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THE SCIENTIFIC AND THEORETICAL FOUNDATIONS OF PROFESSIONAL COMPETENCIES IN THE CONTEMPORARY ERA

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Abstract

This article theoretically examines the scientific and conceptual foundations of professional competence in the contemporary era, within the context of globalization, digital transformation, the growth of the knowledge economy, and the integration of artificial intelligence technologies into education systems. Today, individuals are expected not only to possess professional knowledge but also to develop problem-solving, critical thinking, communication, teamwork, digital literacy, and lifelong-learning skills. The aim of this study is to examine the scientific and theoretical foundations of professional competence in the contemporary era in light of the international and national literature. A document-analysis method was employed, and current scientific studies published by the OECD, the World Economic Forum, the Ministry of Science and Education of the Republic of Azerbaijan, and the relevant scholarly literature were analyzed. The findings indicate that professional competence does not consist solely of technical knowledge and skills but constitutes a multidimensional construct that also encompasses cognitive, social, ethical, and digital competencies.

Keywords: professional competence, competence-based education, skills, digital transformation, lifelong learning.

Introduction

The rapid economic, technological, and social changes accompanying the transition to the knowledge society have reshaped the fundamental aims of education systems. Whereas the traditional understanding of education considered it sufficient to equip individuals with a defined body of knowledge and skills, the contemporary understanding of education regards an individual's

capacity to adapt to changing conditions, to generate new knowledge, and to sustain professional development throughout life as its core objective.

The concept of professional competence lies at the center of this transformation. Today's labor market demands not merely individuals who possess professional knowledge but professionals

who can think critically, develop innovative solutions, use digital technologies effectively, and collaborate across disciplines. Accordingly, the concept of competence is regarded not simply as a set of technical skills but as a holistic construct encompassing knowledge, skills, attitudes, values, ethical responsibility, and professional conduct.

The OECD's Education 2030 approach emphasizes that, in the education systems of the future, individuals should be evaluated not only by their academic achievement but also by their competence in solving complex problems, thinking creatively, and assuming social responsibility. Similarly, the Future of Jobs Report 2025, published by the World Economic Forum, demonstrates that artificial intelligence, automation, and digital transformation are changing the nature of many occupations and that new skills are gaining importance (OECD, 2019; World Economic Forum, 2025).

Consequently, the study of professional competencies in the contemporary era carries strategic importance not only for the educational sciences but also for economic development, sustainable growth, and the strengthening of human capital.

1. Theoretical Foundations of the Concept of Professional Competence

The concept of professional competence is a shared field of inquiry across disciplines such as educational science, psychology, human resource management, and sociology. In the literature, competence is defined as the totality of knowledge, skills, and attitudes that enable an individual to perform a given task or occupation in accordance with established standards (Le Deist & Winterton, 2005; Mulder, 2017).

The competence approach is grounded in constructivist learning theory. According to the constructivist perspective, knowledge is not transmitted to the individual ready-made but is reconstructed through the individual's own experience. For this reason, educational processes should be based not solely on the transmission of information but on practice, problem-solving, and real-life experience.

Contemporary competence models are built on the integration of the cognitive, affective, and psychomotor domains of learning. Bloom's taxonomy of educational objectives is regarded as one of the key theoretical foundations underlying the development of competence-based education (Bloom et al., 1956). In addition, Kolb's experiential learning model holds that individuals learn by doing and generate new knowledge from their own experience (Kolb, 1984).

Bandura's social cognitive learning theory, in turn, highlights the importance of self-efficacy beliefs in professional development. Individuals with high self-efficacy are reported to be more willing to acquire new skills and to develop more effective solutions to the problems they encounter (Bandura, 1986).

Taken together, these approaches make clear that professional competence does not consist solely of technical skills but constitutes a multidimensional construct that also encompasses an individual's motivation to learn, communication skills, ethical values, and openness to continuous development.

2. Historical Development of the Professional Competence Approach

The historical development of the concept of professional competence can be traced back to the Industrial Revolution. In its

early stages, vocational education relied largely on the master-apprentice relationship; with the process of industrialization, standardized educational programs began to be developed (Akyüz, 2020).

From the second half of the twentieth century onward, the behaviorist understanding of education gave way to learner-centered models, and as a result the competence-based education approach became widespread. In particular, the European Qualifications Framework (EQF), developed within European Union countries, contributed to the restructuring of education systems around common standards (Council of the European Union, 2018; Cabinet of Ministers of the Republic of Azerbaijan, 2019).

With the acceleration of digital transformation in the twenty-first century, the concept of professional competence acquired new dimensions. Individuals are now expected not merely to perform specific occupations but to engage in continuous learning, adapt to technological developments, and collaborate across different fields (Rychen & Salganik, 2003).

In this respect, educational institutions are also restructuring their curricula to focus less on the transmission of information and more on the development of competencies (Demirel, 2021).

3. Factors Influencing Professional Competencies in the 21st Century

The rapid advances in information and communication technologies, the expansion of global competition, and the constant flux of labor markets have made it necessary to redefine the concept of professional competence. Today, professional competence no longer refers solely to the capacity to perform a specific occupation; it also encompasses the ability to adapt to changing conditions, engage in continuous learning, generate innovation, and develop interdisciplinary collaboration.

Critical thinking, problem-solving, creativity, communication, collaboration, leadership, and digital literacy — commonly identified as twenty-first-century skills — have become core components of the contemporary understanding of professional competence. These skills support not only individuals' success in professional life but also their active participation in society.

The process of globalization has brought competence frameworks developed in different countries closer together and has encouraged the restructuring of educational programs in line with international standards. This has required educational institutions to move beyond being mere transmitters of knowledge and to transform into centers of research, innovation, and application.

Changes in employers' expectations have also directly influenced the understanding of professional competence. Today, organizations prefer individuals who are not only technically knowledgeable but also open to learning, possess well-developed communication skills, adapt readily to teamwork, adhere to ethical values, and can make effective use of digital technologies.

4. Professional Competence from the Perspective of OECD Education 2030

The Education 2030 initiative developed by the OECD is one of the most comprehensive international efforts directed at the education systems of the future. According to this approach, in order for individuals to adapt to the economic, technological, and social changes they will encounter in the future, they must possess

not only academic knowledge but also holistic competencies composed of knowledge, skills, attitudes, and values (OECD, 2019).

The OECD Learning Compass 2030 emphasizes that the learning process should be centered on the individual and that education systems should cultivate learners as active agents. In this model, students are regarded not merely as consumers of knowledge but as individuals who produce knowledge, question, and develop solutions to social problems.

The core competency domains highlighted in the OECD approach include the following:

- ✓ Critical thinking
- ✓ Complex problem-solving
- ✓ Creativity
- ✓ Digital literacy
- ✓ Entrepreneurship
- ✓ Lifelong learning
- ✓ Social responsibility
- ✓ Global citizenship
- ✓ Collaboration and communication skills

These competencies form a dynamic, mutually reinforcing system and contribute to both the professional and personal development of the individual (Khalilov, 2025).

5. Future Professional Competencies from the Perspective of the World Economic Forum

The Future of Jobs Report 2025, published by the World Economic Forum, offers a comprehensive assessment of the impact of technological developments on the labor market. According to the report, artificial intelligence, big-data analytics, robotic systems, and automation technologies are transforming the structure of many traditional occupations, diminishing the importance of some while giving rise to new areas of expertise (World Economic Forum, 2025).

Among the most important future professional competencies identified in the report are analytical thinking, technological literacy, creativity, resilience, flexibility, leadership, systems thinking, and lifelong learning. The report also notes that continuous reskilling and upskilling will become essential requirements throughout employees' careers.

These developments require educational institutions to continuously update their programs and to align them with the expectations of the business world.

6. The Impact of Digital Transformation and Artificial Intelligence on Professional Competencies

Digital transformation has brought about fundamental changes in both education systems and working life. Technologies such as AI-supported applications, big-data analytics, cloud computing, the Internet of Things, and augmented reality are reshaping the way many occupations are carried out.

This transformation requires employees not only to use technology but also to critically evaluate technological developments,

understand the principles of digital security, and make data-driven decisions.

The use of artificial intelligence applications in educational processes offers significant advantages for personalized learning, the improvement of assessment and evaluation processes, and the monitoring of learning performance. At the same time, ethics, data security, and privacy have become an integral part of professional competencies (Khalilov, Aliyev, Guliyeva & Babayeva, 2024).

For this reason, contemporary educational programs must extend beyond the provision of technical knowledge to include digital ethics, artificial intelligence literacy, data security, cybersecurity awareness, and the sustainable use of technology.

Interim Assessment

The theoretical approaches examined above demonstrate that the contemporary understanding of professional competence has moved beyond technical knowledge and occupational skills to become a multidimensional construct that integrates cognitive, social, ethical, and digital competencies. The approaches developed by the OECD and the World Economic Forum indicate that education systems must be restructured in ways that enhance individuals' capacity to adapt to change in the future. Competence-based educational models are therefore of strategic importance not only for individual achievement but also for economic development, social progress, and sustainable employment policies.

7. Professional Competence and Certification in the Azerbaijani Education System

In line with the requirements of the knowledge society, the reforms carried out within the Azerbaijani education system have made the development of the professional competencies of teachers and other education personnel one of their primary objectives. In particular, the certification system introduced in recent years aims to evaluate teachers' knowledge, skills, and professional performance against objective criteria (Ministry of Science and Education of the Republic of Azerbaijan, 2020).

The development of professional competencies not only supports individual professional growth but also contributes to ensuring the quality assurance of the education system. For this reason, teachers are expected to participate continuously in professional development activities, to apply new teaching methods, and to make effective use of digital technologies in educational settings (Abbasov, 2021; Mehdizade, 2018).

The certification process conducted by the Ministry of Education of the Republic of Azerbaijan is implemented as a comprehensive model that evaluates teachers' subject-matter knowledge, pedagogical competencies, and teaching practices. The primary aim of this model is to enhance teacher quality, raise the quality of education, and improve student achievement (Ministry of Education of the Republic of Azerbaijan, n.d.).

The certification system is not regarded merely as a measurement and evaluation process. It also represents a development-oriented approach that identifies teachers' areas for improvement, facilitates the preparation of professional development plans, and encourages continuous learning.

In contemporary education systems, teacher competencies are considered a dynamic construct, since scientific developments, digital technologies, and pedagogical approaches are in constant

flux. For this reason, the knowledge and skills teachers acquire during their university education must be continuously updated throughout their professional careers.

8. Basic Dimensions of Teachers' Professional Competencies

In the literature, teacher competencies are generally examined under five basic dimensions (Marmara University Journal of Social Sciences, 2020; Pegem Journal of Education and Instruction, 2021).

8.1 Subject-Matter Knowledge

A teacher's possession of up-to-date scientific knowledge in his or her own field of expertise is one of the fundamental conditions for effective teaching. Continuously updating subject-matter knowledge is important for reflecting scientific developments in course content.

8.2 Pedagogical Competence

Pedagogical competence encompasses the ability to select appropriate teaching methods, organize the learning environment, take students' individual differences into account, and carry out effective assessment and evaluation.

In line with the constructivist approach to learning, teachers are expected to take on the role of a facilitator of learning rather than that of a mere transmitter of information.

8.3 Digital Competence

The growing prevalence of digital technologies in educational settings has made digital competence an indispensable element of teachers' contemporary professional competence (Redecker, 2017).

In this context, teachers are expected to:

- ✓ use learning management systems;
- ✓ make use of AI-supported educational tools;
- ✓ develop digital content;
- ✓ carry out online assessment and evaluation; and
- ✓ act in accordance with the principles of digital ethics.

8.4 Communication and Collaboration

A teacher's ability to communicate effectively with students, parents, school administration, and colleagues directly affects the success of the educational process.

Teachers with a collaborative culture increase the sharing of knowledge, develop joint projects, and contribute more to the institutional development of the school.

8.5 Lifelong Learning

According to the contemporary understanding of education, teaching is a dynamic profession that requires continuous learning.

For this reason, teachers':

- ✓ following scientific research;
- ✓ participating in in-service training;
- ✓ pursuing graduate education;
- ✓ taking part in international education projects; and
- ✓ learning digital education applications

play an important role in the development of their professional competencies.

9. Comparison of International Approaches

An examination of the competence models developed by the OECD, the European Union, and the World Economic Forum reveals a number of shared features.

The first common feature is that lifelong learning is adopted as a core principle across all of these models.

The second common feature is that digital competencies have become mandatory across all occupations.

The third common feature is that problem-solving, critical thinking, and creativity skills are regarded as being as important as technical knowledge.

The fourth common feature is that commitment to ethical values and a sense of social responsibility are considered inseparable parts of professional competence.

The fifth common feature is that individuals are expected not merely to carry out their existing tasks, but also to adapt to changing conditions and to generate new knowledge.

Taken together, these approaches demonstrate that the contemporary understanding of professional competence is built upon a multidimensional structure. The corresponding restructuring of education policies plays a decisive role in preparing individuals for the future labor market.

10. Discussion

The national and international studies examined within the scope of this research demonstrate that, in the contemporary era, the concept of professional competence no longer consists solely of professional knowledge and technical skills but has become a multifaceted construct encompassing cognitive, social, emotional, ethical, and digital dimensions. In particular, the transition to the knowledge society, the acceleration of technological innovation, and the transformation of global labor markets have made it necessary to restructure education systems in line with competence-based approaches.

The Education 2030 framework developed by the OECD aims to cultivate individuals who can cope with uncertainty, think creatively, assume social responsibility, and sustain lifelong learning. Similarly, the World Economic Forum indicates that analytical thinking, problem-solving, digital literacy, the ability to work with artificial intelligence, and adaptability will come to the forefront in the future labor market (OECD, 2019; World Economic Forum, 2025).

These findings make it necessary to restructure teacher-training programs and in-service training activities in line with present-day conditions. It is not sufficient for teachers merely to develop their subject-matter knowledge; they must also continuously develop in areas such as digital pedagogy, AI-supported teaching practices, data literacy, ethical decision-making, and interdisciplinary collaboration.

The teacher certification system currently implemented in Azerbaijan represents an important reform for enhancing the quality of education. However, implementing the certification process not merely as a tool for evaluation, but as a dynamic

system that supports continuous professional development, would yield more effective results (Khalilov, Aliyev & Zeynalov, 2025).

The findings of the study show that international practice and the reforms carried out within the Azerbaijani education system share common goals, foremost among which are improving the quality of education, developing teacher quality, adapting to digital transformation, and supporting sustainable professional development.

Conclusion

In contemporary societies, the quality of human capital plays a decisive role in economic development, scientific progress, and the enhancement of social welfare. In the development of human capital, education systems — and in particular the professional competencies of teachers — are regarded as a fundamental element.

Based on the findings of this research, the following conclusions have been reached:

- ✓ Professional competence is a multidimensional construct integrating knowledge, skills, attitudes, values, and ethical principles.
- ✓ Digital transformation and artificial intelligence technologies have significantly broadened the scope of professional competencies.
- ✓ Lifelong learning is one of the core components of the contemporary understanding of competence.
- ✓ Educational programs need to be continuously updated in line with competence-based approaches.
- ✓ Teachers' ongoing participation in professional development activities directly enhances the quality of education.
- ✓ There is a strong alignment between international competence frameworks and national education policies.

In conclusion, professional competencies in the contemporary era encompass not only an individual's capacity to carry out existing tasks but also the ability to adapt to change, generate new knowledge, make effective use of technology, and assume ethical responsibility. For this reason, the fundamental aim of future education systems should be to cultivate individuals who have learned how to learn, who inquire, who question, and who continuously develop, rather than individuals who merely transmit information.

Recommendations

Based on the findings of the research, the following recommendations can be made:

1. Teacher-training programs should be restructured in accordance with a competence-based educational approach.
2. Digital pedagogy and artificial intelligence literacy should be systematically incorporated into in-service training programs.
3. Certification processes should be implemented not solely for measurement purposes but as development-oriented models that support continuous professional growth.

4. Collaboration between universities and the business world should be strengthened.
5. International competence frameworks should be more effectively integrated into national education policies.
6. Teachers' participation in scientific research and international academic collaborations should be encouraged.
7. Continuing professional development centers should be expanded in order to foster a culture of lifelong learning.

References

1. Abbasov, A. N. (2021). *Pedaqogika [Pedagogy]*. Mütərcim.
2. Akyüz, Y. (2020). *Türk eğitim tarihi [History of Turkish education]* (31st ed.). Pegem Akademi.
3. Ministry of Education of the Republic of Azerbaijan. (n.d.). *Sertifikatlaşdırma [Certification]*. <https://edu.gov.az/az/esas-senedler/sertifikatlasdirma>
4. Ministry of Science and Education of the Republic of Azerbaijan. (2020). *Azərbaycan Respublikasında peşə təhsilinin inkişafına dair metodik tövsiyələr [Methodological recommendations on the development of vocational education in the Republic of Azerbaijan]*. Baku.
5. Cabinet of Ministers of the Republic of Azerbaijan. (2019). *Azərbaycan Respublikasının Milli Kvalifikasiyalar Çərçivəsi [National Qualifications Framework of the Republic of Azerbaijan]*. Baku.
6. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
7. Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. David McKay.
8. Council of the European Union. (2018). *Council Recommendation of 22 May 2018 on key competences for lifelong learning (2018/C 189/01)*. Official Journal of the European Union. [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0604\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H0604(01))
9. Demirel, Ö. (2021). *Eğitimde program geliştirme: Kuramdan uygulamaya [Curriculum development in education: From theory to practice]* (30th ed.). Pegem Akademi.
10. Khalilov, T. (2025). Strategic planning-based management practices in higher education institutions. *Pakistan Journal of Life & Social Sciences*, 23(1), 4772.
11. Khalilov, T., Aliyev, V., & Zeynalov, I. (2025). The role of leadership and managerial skills in strategic planning. *Journal of Information Systems Engineering and Management*, 10(20s), 98–104.
12. Khalilov, T., Aliyev, V., Guliyeva, M., & Babayeva, M. (2024). Strategic management mechanisms, directions, and functions in higher education. *Pakistan Journal of Life & Social Sciences*, 22(2), 12146–12162.
13. Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
14. Le Deist, F. D., & Winterton, J. (2005). What is competence? *Human Resource Development International*, 8(1), 27–46. <https://doi.org/10.1080/1367886042000338227>

15. Marmara University Journal of Social Sciences. (2020). Current approaches to professional competencies. <https://dergipark.org.tr/en/pub/mjss/article/767720>
16. Mehdizadə, M. M. (2018). Təhsil nəzəriyyəsi və pedaqogika [Educational theory and pedagogy]. Elm və Təhsil.
17. Mulder, M. (2017). Competence theory and research: A synthesis. In M. Mulder (Ed.), Competence-based vocational and professional education (pp. 1071–1106). Springer. https://doi.org/10.1007/978-3-319-41713-4_49
18. Mulder, M. (Ed.). (2017). Competence-based vocational and professional education: Bridging the worlds of work and education. Springer. <https://doi.org/10.1007/978-3-319-41713-4>
19. OECD. (2019). OECD future of education and skills 2030: OECD learning compass 2030. OECD Publishing. <https://www.oecd.org/education/2030-project/teaching-and-learning/learning/learning-compass-2030/>
20. OECD. (2023). OECD skills outlook 2023: Skills for a resilient green and digital transition. OECD Publishing. <https://doi.org/10.1787/27452f30-en>
21. OECD. (n.d.). OECD Education 2030 Project. <https://www.oecd.org/education/2030-project.html>
22. Pegem Journal of Education and Instruction. (2021). Research on teacher competencies. <https://www.pegegog.net/index.php/pegegog/article/view/1097>
23. Redecker, C. (2017). European framework for the digital competence of educators: DigCompEdu (Y. Punie, Ed.). Publications Office of the European Union. <https://doi.org/10.2760/178382>
24. Rychen, D. S., & Salganik, L. H. (Eds.). (2003). Key competencies for a successful life and a well-functioning society. Hogrefe & Huber.
25. World Economic Forum. (2025). The future of jobs report 2025. <https://www.weforum.org/publications/the-future-of-jobs-report-2025/>