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THEORETICAL FOUNDATIONS FOR DEVELOPING THE INNOVATIVE COMPETENCE OF FUTURE TEACHERS

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ABOUT ARTICLE

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Abstract: This article explores the theoretical-pedagogical underpinnings of cultivating innovative competence in prospective teachers. Drawing on national and international scholarship, it first clarifies the concept of innovation, its genesis, stages (creation, adaptation, diffusion, evaluation), and role as a driver of educational change. It then reviews classifications of educational innovations (pedagogical, organizational, technological; local, modular, systemic) and positions innovation processes as the principal means of shaping teachers' creative problem-solving abilities. Core qualities defining a teacher's innovative competence, critical self-analysis, openness to new ideas, continual professional growth, and creative instructional design are identified, along with the multiple roles an innovative educator must perform (assessor, moderator, facilitator, mentor). The article concludes that fostering these capacities requires an institutional environment that supports risk-taking, collaboration, and lifelong learning, and it offers actionable recommendations for teacher-training programs to embed innovation theory, reflective practice, maker-space practica,

mentorship networks, cross-disciplinary collaboration, impact assessment, and continuous upskilling. Implementing these strategies will transform teacher education into an engine of sustained pedagogical innovation and produce educators capable of preparing students for a knowledge-driven global economy.

Introduction

Preparing future pedagogical personnel for innovative activity is one of the most pressing pedagogical issues today. In the context of globalization, new approaches and technologies are penetrating every sphere of society, while the education system is tasked with training competitive and competent specialists. In particular, it has become essential to enhance the effectiveness of teaching and educational work by widely introducing modern innovative technologies into the learning process.

The President of the Republic of Uzbekistan, Shavkat Mirziyoyev, emphasizing the significance of education and upbringing for societal progress, stated: “The foundation of progress and the force that make a country powerful and a nation great are science, education, and upbringing… Therefore, the threshold of New Uzbekistan begins with the school” [1]. Indeed, equipping the younger generation with modern knowledge and skills and fostering independent, innovative thinking have been elevated to the level of state policy. Consequently, developing teachers’ competence to create innovations and apply them in educational practice has assumed paramount importance.

In the developed countries of the world, innovative approaches in education are viewed as a strategic vector of development. On the basis of creating, assimilating, and disseminating educational innovations, open, flexible, individualized, and knowledge-generating innovative pedagogical processes have been taking shape. For example, in the United States and Western European countries, beginning in the 1960s, the emergence of the concept of “educational technology” drew serious attention to questions of innovation and innovative activity [2]. Even then, a special center for pedagogical innovations and a research institute were established in Europe. As a result, pedagogical science witnessed the rise of an innovative education theory through the technologization and modernization of the educational system.

Literature review. According to scientific sources, the emergence of this theory is the result of efforts to improve educational effectiveness, ensure the socialization of the individual,

and create a learner-friendly environment within the educational process [3]. It has been scientifically substantiated that pedagogical activity is essentially a creative endeavor and is intrinsically linked to pedagogical innovations. In particular, educational scholars K. Angelovskiy, G. I. Gorskaya, V. A. Kan-Kalik, S. L. Kuzmina, V. A. Slastenin, and L. M. Fridman have comprehensively illuminated the general and specific aspects of teachers' innovative activities [4].

Clarifying the essence and meaning of the concept of innovation is of great importance when elucidating the theoretical foundations of the present topic. Lexically, the word "innovation" is derived from the English term "innovation," meaning "to introduce something new." The National Encyclopedia of Uzbekistan explains innovation as follows: "innovation – (Eng. innovation – an introduced novelty, invention) – ensuring the replacement of generations of technology and technique through capital investments in the economy; novelties in the sphere of management and labor organization on the basis of scientific-technical achievements and advanced practices and their application in various fields of activity." In scientific-pedagogical literature, innovation is generally interpreted as "novelty," whereas the "innovation process" is described as the totality of stages involved in assimilating a created novelty and applying it to educational practice. Thus, the concept of innovation essentially denotes the activity of creating novelty and applying it in practice.

Some researchers regard innovation as a set of any creative initiatives and changes within the educational sphere. For example, domestic scholars Sh. Qurbonov and E. Seytxalilov, in their studies, define innovation as an important factor in developing education and emphasize that various initiatives and novelties in the field of education accumulate and take shape as a system [5]. Researcher U. N. Nishonaliyev was among the first scientists to substantiate pedagogical innovations as an independent object of study; his works clarify the theoretical criteria for introducing novelties into the educational process [6]. Likewise, R. Sh. Ahliddinov analyzed issues of pedagogical management within the system of continuing education, substantiating methods for managing innovation processes [7]. In recent years, new studies have emerged: for instance, M. T. Jumaniyozova has specifically examined the pedagogical foundations for preparing teachers for innovative activity in modern conditions and has developed systematic scientific recommendations [4]. It is clear that national researchers, while studying foreign experience, devote special attention to adapting innovative pedagogical ideas to the specific features of Uzbekistan's education system.

Classification of innovations in the education system is likewise of theoretical significance. Scientific sources propose classifying the innovations that occur within the educational process according to various criteria. In particular, depending on the sphere to which the novelty belongs, distinctions are made between pedagogical innovations (related to the teaching-learning process), organizational innovations (pertaining to the management system), and technological innovations (concerning the material-technical base).

By scope of coverage, three types are identified: local innovations (small-scale novelties confined to a particular link or process), modular innovations (a set of several interrelated novelties), and systemic innovations (complex changes exerting wide-ranging influence on the entire education system). Innovations can also be categorized according to the time of their introduction and the degree of their diffusion. However, researchers note that there is currently no single universal classification encompassing all innovations in the education system.

For this reason, it is advisable to analyze separately the content, essence, and scale limits of each pedagogical novelty and to assess its impact on the educational process. Most importantly, innovation and innovation processes serve as the principal means of forming and developing the innovative competence of future teachers. In other words, introducing a novelty is a tool for goal-oriented change, whereas the innovation process is a consistent sequence of changes aimed at shaping and enhancing future teachers' innovative competence.

In the recent past, although the terms "innovative education," "innovative activity," and "innovation process" were rarely used in Uzbek pedagogical literature, today they are in wide circulation. Beginning in the late 1990s and early 2000s, the concept of innovative ideas and technologies started to be introduced into the country's education system [6]. A closer look at the content of the concept of innovative education shows that it embodies a complex activity that includes creating innovation, assimilating innovation, using innovation, and demonstrating innovation. Thus, innovative education is an educational process aimed at forming in the learner the qualities and skills to create new ideas, norms, and rules, as well as to quickly and naturally accept advanced ideas generated by others. According to available information, the term "innovative education" was first used at a meeting of the Club of Rome in 1979 [9]. The methods and tools employed in the innovative education process are referred to as innovative educational technologies—or, put simply, educational innovations.

Results and discussion. In pedagogical literature, an educational innovation is usually defined as a new form, method, or technology that, when applied to solve a problem arising in

the educational process through a novel approach, is capable of producing a much more effective result than previous methods. Thus, any innovation in the field of education is significant in that it offers a new solution to a specific problem and improves educational quality and efficiency. The innovative educational process represents a set of novelties and changes in the educational conception, curricula, methods and tools of instruction, as well as in methods of upbringing. In essence, this process encompasses two main aspects: first, studying, generalizing, and popularizing advanced pedagogical experience; and second, applying the achievements of pedagogical science to practice. In this sense, a deep analysis of innovation processes in education makes it possible to introduce the achievements of pedagogical theory and practice into the real educational process.

The concept of innovative activity occupies a distinct place in the context of the pedagogical process. To organize a teacher's innovative activity effectively within an educational institution, an innovation-supportive environment must first be in place. When a creative and free atmosphere is cultivated in the pedagogical team, the teacher feels at ease, and an internal drive and interest in novelty emerge. As a result, the teacher is inspired to generate new ideas and implement them in practice. An innovative environment refers precisely to those conditions that foster the emergence of pedagogical innovations and facilitate their rapid assimilation and application in practice. In an educational institution where such an environment exists, innovation processes, namely, the introduction of novelties and their adaptation to new conditions become easier and proceed successfully.

Theoretical interpretations of innovative activity originate with the Austrian economist I. Shumpeter and the Russian scholar N. Kondratyev, who were the first to introduce this concept into the theory of economics. They interpreted innovation as new combinations and as a "driver" of social development, offering a theoretical explanation of the step-by-step evolution of innovation processes.

In pedagogy, the problem of innovative activity entered the agenda starting in the 1960s—when, as noted above, the concept of educational technology came into wide use [2]. The establishment of a European Center for Pedagogical Innovations during those years is a case in point. Analysis of scientific sources shows that the formation of the theory of pedagogical innovation was closely linked to efforts to technologize the education system, increase educational effectiveness, and foster the all-round development of the learner's personality. As a result, the scientific idea emerged that pedagogical activity is the unity of

creative process and pedagogical innovations. This approach made it possible to gain a deeper understanding of how a teacher's innovative pedagogical activity takes shape. During that period, scholars such as V. A. Slastenin, V. I. Zagvyazinskiy, and A. V. Khutorskiy developed methodological recommendations for implementing pedagogical innovations [3].

The teacher's innovative activity by its very nature possesses a creative component that distinguishes it from traditional pedagogical activity. Some researchers have sought to substantiate innovative activity theoretically as a distinct form of pedagogical work. For instance, K. Angelovskiy studied pedagogical innovation as an independent object [10]; V. A. Slastenin [11] and V. I. Slobodchikov [12] endeavored to prove that innovative activity is a special kind of activity aimed at renewing the teacher's own professional practice.

Specifically, the Russian scholar V. I. Slobodchikov defines it as follows: "Innovative activity is an activity aimed at solving a problem that arises when new social demands do not correspond with existing traditional norms, or when a newly formed norm in practice clashes with an old one" [12].

From this definition it can be understood that innovative activity is essentially a creative endeavor directed toward eliminating the contradiction between current societal needs and outdated principles. Researchers also interpret innovative activity as an important part of both social practice and theory, as well as a system of actions carried out by subjects to improve the characteristics of socio-cultural objects. In this regard, innovative activity encompasses not only the ability to solve existing problems but also the motivational readiness to find new solutions in any situation. Indeed, the central issue in a teacher's innovative activity is the striving to organize the learning process effectively and to achieve this goal.

It should be emphasized that the dynamics of innovation processes in society have brought the issue of preparing teachers for innovative activity to the forefront. Solving this problem involves not only the use of technical tools but also such stages as searching for, creating, adapting, and implementing innovations, as well as evaluating the results obtained. According to M. T. Jumaniyozova, in the context of accelerating innovation processes, the need to teach teachers to create innovations and introduce them into practice increases even more [8]. This, in turn, requires developing new approaches and principles within the system for training pedagogical personnel. Indeed, preparing teachers for innovative activity is not limited to mastering technical tools; rather, it also envisages forming motivation and creative thinking toward novelty. A teacher should not confine themselves to merely using existing innovative

technologies: they must continually improve them, critically analyze their own pedagogical activity, and search for new methods. From this standpoint, developing teachers' innovative thinking and motivating them toward creative inquiry occupy a special place in the system of professional development and retraining of pedagogical staff.

What competencies and qualities must a teacher possess to engage in innovative pedagogical activity? Research shows that a teacher involved in innovation should embody the following key traits: the ability to consciously analyze their professional activity; a critical attitude toward existing norms; openness to new pedagogical ideas and readiness to embrace them; a habit of continual self-development and improvement of professional mastery; and the capacity to adopt non-traditional, creative solutions in the teaching process. Contemporary Russian educators identify precisely these qualities as essential for the teacher's ongoing development. This implies that a future teacher needs to cultivate the ability to detect novelty and approach it creatively in their professional work, remaining constantly inquisitive even when employing innovative technologies in the educational process. The teacher must strive to realize their full potential and to continually refine both professional and personal qualities.

The set of qualities outlined above determines the innovative competence of pedagogical personnel. In the scientific literature, the concept of innovative competence is interpreted as a collection of creative skills manifested in a teacher's new way of thinking and practical activity. For instance, sources dealing with pedagogical competence and creativity state that innovative competence is the ability to put forward new ideas and successfully apply them in practice with the aim of improving the educational process and raising its quality and efficiency [13].

Accordingly, the innovative competence of a future teacher refers to their ability to find novel solutions to problems that arise in the educational process, to master advanced pedagogical technologies thoroughly and apply them creatively, and, when necessary, to develop new pedagogical ideas. Forming such competence requires the ongoing integration of theoretical knowledge with practical activity, analyzing the knowledge and skills acquired during study and applying them in new conditions.

Moreover, creating an innovative environment within the educational institution is crucial for developing innovative competence: teachers must have conditions that allow for free creative inquiry, mutual exchange of experience, and support for innovations. Indeed, merely supplying technical tools and resources is not enough; if a future teacher is imbued with an innovative spirit, a drive for novelty, and a creative approach to the profession, they will

become a truly innovative educator capable of organizing the educational process at a high level.

The modern education system requires the teacher to combine several roles and competencies simultaneously. In particular, a teacher endowed with innovative competence acts in their professional practice as an evaluator (assessor), moderator, facilitator, and mentor. Each of these roles rests on a specific theoretical foundation within the pedagogical process.

Teacher-as-assessor. First and foremost, the evaluator possesses the skills to analyze and assess the educational process, determining students' level of knowledge, gauging the effectiveness of their own lesson methodology, and, where necessary, introducing changes into the learning process. For a teacher engaged in innovative activity, reflective analysis and assessment skills are of paramount importance, because the ability to appraise the results of each implemented novelty provides the basis for subsequent innovative steps.

Teacher-as-moderator. In this role, the teacher manages the environment and the dynamics of the learning process. Rather than standing at the board delivering a monologue in a traditional lesson, the moderator focuses on ensuring the active participation of students. During moderation, the teacher guides learners toward collaborative group work, creating conditions for independent thinking and self-development. The moderator's tasks include: organizing group activity according to a carefully prepared plan; posing guiding questions to steer the learning process; managing discussions; and making any adjustments needed to achieve the intended objectives. Acting as a "director" of the process, the moderator concentrates primarily on students—helping them express ideas freely, regulating group dynamics, and distributing social roles appropriately. Thus, moderation demands of the teacher a high level of communicative competence as well as specialized knowledge and skills in group management.

A teacher-facilitator manifests as the person who directly works with learners in the classroom to boost their activity. The facilitator is a specialist who, in order to increase lesson effectiveness, divides students into small groups and organizes and manages discussion and joint work. The facilitator supports learners, giving them guidance so they can master the topic independently and providing the necessary materials and a favorable environment. A facilitator's tasks include, for example, allocating time correctly during discussions; helping students stay within the topic's scope by asking evaluative and guiding questions; teaching them to listen to one another; creating an atmosphere of active communication; and, at the end

of the discussion, drawing conclusions and presenting well-grounded arguments. Thus, a facilitator-teacher must know well the methods and techniques that stimulate students' thinking activity and maintain a neutral yet supportive stance in discussions and group work. The importance of this role lies in its focus on developing learners' independent and critical thinking and ensuring every student's participation in the lesson.

Finally, a teacher-mentor is a person who shares their knowledge and experience with others, acting as a tutor for novice teachers or students. A teacher at the mentoring level not only organizes their own lessons at a high standard but also provides methodological support to colleagues and disseminates pedagogical innovations throughout the team. The mentor-teacher serves as a model through creativity and professionalism, leading in the creation and application of pedagogical novelties. For example, as an experienced teacher, the mentor may train peers at seminars on newly introduced educational technologies, advise novice teachers, and guide students in developing independent learning skills. Mentorship demands from the teacher not only deep theoretical knowledge, rich practical experience, and mature pedagogical mastery but also leadership abilities. Mentoring is one of the highest manifestations of innovative competence, in which the educator is an innovator themselves and can also inspire others to engage in innovative activity.

Conclusion. In sum, the theoretical-pedagogical foundations for developing the innovative competence of prospective teachers rest on two mutually reinforcing pillars. First, they require a profound understanding of the concept of innovation itself, its stages of creation, adaptation, diffusion, and evaluation and of the broader social and educational dynamics that drive continuous change. Second, they demand the purposeful cultivation of a coherent cluster of qualities and skills that enable future educators to detect emerging needs, generate novel solutions, and integrate those solutions creatively into everyday classroom practice.

The literature, both national and international now converges on a clear vision of the twenty-first-century teacher: an educator who embodies the roles of assessor, moderator, facilitator, and mentor; who employs reflective analysis to refine instruction; who scaffolds collaborative knowledge construction; and who disseminates best practices across professional communities. Such a teacher not only masters existing technologies but also iteratively improves them, designing new pedagogical models, tools, and learning environments. Crucially, this profile is unattainable without an institutional culture that

supplies psychological safety, supports risk-taking, and values the systematic exchange of experience—conditions under which innovation processes can flourish.

When teacher-preparation programs internalize these principles, they create a virtuous cycle: well-trained innovators elevate learning quality and efficiency; their classrooms, in turn, nurture students who are themselves critical, creative, and adaptable qualities indispensable for thriving in a knowledge-driven global economy. It follows that strengthening the innovative competence of future teachers is not an ancillary task but a strategic imperative for any education system intent on producing intellectually mature, competitive citizens.

Recommendations:

1. Require every pedagogical discipline to address innovation cycles—problem identification, ideation, prototyping, implementation, evaluation—connecting them to concrete subject-matter examples.

2. Incorporate structured self-assessment tools and peer-review protocols that prompt pre-service teachers to analyze the impact of each new method they trial and to iterate accordingly.

3. Equip teacher-training institutions with flexible laboratories where candidates can experiment with emerging technologies, develop micro-projects, and receive real-time mentorship from experienced innovators.

4. Pair novice educators with mentor-teachers recognized for exemplary innovation, establishing formal incentives, release time, recognition awards, professional-development credits for mentors' guidance.

5. Initiate joint modules with faculties of engineering, psychology, and computer science so that future teachers internalize diverse problem-solving perspectives and technological fluencies.

6. Develop assessment frameworks that track how teacher-led innovations affect learner engagement, academic achievement, and transferable skills, feeding the data back into program improvement cycles.

7. Offer alumni access to continuous upskilling opportunities—online micro-credentials, action-research grants, innovation incubators—ensuring that teachers' creative growth keeps pace with societal change.

Implementing these recommendations will help transform teacher education into an engine of sustained pedagogical innovation, positioning educators as the chief architects of an adaptable, high-performing, and future-ready learning ecosystem. .

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