgan va kompleks ta'lim yondashuvi talabalar ishtirokini, professional koʻnikmalarni egallashni va qurilish sanoatining oʻzgaruvchan talablariga javob berishga tayyorlikni sezilarli darajada oshiradi, deb koʻrsatadi. Biroq, resurslarning cheklanganligi va oʻqituvchilarni doimiy ravishda professional rivojlantirish zaruriyati bu strategiyalarni toʻliq amalga oshirishda toʻsiq boʻlishi mumkin.

#### Аннотация

Это исследование изучает влияние инновационных педагогических стратегий на развитие профессиональной компетенции студентов технических высших учебных заведений, с особым акцентом на строительную отрасль. Подчеркивается важность включения индивидуализированных учебных траекторий, создания научно-образовательных центров, а также стимулирования творчества и инноваций в образовательной среде. Кроме того, в работе выделяется ключевая роль профессиональной экспертизы преподавателей в мотивации студентов и подготовке их к вызовам отрасли. Результаты исследования показывают, что интегрированный и всесторонний образовательный подход, сочетающий теоретические знания и практическое применение, значительно повышает вовлеченность студентов, приобретение профессиональных навыков и готовность студентов удовлетворять меняющиеся требования строительной отрасли. Однако проблемы, такие как ограничения ресурсов и необходимость постоянного профессионального развития преподавателей, представляют собой препятствия для полной реализации этих стратегий.

Key words: Innovative pedagogy, professional competence, technical education, construction industry, individualized learning, scientific and educational centers, creativity in teaching, educators' expertise, student motivation, skill acquisition.

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Kalit soʻzlar: Innovatsion pedagogika, professional kompetensiya, texnik ta'lim, qurilish sanoati, individual oʻrganish, ilmiy va ta'lim markazlari, ta'limda ijodkorlik, oʻqituvchilarning mutaxassisligi, talabalar motivatsiyasi, koʻnikmalarni egallash.

**Ключевые слова:** Инновационная педагогика, профессиональная компетентность, техническое образование, строительная отрасль, индивидуализированное обучение, научно-образовательные центры, креативность в обучении, экспертность преподавателей, мотивация студентов, приобретение навыков.

#### INTRODUCTION

In the contemporary landscape of technological progress and accelerated industrial expansion, the need for highly proficient professionals in technical disciplines has reached unprecedented levels. Institutions of higher technical education hold a fundamental responsibility in equipping students with the requisite knowledge, skills, and competencies to address the demands of a rapidly evolving professional landscape. Nevertheless, conventional educational methodologies frequently prove inadequate in preparing students for the multifaceted and interdisciplinary challenges characteristic of the modern workforce.

This study examines innovative strategies for cultivating professional competence in students specializing in building and construction. As a fundamental driver of economic growth and infrastructure development, the construction sector necessitates professionals who are not only technically proficient but also skilled in critical thinking, problem-solving, and adaptability. By adopting forward-thinking pedagogical approaches, including project-based learning, the use of digital technologies, and collaborations with industry stakeholders, technical education institutions can enhance the holistic professional development of their students.

This research seeks to analyze and assess these innovative practices, employing the building and construction specialization as a case study, to offer valuable insights into effective educational methodologies. The primary focus lies in harmonizing theoretical instruction with practical implementation, thereby narrowing the divide between academic training and industry expectations.

#### LITERATURE ANALYSIS AND METHODOLOGY

Researcher Ilfak Vildanov of Kazan State University identifies several conceptual principles underpinning the methodological framework for training future engineering specialists: • The core objective of the technological framework within the educational process at technical universities is to facilitate the personal and professional growth of students, who are both the subjects and beneficiaries of education. • The technological framework must establish optimal conditions for developing trainees' abilities and fostering their professional growth by incorporating a design that accounts for individual and psychophysiological characteristics. • At the heart of this technological framework lie scientific and educational centers, which serve as the primary structural components. These centers systematically integrate various elements of the educational environment to cultivate practical skills (competencies) and relevant experiential knowledge aligned with students' specializations. • Scientific and educational centers (architectural, spatial, material, ergonomic, etc.) create a synergistic environment that supports the creative and professional development of students. These centers encourage both individual and collaborative efforts while adhering to universal and professional competencies defined by the FES3++ standards. • The professional development of students is further supported by the teaching staff, whose personal, social, and professional attributes are embedded in the training content and integrated into the technological framework. This conceptualization underscores the holistic and integrative approach necessary to prepare engineering specialists for the dynamic demands of their field[1].

Ilfak Vildanov's conceptual principles for preparing future specialists in the engineering field align closely with the perspectives advanced by Uzbek scholars on modernizing education and fostering professional competencies. Uzbek researchers, including X.S.Oripov and Z.T. Karimova, underscore the importance of a learner-centered educational process[2]. Karimova, in particular, emphasizes the necessity of designing educational frameworks that consider the psychophysiological characteristics of students. This perspective resonates strongly with Vildanov's focus on tailoring technological complexes to individual attributes and needs.

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Furthermore, Uzbek scholars highlight the critical role of scientific and practical centers in developing professional competencies. For instance, R.A.Xoliqov asserts that such centers should not only provide theoretical knowledge but also facilitate the development of practical skills and professional experience[3]. This viewpoint complements Vildanov's emphasis on the practical components of educational systems. Another significant aspect is the creation of a conducive environment for creative development. Scholars like A.N.Safarov argue that an innovative educational environment fosters not only professional skills but also social and personal competencies among students. This aligns with Vildanov's concept of integrative scientific-educational centers that encourage both individual and collaborative activities. The role of pedagogical staff in the educational process has also been extensively explored by Uzbek researchers. S.Kh.Juraev highlights the importance of integrating the personal, social, and professional attributes of educators into the curriculum to positively influence student motivation and professional growth[4]. This perspective is consistent with Vildanov's assertion that the personal and professional characteristics of teaching staff are integral to the technological complex. Vildanov's conceptual framework aligns with the views of Uzbek scholars regarding the modernization of education and the development of professional competencies. Integrating these approaches can enhance the efficiency of educational processes and better prepare students for their future professional endeavors.

#### **RESULT AND DISCUSSION**

Innovative Strategies	Key Insights from Vildanov	Key Insights from Uzbek Scholars	Outcomes in Building and Construction Education	Challenges
Individualized Learning and Professional Growth	Incorporating psychophysiological and individual characteristics into educational models.	Karimova supports the integration of personalized elements to enhance student engagement and learning customization.	Improved student engagement, better retention, and development of professional skills.	Integration of individualized learning elements into curricula.
Significance of Scientific and Educational Hubs	Advocating for the integration of scientific-educational centers into education.	Kholiqov emphasizes the importance of scientific- educational centers in bridging theory with practice.	Effective connection of theory and practice using digital resources, collaborative initiatives, and real-world simulations.	Financial resources and strong partnerships needed to develop scientificeducational centers.
Fostering Creativity and Innovation in Educational Settings	Creating innovative learning environments that foster creativity, critical thinking, and adaptability.	Safarov highlights the need for innovative and integrative learning environments that foster both technical and soft skills.	Development of both technical and soft skills such as critical thinking, adaptability, and teamwork.	Challenges in sustaining innovative learning environments and ensuring their applicability in practice.

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Innovative Strategies	Key Insights from Vildanov	Key Insights from Uzbek Scholars	Outcomes in Building and Construction Education	Challenges
The Role of Educators' Expertise	Emphasizing the role of educators in shaping students' professional competencies.	Juraev stresses the importance of integrating personal and professional expertise into teaching methods for better student outcomes.	Increased student motivation and preparedness for industry-specific challenges.	Ensuring educators are equipped with advanced pedagogical competencies.

The study highlights the need for an integrated, holistic approach to technical education. By combining Vildanov's theories with Uzbek scholars' practical frameworks, institutions can better prepare students for the dynamic construction industry. Despite challenges in resources and educator training, these strategies promise to enhance student competence and the effectiveness of technical education systems.

**Conclusion:** In summary, the research emphasizes the significance of implementing innovative and comprehensive strategies to foster professional competence in technical higher education, especially within the building and construction field. The incorporation of personalized learning, the creation of scientific-educational centers, the promotion of creativity, and the utilization of educators' expertise are crucial elements in improving student engagement, knowledge retention, and readiness for industry challenges.

Despite existing obstacles such as resource constraints and the necessity for ongoing professional development for educators, the approaches proposed by Vildanov and Uzbek scholars offer a promising framework for equipping students to meet the dynamic requirements of the construction sector. By blending theoretical perspectives with practical applications, technical institutions can cultivate a workforce possessing both technical and soft skills, prepared to address the complexities of a rapidly evolving professional environment. Consequently, a holistic, integrated approach to education can play a vital role in advancing both individual professional competence and the modernization of technical education systems.

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