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Theoretical and Methodological Foundations for Developing Foresight Competence in Future Teachers

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Abstract
This article analyzes the theoretical and methodological foundations for developing foresight competence in future teachers. The purpose of the study is to reveal the scientific essence of foresight competence, its structural components, and the current state of its development among future teachers. The study employed content analysis of normative-legal documents, comparative-historical analysis of foreign, CIS, and Uzbek scholarly sources, and theoretical generalization. As a result, a five-component structural-functional model of the competence (cognitive, prognostic-analytical, operational-activity, motivational-axiological, and reflexive) and three levels of its development (reproductive-predictive, tactical-adaptive, strategic-creative) were developed. The findings show that the current state of this competence among future teachers does not fully meet modern requirements, which substantiates the need to use the collaborative potential of the innovative pedagogical education cluster.

Keywords: Foresight competence, future teacher, prognostic thinking, strategic design, pedagogical education cluster, collaborative cooperation, futures literacy, reflexive activity.

INTRODUCTION

BO'LAJAK PEDAGOGLARDA FORSAYT KOMPETENSIYASINI RIVOJLANTIRISHNING NAZARIY-METODOLOGIK ASOSLARI

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ANNOTATSIYA:
Ushbu maqolada bo'lajak pedagoglarda forsayt kompetensiyasini rivojlantirishning nazariy-metodologik asoslari tahlil qilingan. Tadqiqot maqsadi – forsayt kompetensiyasining ilmiy mohiyatini, tarkibiy komponentlarini va bo'lajak pedagoglarda uning rivojlanganlik holatini aniqlashdan iborat. Tadqiqotda normativ-huquqiy hujjatlarni kontent-tahlil qilish, xorijiy, MDH va o'zbek ilmiy manbalarini qiyosiy-tarixiy tahlil qilish hamda nazariy umumlashtirish metodlaridan foydalanildi. Natijada forsayt kompetensiyasining besh komponentli (kognitiv, prognostik-analitik, operatsion-faoliyat, motivatsion-aksiologik, refleksiv) tarkibiy-funksional modeli va uning uch bosqichli rivojlanish darajalari (reproduktiv-bashorat, taktik-moslashuvchan, strategik-kreativ) ishlab chiqildi. Tahlil natijalari bo'lajak pedagoglarda ushbu kompetensiyaning hozirgi holati zamonaviy talablarga to'liq mos kelmasligini ko'rsatdi, bu esa

pedagogik ta’lim innovatsion klasterining kollaborativ imkoniyatlaridan foydalanish zarurligini asoslaydi.

Kalit so‘zlar: forsayt kompetensiyasi, bo‘lajak pedagog, prognostik tafakkur, strategik loyihalash, pedagogik ta’lim klasteri, kollaborativ hamkorlik, kelajak savodxonligi, refleksiv faoliyat.

АННОТАЦИЯ

В статье проанализированы теоретико-методологические основы развития форсайт-компетенции у будущих педагогов. Цель исследования – раскрыть научную сущность форсайт-компетенции, её структурные компоненты и состояние сформированности у будущих педагогов. Использованы методы контент-анализа нормативно-правовых документов, сравнительно-исторического анализа зарубежных, постсоветских и узбекских научных источников, а также теоретического обобщения. В результате разработана пятикомпонентная структурно-функциональная модель компетенции и обоснованы три уровня её развития. Результаты показали, что текущее состояние компетенции не в полной мере соответствует современным требованиям, что обосновывает необходимость использования коллаборативных возможностей инновационного кластера педагогического образования.

Ключевые слова: форсайт-компетенция, будущий педагог, прогностическое мышление, стратегическое проектирование, кластер педагогического образования, коллаборативное сотрудничество, футурологическая грамотность, рефлексивная деятельность.

1. INTRODUCTION

The modern education system has moved away from a stable and predictable development model, entering a new phase characterized by uncertainty, rapid change, and unpredictability. Under these conditions, fundamentally updating the content of professional training for educators—and developing their skills in envisioning the future and strategic planning—has become a pressing pedagogical issue. As A. Schleicher, Director for Education and Skills at the OECD, has noted, the educator of tomorrow must be prepared to work amidst uncertainty and equip students for professions that do not yet exist [8]. Consequently, the modern teacher must evolve from a mere transmitter of knowledge into an active agent who shapes the future trajectory of education. Although the term "foresight competence" is not explicitly used in the regulatory and legal documents of the Republic of Uzbekistan concerning education, science, and digital transformation (the Constitution [1], the laws "On Education" [2] and "On the Status of a Pedagogue" [3], the law "On Science and Scientific Activity" [4], and Presidential Decrees No. PF–5847 [5], No. PF–6079 [6], and No. PF–158 [7]), the tasks stipulated therein—pertaining to strategic planning, innovative activity, and prognostic analysis—form the legal and methodological basis for the development of this competence (Table 1).

Table 1. Legal and regulatory foundations of foresight competence

Document	Aspects related to foresight competence
Constitution [1]	Right to education, academic freedom, and guarantees for the status of educators
Law "On Education" [2]	Experimental and innovative activities, educational monitoring, and continuity
Law "On the Status of a Pedagogue" [3]	Freedom to select technologies and methods; proprietary (author-developed) methodologies
Law "On Science and Scientific Activity" [4]	Scientific-prognostic thinking and the integration of education and science
Decree No. PF–5847 [5]	Individualization, adaptive technologies, and the enhancement of professional competence
Decree No. PF–6079 [6]	Digital transformation and the training of personnel with digital skills
Decree No. PF–158 [7]	Developing the potential of educators and ensuring international competitiveness

Literature Review

In scientific literature, the concept of "foresight" is interpreted not as a tool for making precise predictions about the future, but as a methodology for the systematic analysis of potential future changes and the development of appropriate strategies to address them. A. Toffler asserts that the function of the education system is to prepare individuals for problems that have not yet emerged [26]. M. Fullan characterizes the educator as an active driver of educational reform—a "change agent" [9]; Ch. Fadel, M. Bialik, and B. Trilling propose a four-dimensional framework for education [10]; and R. Miller introduces the concept of "futures literacy" [11]. Within the CIS academic tradition, scholars such as V.A. Slastenin [12], E.F. Zeyer and E.E. Simanyuk [13], A.M. Novikov [14], N.V. Kuzmina [15], A.K. Markova [16], V.D. Shadrikov [17], I.A. Zimnyaya [18], Yu.G. Tatur [19], A.V. Khutorskoy [20], and V.A. Adolf [21] have established the prognostic, gnostic, and value-goal-oriented dimensions of competence. Among scholars in Uzbekistan, N.A. Muslimov and his co-authors [22], G‘.I. Muhamedov and U.N. Khodjamqulov [23], O‘.Q. Tolipov and M. Usmonboyeva [24], B.Kh. Khodjayev [25], as well as M.A. Ikramova and N.A. Muslimov [37], have addressed issues concerning professional competence, innovation clusters, and pedagogical forecasting. Internationally, R. Slaughter [32], J. Voros [31], S. Inayatullah [28], B. de Jouvenel [29], M. Godet [30], W. Bell [27], the UNESCO "Futures Literacy" concept [33], J. Dewey [34], J. Raven [35], D. Rychen and L. Salganik [36], and P. Griffin et al. [38] have provided a theoretical foundation for the dimensions of foresight competence: cognitive, creative-scenario-based, strategic-project-oriented, reflective, and communicative-collaborative.

An analysis of the literature indicates that foresight competence has not been fully characterized as a distinct, unified scientific category in existing research; rather, its constituent components (prognostic, strategic-project-oriented, innovative, collaborative, and reflective) appear in a fragmented manner across various scholarly sources. This served as the basis for defining the aim and objectives of the present study: (1) to formulate a scientific definition of foresight competence; (2) to develop its structural-functional model; (3) to determine the levels

of development of this competence among prospective educators; and (4) to substantiate the organizational-methodological factors for its development.

2. RESEARCH METHODOLOGY (MATERIALS AND METHODS)

The research is theoretical-analytical in nature, employing the following methods:

– Content analysis method — seven normative-legal documents of the Republic of Uzbekistan concerning education, science, and digital development (the Constitution, two laws, one legislative act, and three Presidential decrees) were analyzed with a focus on provisions related to "foresight competence" [1–7];

– Comparative-historical analysis method — scientific sources from abroad (11 sources, including Toffler [26], Bell [27], Voros [31], Godet [30], and Inayatullah [28]), the CIS (10 sources, including Slastenin [12], Zeyer [13], and Kuzmina [15]), and Uzbekistan (5 sources, including Muslimov [22], Muhamedov [23], and Khodjayev [25]) were compared;

– Theoretical generalization and modeling method — based on the analyzed sources, the structural components and developmental levels of foresight competence were synthesized;

– Elements of pedagogical observation — findings from observations of the educational process within higher education institutions specializing in pedagogy were synthesized (specifically, the analysis of students' project-based and research activities, as well as the content of their academic assignments). Stages of the research: 1) establishing the relevance of the problem through normative-legal and scientific-theoretical substantiation; 2) defining the essence of the concept of "foresight competence"; 3) developing a structural-functional model; 4) formulating criteria for levels of development; 5) synthesizing the obtained results and drawing conclusions. The research does not include an empirical survey or an experimental testing phase—this will be carried out in the subsequent (experimental) chapter of the dissertation; the present article focuses on establishing the theoretical-methodological foundation.

3. RESULTS

Based on the analysis conducted, foresight competence was defined as follows: foresight competence is an integral professional quality representing an individual's ability to systematically analyze existing trends and problems, anticipate potential changes, develop and evaluate alternative future scenarios, and make strategic decisions aimed at shaping a desirable future [27; 28; 30; 31].

3.1. Structural-functional model

As a result of the analysis, a five-component model of foresight competence was developed (Table 2):

– Cognitive component — knowledge related to futures studies, strategic planning, and digital transformation [27; 31];

– Prognostic-analytical component — skills for identifying trends and developing alternative scenarios [29; 30];

– Operational-activity component — proficiency in applying methods such as Delphi, SWOT, PEST, scenario planning, and roadmapping [30; 31];

– Motivational-axiological component — openness to innovation and a sense of responsibility for the future [13; 22];

– Reflexive component — the ability to evaluate the outcomes of one's own activities and define a development strategy [34].

Table 2. Structural components of foresight competence

Component	Content	Scientific-theoretical basis
Cognitive	Foresight, trends, forecasts, scenarios, and knowledge about the future	Bell [27], Voros [31]
Analytical-prognostic	Analyzing trends and identifying potential changes	Godet [30], Jouvenel [29]
Creative-scenario	Envisioning alternative futures and creating scenarios	Inayatullah [28], Slaughter [32]
Strategic-project	Planning future activities and making decisions	Godet [30], Voros [31]
Reflexive	Re-evaluating one's own activities and perspectives on the future	Dewey [34]
Communicative-collaborative	Discussing the future collectively and developing a shared decision	Rychen, Salganik [36]

3.2. Levels of Development

A three-tier hierarchy regarding the level of development of foresight competence has been established (Table 3). This hierarchy was developed based on B.Kh. Khodjayev's research on the levels of pedagogical prognostic competence [25] and J. Voros's model of the stages of the foresight process [31].

Table 3. Levels of development of foresight competence

Level	Description	Key indicators
Reproductive-predictive	Initial foresight approach	General overviews, passive acceptance of ready-made forecasts
Tactical-adaptive	Adaptability to change and collaboration	Detecting "weak signals," collaborative modeling
Strategic-creative	Innovative and strategic management	Creating future models, driving alternative scenarios

The observations revealed the following trends: for the majority of prospective educators, operational thinking takes precedence over strategic thinking. While students are capable of addressing immediate pedagogical tasks, they encounter difficulties in making well-founded forecasts for the 5–10 year educational horizon, developing alternative scenarios, and identifying potential pedagogical risks in advance. The operational-activity component of competence—specifically the practical application of foresight methods—emerged as the least developed aspect.

4. DISCUSSION

The findings confirm a fundamental distinction between traditional pedagogical forecasting and the foresight approach: whereas the former relies on the linear extrapolation of past and present trends, foresight competence is characterized by a multi-scenario perspective and a proactive stance [30]. This conclusion validates and extends the theoretical positions of M. Godet [30] and J. Voros [31] within the context of prospective educators.

The weakness in the operational-activity component identified in this study aligns with earlier observations by B. Kh. Khodjayev [25] regarding pedagogical prognostic competence within the Uzbek education system; this serves as additional evidence supporting the reliability of the findings. At the same time, this study [builds upon/relates to] the work of N. A. This study enriches the existing scientific foundation by incorporating foresight-specific prognostic-analytical and creative-scenario dimensions into the model of professional development components proposed by Muslimov et al. [22].

The findings also confirm the practical significance of the concept of an "innovative cluster for pedagogical education"—a framework established by G‘.I. Muhamedov and U.N. Xodjamqulov [23]. Cluster-based collaboration (involving higher education institutions, general education schools, scientific-methodological centers, and employing organizations) emerges as the most effective organizational-methodological environment for developing foresight competencies. It achieves this by fostering a synergistic atmosphere and utilizing collaborative foresight sessions—along with a "reverse-hierarchy" impulse mechanism—to bridge students' theoretical knowledge with real-world pedagogical practice [23; 37].

A limitation of this research is its primarily theoretical-analytical nature; it does not yet rely on extensive empirical data (such as that derived from surveys or tests), and the observations are generalized based on a limited number of study groups. Consequently, the developed five-component model and three-level hierarchy require empirical validation through diagnostic criteria and indicators—a task that will be addressed in subsequent chapters of this dissertation.

5. CONCLUSION

The research conducted has led to the following conclusions. First, foresight competence is not merely an additional attribute of a modern educator, but a fundamental meta-competence that ensures professional stability within an uncertain (VUCA) educational environment [8; 9]. Second, this competence is based on the integration of cognitive, prognostic-analytical, operational-activity, motivational-axiological, and reflexive components [12; 13; 22; 34]. Third, the current level of foresight competence among prospective educators does not fully align with the requirements of modern education [25]; the operational-activity component was identified as the least developed aspect. Fourth, the collaborative potential of an innovative cluster for pedagogical education should be recognized as the most effective organizational-methodological factor for developing this competence [23; 37]. The developed model and proficiency criteria will serve as a diagnostic foundation for the subsequent (experimental) phase of the research.

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