# METHODOLOGICAL MODEL FOR DEVELOPING PROFESSIONAL-PRACTICAL COMPETENCIES OF VOCATIONAL EDUCATION STUDENTS IN DUAL EDUCATION CONDITIONS

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**Abstract**

The modernization of vocational education requires the implementation of innovative pedagogical approaches aimed at developing students' professional-practical competencies in accordance with labor market demands. One of the most effective approaches is the dual education system, which integrates theoretical learning in educational institutions with practical training in enterprises. This article presents a methodological model for developing professional-practical competencies of vocational education students under dual education conditions. The model is based on competency-based, practice-oriented, and learner-centered approaches and includes target, content, organizational, technological, and evaluative components. The study highlights the pedagogical conditions, methodological support, and mechanisms necessary for effective competency formation. The proposed model contributes to improving the quality of vocational training and enhancing graduate employability.

**Keywords:** dual education, vocational education, professional-practical competence, methodological model, competency-based approach, workplace learning, professional training.

## Introduction

The rapid development of technology, digital transformation, and globalization have significantly changed labor market requirements. Modern employers increasingly demand specialists who possess not only theoretical knowledge but also practical skills, professional flexibility, and the ability to adapt to changing production conditions. Consequently, vocational education institutions face the challenge of preparing graduates capable of effectively performing professional tasks in real work environments.

In this context, dual education has become one of the most promising educational models. The dual education system combines academic learning with practical training at enterprises, enabling students to acquire professional competencies through direct participation in workplace activities. Unlike traditional vocational education, dual education ensures a closer connection between educational content and industry needs.

The effectiveness of dual education largely depends on the availability of a scientifically grounded methodological model that coordinates educational objectives, learning content, practical activities, assessment criteria, and stakeholder collaboration. Therefore, developing a methodological model for forming professional-practical competencies under dual education conditions represents an important pedagogical task.

## Literature Review

The concept of professional competence has been widely studied in educational research. According to Mulder (2017), professional competence is an integrated combination of knowledge, skills, attitudes, values, and experience required for effective professional activity.

Billett (2020) emphasizes that workplace learning provides authentic opportunities for students to transform theoretical knowledge into practical competence. The dual education system promotes experiential learning through direct involvement in real production processes.

Euler (2019) argues that successful implementation of dual education requires systematic cooperation between educational institutions and enterprises. Effective methodological support, competency-based curricula, and continuous assessment mechanisms are essential elements of this process.

Recent studies also indicate that professional-practical competence formation should be viewed as a multidimensional process involving cognitive, operational, motivational, and reflective components.

**Materials and Methods**

The study employed theoretical analysis, comparative analysis, and pedagogical modeling methods. Scientific publications, regulatory documents, and international experiences related to vocational education and dual education systems were analyzed.

Based on the analysis, a methodological model for developing professional-practical competencies was designed. The model incorporates modern pedagogical approaches, competency-based education principles, and workplace learning mechanisms.

**Results**

The proposed methodological model consists of five interconnected components:

**Target Component**

The target component defines the overall objective of developing students' professional-practical competencies in accordance with occupational standards and labor market requirements.

**Content Component**

This component includes theoretical knowledge, professional skills, practical tasks, and competency-oriented learning materials. Educational content is designed in collaboration with employers to ensure relevance to industry needs.

**Organizational Component**

The organizational component regulates cooperation between vocational education institutions and enterprises. It determines the distribution of theoretical and practical learning activities, student internships, mentoring systems, and workplace supervision.

**Technological Component**

This component involves teaching methods, learning technologies, digital resources, simulation tools, project-based learning, and workplace training activities. Interactive and competency-oriented instructional methods are emphasized.

**Evaluation Component**

The evaluation component includes criteria, indicators, and assessment tools for measuring competency development. Both educational institutions and employers participate in evaluating students' professional achievements.

The implementation of this model creates favorable conditions for developing practical skills, professional responsibility, independent decision-making, and workplace adaptability.

**Discussion**

The proposed methodological model reflects the principles of competency-based and practice-oriented education. It ensures systematic interaction between theoretical learning and practical training, thereby enhancing the effectiveness of competency development.

One of the key advantages of the model is its flexibility and adaptability to different vocational specializations. The model can be modified according to specific occupational standards, enterprise requirements, and technological developments.

The success of the model depends on several pedagogical conditions, including strong institutional-enterprise partnerships, qualified mentors, updated educational content, and continuous monitoring of learning outcomes. Furthermore, digital technologies can significantly enhance the implementation of the model by providing flexible access to learning resources and competency assessment tools.

**Conclusion**

In conclusion, the formation of professional-practical competencies of vocational education students under dual education conditions represents a strategically important task in modern educational systems. The rapid development of industry, digital technologies, and labor market requirements necessitates the preparation of specialists who are capable of applying theoretical knowledge effectively in real production environments. Therefore, the integration of educational institutions and enterprises through dual education creates favorable conditions for improving the quality of vocational training and ensuring the competitiveness of graduates.

The methodological model proposed in this study demonstrates that the effective development of professional-practical competencies requires a systematic and scientifically grounded approach. The integration of target, content, organizational, technological, and evaluation components enables the creation of a holistic educational environment in which students can gradually develop professional knowledge, practical skills, professional values, and workplace behavior. Such an approach ensures continuity between learning and professional practice, thereby increasing the effectiveness of competency formation.

The study confirms that dual education significantly enhances students' readiness for professional activity. Through direct participation in workplace processes, students acquire practical experience, develop professional responsibility, improve problem-solving abilities, and strengthen communication and teamwork skills. These competencies are highly valued in contemporary labor markets and contribute directly to successful employment and career development.

Furthermore, the effectiveness of the methodological model largely depends on strong cooperation between vocational education institutions and enterprises. Employers play an essential role not only in providing practical training opportunities but also in defining competency requirements, participating in curriculum development, and evaluating students' professional achievements. Such collaboration ensures that educational outcomes correspond to actual labor market demands and technological advancements.

Another important finding is the necessity of providing comprehensive educational-methodological support for dual education. Competency-based curricula, modern instructional materials, practical training programs, digital learning resources, mentoring systems, and objective assessment mechanisms serve as essential tools for successful competency development. The continuous modernization of these resources is required to meet the challenges of Industry 4.0 and the digital transformation of professional activities

The implementation of innovative pedagogical technologies, including project-based learning, simulation methods, digital platforms, and workplace-based assessment systems, can further enhance the effectiveness of dual education. These technologies facilitate active learning, encourage independent decision-making, and support the development of lifelong learning competencies that are increasingly important in modern professional environments.

From a broader perspective, the successful implementation of the proposed methodological model contributes not only to individual student development but also to national socio-economic progress.

Highly qualified and professionally competent specialists increase labor productivity, support technological innovation, and strengthen the competitiveness of enterprises and industries. Consequently, dual education becomes an important mechanism for workforce development and sustainable economic growth.

Therefore, it can be concluded that the proposed methodological model provides a comprehensive framework for organizing professional-practical competency development in dual education conditions.

Its implementation can significantly improve the quality of vocational education, strengthen the relationship between education and industry, increase graduate employability, and contribute to the preparation of a highly skilled workforce capable of meeting contemporary and future labor market challenges. Future research should focus on empirical validation of the model, development of digital competency assessment systems, and exploration of innovative approaches to enhancing workplace learning experiences.

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