FORUM PEDAGOGICZNE

**2025, 16, 2: 221–229**
p-ISSN 2083-6325; e-ISSN 2449-7142
https://doi.org/10.21697/fp.2025.2.19



OLEKSANDR KUCHAI[1]
*Mazovian Academy in Płock, Poland*
ORCID 0000-0002-9468-0486

Received: 5.09.2024; revised: 25.02.2025; accepted: 24.04.2025

# DEVELOPMENT OF LOGICAL THINKING OF FUTURE SPECIALISTS IN THE PROCESS OF PROFESSIONAL SELF-IMPROVEMENT

## ROZWÓJ MYŚLENIA LOGICZNEGO PRZYSZŁYCH SPECJALISTÓW W PROCESIE SAMODOSKONALENIA ZAWODOWEGO

**Streszczenie:** W artykule zbadano rozwój logicznego myślenia przyszłych specjalistów w procesie samodoskonalenia zawodowego. Rozwój logicznego myślenia przyszłego specjalisty jest ważnym problemem pedagogicznym. Jednym z wiodących środków rozwoju logicznego myślenia przyszłego specjalisty jest współtworzenie nauczyciela i ucznia. Współczesne ukraińskie instytucje edukacyjne potrzebują specjalisty, który wykonuje swoje obowiązki profesjonalnie i gromadzi wieloaspektowe cechy osobowości twórczej. Nauczyciel, który jest powołany do profesjonalnego prowadzenia procesu edukacyjnego, wymaga nie tylko głębokiej i wszechstronnej znajomości teoretycznych przepisów pedagogicznych, ale także szerokiego przygotowania praktycznego, elastyczności logicznego myślenia, umiejętności kreatywnego rozwiązywania zadań działalności edukacyjnej, co ostatecznie decyduje o poziomie jego profesjonalizmu.

**Słowa kluczowe:** myślenie logiczne, przyszli nauczyciele, edukacja, samodoskonalenie zawodowe.

**Abstract:** The article examines the development of logical thinking of future specialists in the process of professional self-improvement. The development of logical thinking of the future specialist is an important pedagogical problem. One of the leading means of developing the logical thinking of a future specialist is the co-creation of a teacher and a student. Modern Ukrainian educational institutions need a specialist who performs his duties professionally and accumulates multifaceted qualities of a creative personality. A teacher who is called to carry out the educational process professionally requires not only a deep and comprehensive knowledge of the theoretical provisions of pedagogy, but also extensive practical training, flexibility

1 **Oleksandr Kuchai**, PhD habil., Associate Professor, is affiliated with the Faculty of Humanities, Social Sciences and Computer Science at Mazovian Academy in Płock, Poland. E-mail address: o.kuchai@gmail.com.

of logical thinking, and the ability to creatively solve the tasks of educational activity, which ultimately determines the level of his professionalism.

**Keywords:** logical thinking, future teachers, education, professional self-improvement

## Introduction

Global changes in the socio-economic sphere of society put forward qualitatively new requirements for the system of higher pedagogical education.

The rapid growth of scientific information in the educational process has revealed the need of society for a creative personality of a teacher, capable of generalizing professional activity, independent solution of non-standard problems, which is possible only with a high level of development of logical thinking of the future specialist (Chen et al., 2022).

The development of logical thinking of future specialists in the process of professional self-improvement is an important pedagogical problem, since it allows to organize empirical knowledge, systematize and classify various concepts, give them a clear definition, and ensures mutual understanding between the teacher and students. Mathematization of knowledge, its separation from clarity enhance the role of logical thinking of the future teacher. The level of its development characterizes the professional training of a specialist (Elley, 2021).

The formation of a culture of thinking, its logical side is perceived as the process of developing certain components of a logical nature in thinking, is the basis of the intellectual development of the personality of the future teacher. The complexity of the problem of forming a culture of logical thinking is due to the fact that thinking is characterized by multi-aspect, versatility, multiplicity of connections and features (Hizi, 2021).

One of the leading means of developing the logical thinking of a future teacher is the co-creation of a teacher and a student. However, the system of education in higher education institutions, which has developed over decades, cannot fully contribute to the orientation of the student to the creative beginning in educational activities, limiting the teacher's activity in favor of the initiative and independence of the student (Bobrovytska et al., 2021).

Research into the process of developing logical thinking of future specialists in the process of professional self-improvement provides the key to analyzing and constructing didactic ways to solve the problem. The relevance of studying the development of future specialists in the process of professional self-improvement is also determined by the problem of insufficient readiness of the future teacher in the process of professional self-improvement and its weak development in pedagogical science (Liao et al., 2023).

The relevance, theoretical significance and insufficient development of the specified problem in pedagogical science allowed us to determine the topic

of the article. The purpose of the article: We set a goal to consider the development of logical thinking of future specialists in the process of professional self-improvement.

Analysis of basic research and publications

The problem of logical thinking and the search for new teaching methods taking into account the peculiarities of thinking of modern education seekers were directly considered by: O. Bordeniuk, S. Honcharenko, M. Yevtukh, V. Kremen, L. Panova, O. Savchenko, Yu. Senko, S. Sysoeva.

The problem of the development of thinking was studied in philosophy (H. Hegel, V. Gott, I. Kant, V. Stepanov, and others); in psychology (B. Ananiev, G. Berulava, D. Bogoyavlenskyi, P. Halperin, V. Davydov, H. Kostiuk, S. Rubinstein, N. Talizina, L. Fridman); in pedagogy (V. Bespalko, V. Verhasov, A. Yesaulov, N. Zvereva, L. Zorina, I. Lerner, M. Makhmutov, N. Menchynska, H. Shchukina ).

The problems of logical thinking were discussed in the works of H. Bevz, P. Blonsky, S. Vyhotskyi, V. Huseva, P. Zinchenko, N. Loseva, D. Poya, D. Termenzha and others; the development of logical thinking during physics education is considered in the works of P. Atamanchuk, O. Buhaiev, S. Honcharenko, V. Ilchenko, H. Kasyanova, E. Korshak, O. Liashenko, V. Multanovsky, V. Razumovskyi, A. Pavlenko, M. Sadovyi.

The analysis of research on the problem of developing the logical thinking of a future specialist showed that this process is carried out spontaneously in higher education, there is no strategy for its development in higher education. The insufficient level of development of students' logical thinking is evidenced by weak mastery of basic mental operations, unconscious use of logical operations in the process of solving tasks, ignorance, and weak interest in the problems of developing students' logical thinking (Bahlaieva, 2000).

Analysis of research on the development of logical thinking of a future specialist in modern higher education revealed a contradiction between the need of society for a teacher with developed logical thinking and the lack of a strategy for its development in higher education, between the potential opportunities for self-improvement in the development of a specialist's logical thinking and its insufficient implementation in the practice of the educational process.

These contradictions allowed us to pose the problem of finding and substantiating ways of effective development of logical thinking in the process of professional self-improvement.

## Research methods

To achieve the set goal and solve the research problems, theoretical methods were used: analysis and synthesis of philosophical, psychological-pedagogical, scientific-methodological sources of information devoted to various aspects of the problem of developing logical thinking of a future specialist. Data collection tools and

methods (questionnaires, interviews, experiments) were not used in the article. The article takes an exclusively theoretical approach.

## Presentation of the main research material

The problem of developing the logical thinking of a future specialist in the conditions of humanization and informatization of education is an important pedagogical problem, which is caused by the need of society for developed logical thinking and the lack of a strategy for its development in the educational process of a pedagogical university (Kremen, 2007).

Logical thinking of the future specialist is a self-organizing system of knowledge and skills associated with logical forms, logical language, and logical conclusion, which is rebuilt as a result of a change in the general intellectual level of the student's development in a holistic educational process aimed at preparing the student for future activities (Bahlaieva, 2000).

Logical thinking is a necessary means of learning material in any field of knowledge. It is a higher cognitive process, a form of creative reflection of reality by a person.

We are impressed by the opinion of K. Krutiy (2000), who understands logical thinking as free possession of a certain complex of elementary logical concepts and actions that constitute the alphabet of logical thinking and the necessary basis for its development

I. Lyubchenko (2015) emphasizes the importance of the development of logical thinking. In her opinion, the development of logical thinking is an internally necessary movement of a living system from lower to higher levels of its functioning, it is a qualitative change in the whole, a transition from lower structures of cognition to higher ones.

The development of the logical thinking of the future specialist takes place taking into account co-creation, as it provides: stimulation of the future teacher's need for the development of logical thinking; organization of creative educational and cognitive activities; activation of educational and cognitive activities based on the free choice of course study strategy; the right to independent search and construction of individual experience in the development of logical thinking, the active position of the subjects of the creative process, the preservation of the individual creative style of each of the subjects of interaction (Bilokobylska, 2000).

In the conditions of the restructuring of higher education, the requirements for improving the quality of specialist training come first. In this regard, the process of self-improvement of teachers is important, contributing to the formation and improvement of the teacher's professional qualities throughout his life (Dryden & Vos, 2005).

The pedagogical educational institution is the main, main stage of the formation of a future teacher. Following the requirements set by the restructuring of the school, decisive measures are taken to form a high educational level of teaching staff, to increase their professional skills in every possible way (Prokopenko, 2008).

To become a real master of one's business, one education alone is not enough, here one needs experience, a systematic increase in the scientific and theoretical level, and pedagogical qualifications, it is necessary to constantly update knowledge, which is caused by the accelerated pace of scientific and technical progress, changes in the content of education, teaching methods (Savchenko, 2007).

Every teacher needs to work more on himself and engage in self-education, self-improvement, and self-discovery, which play an extremely important role in the formation of a teacher's skill. The independence of the teacher, his interest, orientation, and choice of a problem for in-depth study are important here (Bobrovytska et al., 2021).

We think that self-improvement is an activity that is consciously regulated by an individual and aimed at cultivating professionally significant properties and qualities. it requires from a person the ability and willingness to work diligently on himself, to form such qualities in himself that help to achieve success in work.

The basis of learning is self-education. If there are appropriate means and a favorable environment for self-education, then even an average person will show enthusiasm and willingness to learn throughout life (Vukina et al., 2007).

The new evolution under the slogan of independent study and work involves taking control of one's own life (Bilokobylska, 2000).

Following the requirements of the Bologna Process, the organization of independent work acts as the leading principle of building the educational process in higher education institutions.

The most important factor in the quality of education is the quality of teacher training, the dominant factor of which is the harmony of personal and professional development, the formation of not a teacher, but a cultured, humane, civic-conscious person. Now we observe the inconsistency of the rapid pace of modernization of school education with the processes of training and retraining of teachers and their weak informational and methodical support (Luo et al., 2022). Precisely these problems require qualified and long-term cooperation of scientists, management structures of various levels, heads of higher education institutions, scientists, associations, and creative pedagogical unions (Hrakhorovska & Naidionova, 2007).

To qualitatively update the process of improving the qualifications of specialists, it is necessary to ensure: the introduction of program-targeted modeling of training with diagnostic support; enrichment of learning with a reflective component; availability of individual assistance in professional self-improvement; a system of moral and material incentives. In this regard, scientific and managerial efforts are needed to create scientific and regulatory support for anticipatory and

accompanying training of teachers in the conditions of innovative transformations (Prysiazhniuk, 2009).

Modern Ukrainian educational institutions need a specialist who performs his duties professionally and accumulates multifaceted qualities of a creative personality. Without professionalism, current training and education is impossible. The future of Ukrainian society, the ideals, and actions of the students largely depend on what properties of his "I" the teacher conveys to the students, and what strings of their souls he will be able to touch (Blettner et al., 2023).

It is quite clear that this can be done by someone who possesses professional skills, who is capable and knows how to creatively transfer the wealth of human culture to his students (Bobrovytska et al., 2021).

Today, teachers working in Ukrainian schools strive for high-quality education and upbringing, show methodical creativity, and enrich advanced pedagogical experience. However, one cannot fail to state the fact that, for several reasons, in modern educational institutions there are not enough teachers who carry out pedagogical activities at a high professional level. Moreover, there is a certain tendency to decrease the level of their professional growth (Takehashi, et al., 2024). This is connected both with the numerous complexities of the socio-economic life of the state and with the significant shortcomings of the process of training a professional teacher in institutions of secondary and higher special education, which can sometimes be considered as a consequence of not entirely correct psychological and pedagogical attitudes about this complex problem. However, the social position and professional prestige of a teacher largely depend on him: on his life position, human properties and qualities, erudition, and the quality of his pedagogical activity, which is far from simple (Sysoieva, 2008).

After all, the work of a teacher belongs to very complex types of activity. In this regard, the teacher faces several professional problems. Even deep knowledge of pedagogical theory does not reduce the difficulties he has to face in his work. The fact is that the pedagogical theory contains generalized provisions on how to teach and educate students, it fixes general methodical ideas about the approach to children, about accounting for their age and individual characteristics. Practice, on the other hand, appears in a wide variety of specific and individual aspects and often poses such questions to which there are no direct answers in pedagogical theory.

Therefore, a teacher who is called to carry out the educational process professionally requires not only a deep and comprehensive knowledge of the theoretical provisions of pedagogy but also extensive practical training, the flexibility of logical thinking, the ability to creatively solve the tasks of educational activity, which ultimately determines the level of his professionalism (Bobrovytska et al., 2021).

## Conclusions and prospects of further exploration of the direction

In support of our goal, in this article we will consider the development of logical thinking of future specialists in the process of professional self-improvement.

So, summing up the above, we came to the conclusion that the development of logical thinking of future specialists takes place taking into account self-improvement, since it provides: stimulation of the future teacher's need for the development of logical thinking; organization of creative educational and cognitive activity; activation of educational and cognitive activity on the basis of free choice of course study strategy; the right to independently search and construct individual experience of the development of logical thinking, active position of the subjects of the creative process, preservation of the individual creative style of each of the subjects of interaction.

The problem of the development of logical thinking of a future specialist in the conditions of humanization and informatization of education is an important pedagogical problem, which is due to the need of society for teachers with developed logical thinking and the lack of a strategy for its development in the educational process of a pedagogical university.

The logical thinking of a future teacher is a self-organizing system of knowledge and skills associated with logical forms, logical language, and logical inference, which is restructured as a result of changes in the student's general intellectual level of development in a holistic educational process aimed at preparing the student for future activities.

The systematic nature of the logical thinking of the future specialist determines the criteria for its development: the degree of awareness of logical operations and techniques of logical thinking, the degree of mastery of operations and techniques of logical thinking, the thesaurus of logical thinking, which is determined by knowledge and skills related to logical forms, logical deduction, logical language. The process of co-creation, which stimulates the development of logical thinking of the future specialist, requires special preparation for co-creation as a teacher and students. Criterion indicators of the student's readiness for the development of logical thinking are 1) a single target space; 2) joint creative activity; and 3) the dynamics of self-processes of interaction participants.

It is recommended to expand logic courses by integrating them into real-world project tasks and practical problem solving, which will contribute to increasing algorithmic literacy. It is also proposed to involve case methods, project-based learning and group discussions to develop interpersonal skills and adaptability in a changing digital environment. It is recommended to create more flexible and interactive learning modules that will reflect the latest technological trends and help graduates be more competitive in the professional world.

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