

"A DIDACTIC APPROACH TO THE EFFECTIVE DEVELOPMENT OF CREATIVE COMPETENCIES IN FUTURE TEACHERS BASED ON FORESIGHT TECHNOLOGIES IN THE CONTEXT OF DIGITALIZATION."

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ABSTRACT

This article is intended for undergraduate students studying in the field of pedagogical higher education. It describes the pedagogical conditions, quality indicators, and information-didactic support for using innovative organizational-didactic forms of education in providing future teachers with methodological tools and knowledge related to creative pedagogical competence. The methodology for improving the creative competencies of future teachers based on Foresight technologies is highlighted through an innovative approach.

Keywords: Foresight, technique, innovative, center, management, monograph, intellect, transfer, component, creative, competence, criteria.

INTRODUCTION

Globally, improving students' creative competencies based on Foresight technologies and mastering new forms of independent professional development are emphasized as promising directions in education, science, and innovation. In particular, the global Education 2030 Concept, under the idea of "Ensuring opportunities for quality education throughout life," places special emphasis on the continuous professional development of specialists and the cultivation of creative thinking.

Specifically:

Finland: Known for its foresight and strategic planning centers. For instance, the Finnish Innovation Fund (Sitra) conducts long-term foresight work based on various scenarios for the development of the economy and society.

Germany: Home to several foresight centers; for example, the Federal Ministry of Education and Research (BMBF) is active in foresight, trend analysis, and development within the fields of research and education.



United Kingdom: The British Technology Strategy Board has launched a foresight and innovation center to identify technological trends and develop strategies for various sectors of the economy.

USA: Features various government and industrial foresight centers. The National Intelligence Council (NIC) conducts foresight on global trends based on scenarios of world political development. Major companies like IBM and Microsoft also have their own foresight centers to plan future technology research.

Singapore: Singularity University is involved in foresight and research in the field of technological innovation.

Systematic work is being carried out to improve the educational and methodological support for teaching students' creative competencies based on foresight technologies, using interactive teaching strategies to create problem-based situations, selecting appropriate problem tasks, and creating and implementing educational resources for virtual laboratory work.

RESEARCH METHODOLOGY

This research contributes to the implementation of tasks defined in several decrees of the President of the Republic of Uzbekistan, including Decree No. PF-5099 (June 30, 2017) on improving IT conditions, Decree No. PF-5847 (October 8, 2019) on the Concept of Developing the Higher Education System until 2030, and Decree No. PF-60 (January 28, 2022) on the Development Strategy of New Uzbekistan for 2022-2026.

The "Concept for the Development of the Higher Education System of the Republic of Uzbekistan until 2030" identifies the following tasks: the gradual introduction of the "University 3.0" concept, which envisages the close integration of education, science, innovation, and the commercialization of research results; and the establishment of foresight centers, technoparks, technology transfer centers, accelerators, startups, and business incubators within higher education institutions.

LITERATURE REVIEW

In the developing continuous education system of Uzbekistan, the higher education system plays a unique role. To solve emerging problems, it is first necessary to create the required information infrastructure for introducing modern technologies into the educational process.

The theoretical and methodological issues of developing the higher education system and the problems of creating an information environment have been studied by domestic scholars such as R.Kh. Djurayev, A.A. Abduqodirov, U.S. Begimkulov, S.Yu. Makhmudov, M.T. Mirsoliyeva, N.A. Muslimov, N.I. Taylakov, B.S. Abdullaeva, M.A. Yuldashev, and Sh.S. Sharipov.

The theory and practice of using foresight technologies in higher education, as well as the didactic and methodological foundations related to the prospects of education, science, and innovation, are covered in the works of D.N. Mamatov, O.Q. Tolipov, D.O. Khimmataliev, G.O. Ernazarova, O.A. Kuysinov, J.A. Hamidov, and others.

Scientific research on foresight technologies can be found in the works of A.J. Khurramov, M.U. Makhkamova, and A.I. Yusupov. O.D. Rakhimov, Sh.J. Berdiyev, M.I. Rakhmatov, and A.T. Nikboev have studied foresight as a factor in expanding innovation activities. D.O. Rakhimova discussed the necessity of using "foresight methods" in developing foresight competence in future managers.



Internationally, research on implementing ICT in distance professional development in higher education has been conducted by Andersen A.D., Bengston D., Bas E., Burt G., Van der Heijden K., Durance P., Effie A., Guy E.K., Goxberg L.M., Georghiou L., Graves T., and others.

Despite these efforts, factors negatively impacting the effective organization of higher education include the conflict between the rapid renewal of the education system and the current system's lack of readiness to respond, undeveloped methodological support, and the insufficient scientific and pedagogical substantiation of improving personnel training processes based on integrated information-educational environments and modern ICT.

ANALYSIS AND RESULTS

Effective forecasting is an activity performed by recognized individuals that requires both experience and creativity in relatively equal proportions. It involves preparing forecasts based on the opinions of top experts, scientists, or authorities in a specific field.

Key Foresight methods include:

Interviews: Often described as "structured conversations," these are fundamental tools for gathering distributed knowledge among interlocutors, including tacit knowledge not found in literature.

Literature Review (LR): A core part of the scanning process. Good reviews use a discursive style and are structured around themes and relevant theories.

Morphological Analysis: Closely related to relevance trees; it helps solve complex problems and manage change by mapping potential future solutions.

Relevance Trees and Logic Tables: Hierarchical approaches that start with a general description of a topic and break it down into components to study their interrelationships.

Role-playing/Acting: Requires imaginary interaction and creativity to answer: "If I were person X, how would I solve problem Y?"

Scanning (Environmental/Horizon Scanning): Systematic observation and monitoring of technological, socio-cultural, political, environmental, or economic contexts.

Scenarios: Systematic visions of potential future states, often incorporating multiple characteristics and parameters of the research object.

Science Fiction (SF): While less linked to official policy, it uses storytelling to explore the consequences of probable future events.

Simulation Games: One of the oldest methods, often used in military strategy, where a scenario defines the context and actors.

Surveys: A fundamental tool of social research used extensively in forecasting via online questionnaires.

SWOT Analysis: Identifies internal factors (strengths/weaknesses) and external factors (opportunities/threats) for an organization or unit.

Wild Cards and Weak Signals (Wi-We): Analytical types focusing on low-probability but high-impact events (Wild Cards) and vague observations that warn of future shifts (Weak Signals).

Trend Extrapolation: One of the longest-established tools, assuming the future is a continuation of the past. Recently, the concept of **Megatrends** (e.g., globalization, climate change) has become popular.

CONCLUSION

In conclusion, for any technology forecasting program to succeed, it must follow best practices. Forecasting can cover several distinct horizons. Depending on the industry, forecasting may look 10–15 years ahead, while "foresight" may cover long-term horizons of 15–30 years. These two serve different purposes: forecasting helps coordinate active R&D and innovation efforts for current economic directions, while foresight identifies disruptive technologies that may shape the long-term future.

In the medium-term, technologies are already partially developed, making them easier to analyze. Looking further into the future introduces greater uncertainty, where technologies may still be theoretical or in the realm of science fiction. It is crucial to define the working horizon and adapt the approach accordingly. Technology forecasting can identify vast opportunities, but if they do not align with existing national innovation and educational policies, the country is unlikely to succeed in realizing them. Results must match the socio-cultural context and industrial base of the country. Stimulating society-driven innovation at the national level creates harmony between resources and efforts, increasing trust in the general direction of innovation among companies and institutions.

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