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TRAINING AS A FORM OF ACTIVE LEARNING IN VOCATIONAL EDUCATION INSTITUTIONS: THEORY AND ICT PRACTICE

Abstract. The article highlights the theoretical foundations and practical aspects of implementing ICT-supported training in vocational education institutions.

Based on the analysis of scientific and methodological literature, the essence of training is clarified as a multidimensional educational phenomenon that integrates cognition, reflection, interpersonal interaction, and practice-oriented experience acquisition. The functions of training (educational, socialising, motivational and value-based, corrective and developmental,

practice-oriented) are identified, alongside examples of exercises that ensure their implementation in vocational education settings.

On the basis of generalised pedagogical practices, the leading types of training are defined, including communicative, production-oriented, technical and technological, managerial and project-based, entrepreneurial, inclusive-oriented, and stress-resilience training. The feasibility of integrating training technologies with ICT is substantiated, as it ensures variability of the learning environment, modelling of production situations, personalised learning trajectories, and step-by-step development of professional actions through the use of digital platforms and simulators (Moodle, Google Classroom, Zoom, Teams, VR/AR tools).

The results of a pilot study conducted at the Ivano-Frankivsk Vocational College of Vasyl Stefanyk Carpathian National University with Software Engineering students indicate positive dynamics in the development of professional confidence, operational-technological skills, learning motivation, and communication activity (average growth rate – 22%).

The findings prove the effectiveness of ICT-supported training as a mechanism for implementing a competency-based approach and outline prospects for further research aimed at expanding empirical evidence and methodological support for educators.

Keywords: training; training technologies; active learning; vocational education; competency-based approach; ICT practice; digitalisation; workplace situations; professional competencies; simulators.

ТРЕНІНГ ЯК ФОРМА АКТИВНОГО НАВЧАННЯ В ЗАКЛАДАХ ПРОФЕСІЙНОЇ ОСВІТИ: ТЕОРІЯ ТА ІКТ-ПРАКТИКА

Анотація. У статті висвітлено теоретичні й практичні засади використання тренінгу з ІКТ-підтримкою в закладах професійної освіти.

На основі аналізу науково-методичної літератури уточнено сутність тренінгу як багатовимірного освітнього феномена, що поєднує пізнання, рефлексію, міжособистісну взаємодію та практико орієнтоване опанування досвіду. Розкрито функції тренінгу (навчальна, соціалізуюча, мотиваційно-ціннісна, корекційно-розвивальна, практико орієнтована) та наведено приклади вправ, що забезпечують їхню реалізацію за умов професійної освіти.

На основі узагальнення педагогічних практик визначено провідні типи тренінгів: комунікативні, виробничо-практичні, техніко-технологічні, управлінсько-проєктні, підприємницькі, інклюзивно-орієнтовані й стресостійкісно-адаптаційні. Обґрунтовано доцільність інтеграції тренінгових технологій з ІКТ, що забезпечує варіативність освітнього середовища, моделювання виробничих ситуацій, персоналізацію навчання та поетапне відпрацювання професійних дій із використанням цифрових платформ і симуляторів (Moodle, Google Classroom, Zoom, Teams, VR/AR-засоби).

Представлено результати пілотного дослідження, проведеного на базі Івано-Франківського фахового коледжу КНУ імені Василя Стефаника зі здобувачами спеціальності «Інженерія програмного забезпечення», що засвідчили позитивну динаміку сформованості професійної впевненості, операційно-технологічних умінь, навчальної мотивації та комунікаційної активності (середній приріст показників – 22 %).

Зроблено висновок про результативність тренінгу з ІКТ-практикою як механізму реалізації компетентнісного підходу й перспективність подальших досліджень у напрямі розширення емпіричної бази й методичного супроводу педагогів.

Ключові слова: тренінг; тренінгові технології; активне навчання; професійна освіта; компетентнісний підхід; ІКТ-практика; цифровізація; виробничі ситуації; професійні компетентності; симулятори.

INTRODUCTION

The problem formulation. Modern vocational education is currently undergoing substantial transformation influenced by processes of digitalisation, the implementation of the competency-based approach, increased competition in the labour market, and the growing demand for flexible (soft) skills and a culture of lifelong learning. In this context, traditional, predominantly information-reproductive instructional formats (lectures, frontal teacher-centred delivery, top-down instruction) are proving insufficient for fostering learners' capacity for autonomous action, effective communication, teamwork, and decision-making in conditions of uncertainty.

An effective pedagogical response to these challenges is the integration of training as a form of active learning grounded in interaction, experiential engagement, reflection, and practical applicability. Within vocational education institutions, training technologies enable not merely the transmission of educational content but its experiential internalisation through the modelling of authentic production, interpersonal, and problem-based scenarios. Such an approach strengthens the connection between educational processes and real professional contexts, thereby contributing to the formation of practice-oriented competencies required by contemporary labour markets.

Analysis of recent research and publications. he review of scientific and methodological literature demonstrates that, at the present stage, the issues of professional training of vocational education teachers have been addressed in the works of V. Andrushchenko, V. Bekh, H. Bilavych, I. Zyazyun, V. Kremen, N. Nychkalo, L. Prokopiv, V. Radkevych and others. The implementation of training as an educational technology has been examined in the studies of O. Banit, O. Karpenko, S. Sysoieva, V. Stynska, Ya Topolnyk, O. Shamraliuk and other scholars. Despite the existing academic contributions, the problem of defining training as a form of active learning in vocational education institutions remains insufficiently investigated, particularly with regard to the correlation between its theoretical foundations and ICT-supported practice. This gap substantiates the choice of the research topic and confirms its relevance in the context of current educational policy priorities and the demands of the contemporary labour market.

THE AIM OF THE STUDY – is to determine the theoretical foundations and substantiate the practical possibilities of implementing ICT-supported training as a form of active learning in vocational education institutions.

RESEARCH METHODS

A set of research methods was applied in the course of the study, including analysis, synthesis, and generalisation to examine scientific and methodological literature on the issues of professional training and the implementation of training technologies; comparative analysis to contrast traditional and training-based forms of organising learning in vocational education institutions; a systemic-structural approach to identify the content-related characteristics of training as a form of active learning; modelling to substantiate the possibilities of integrating ICT tools into the training environment; pedagogical observation and the analysis of educational experience to determine the effectiveness of training in practical instructional settings.

RESULTS OF THE RESEARCH

Our analysis shows that training (from the English to train – to teach or develop skills) is defined as a multidimensional educational phenomenon integrating cognition, reflection, interpersonal interaction, and practice-oriented experience acquisition (Shamraliuk, 2023). In contemporary pedagogical theory, training is understood as an educational space for self-awareness, a partnership-based format of subject–subject interaction, a tool for activity-based content acquisition, and a mechanism of professionalisation that supports the development and transformation of practical skills (Stynska & Karpenko, 2021).

Key characteristics determining the effectiveness of training include its group format, which facilitates socialisation and professional communication; its activity-based nature, implemented through interactive methods (simulation, discussions, case analysis); practical orientation towards modelling workplace situations; reflexivity, which ensures analysis and consolidation of experience; and a psychologically safe environment grounded in confidentiality, respect, and the right to make mistakes (Shamraliuk, 2023). These features reinforce the potential of training as a form of active learning in vocational education.

Training, as an organisational-didactic format of instruction, is especially significant in vocational education due to its ability to combine practice-oriented competence acquisition, socialisation, and the development of professional behavioural patterns. Summarising research and pedagogical experience makes it possible to distinguish key training functions that ensure a holistic cycle of competence formation (Shamraliuk, 2023; Stynska & Karpenko, 2021) (Table 1).

Table 1

Functions of training, their characteristics, expected learning outcomes, and tools for implementation

Training Function	Brief Description	Expected Outcomes	Example Exercises
Educational	Development of knowledge, skills, and abilities through action; mastering algorithms of professional performance	Algorithmic thinking; readiness to follow standards; technical literacy	Emergency Scenario: 60 Seconds; Production Algorithm; Quality Control; Partner Instruction; Technological Route; Three-Stage Task; Error Point
Socialising	Acquisition of social roles, norms of professional communication, and teamwork skills	Team-building; culture of professional communication; responsibility in interaction	Team on the Bridge; Production Meeting; Responsibility Point; Blind Navigator; Group Resource; Synchronisation; Client–Employee
Motivational & Value-Based	Awareness of the significance of the future profession; formation of professional identity and internal motivation	Stable professional motivation; formation of the "I am a professional" self-concept	My Professional Path: Five Years Ahead; Goal Map; Professional Identity; I Am a Specialist; Growth Position; Value of the Profession
Corrective & Developmental	Overcoming ineffective behavioural patterns; development of self-regulation and stress resistance	Assertiveness; emotional management; constructive responses to challenging situations	I-Message; Stop Pause; Triangle of Responsibility; Emotional Thermometer; Rewriting Reactions; Crisis Response
Practice-Oriented	Transfer of learning experience to real conditions of future professional activity	Readiness to act in workplace situations; ability to apply technologies and protocols	Workplace Simulation; Micro-Instruction; Technological Audit; Product Evaluation; Practical Problem; Action Protocol

The identified functions of training form the conceptual and operational framework for its implementation and determine the main vectors of pedagogical influence on learners. The system of exercises presented above operationalises these functions and ensures a full cycle of competence development – from the initial acquisition of content to the consolidation of professional actions and behavioural strategies in simulated workplace environments.

Although scholars propose various training classifications, the synthesis of vocational education practices allows identifying the most relevant formats for comprehensive professional development. These include communicative, production-oriented, technical-technological, managerial and project-based, entrepreneurial, inclusive-oriented, and stress-resilience training. Each of these formats targets specific aspects of professional formation and collectively supports learners' readiness for future employment (Topolnyk, 2020; Banit, 2021; Danylchuk, 2025).

Thus, training in vocational education may be viewed as a systemic technology that integrates educational, socialising, motivational, corrective, and practice-oriented components, contributing to the holistic formation of professional competence.

In the context of the digitalisation of vocational education, the effectiveness of training technologies increases significantly when integrated with ICT tools that enable a flexible, open and practice-oriented learning environment. ICT-supported practice expands the functional potential of training and enables the modelling of authentic workplace situations through digital resources. The use of interactive platforms (Zoom, Microsoft Teams, Moodle, Google Classroom), specialised simulators and virtual training tools provides learners with experience in managing processes that closely mirror contemporary production environments.

Digital simulators of technological operations, automated design environments, video laboratories, VR/AR applications and virtual workspace platforms offer opportunities for step-by-step practice in a safe setting, reducing the risks associated with workplace errors. Such tools require the consistent organisation of the training process: from reproductive tasks and algorithmic actions to creative modelling of professional scenarios in which learners make decisions, analyse consequences and relate them to qualification requirements (Lazarenko et al., 2022).

The introduction of ICT into training also transforms the functional role of the educator: from a transmitter of knowledge to a facilitator and moderator of digital interaction, a consultant, and a navigator of personalised learning trajectories. During training, the educator coordinates group dynamics, structures stages of activity and organises feedback through analytical instruments such as electronic gradebooks, LMS analytics, surveys and self-assessment chatbots (OECD, 2021). This contributes to greater transparency of assessment, strengthens reflective learning, and supports the development of self-regulation and responsibility for learning outcomes (Table 2).

Table 2

Pedagogical model of ICT-supported training in vocational education institutions

Model Component	Pedagogical Description	ICT Tools and Instruments	Expected Outcomes for Learners
Purpose	Development of professional competences through active, practice-oriented learning	—	Awareness of the significance of digital interaction as an integral element of the profession
Content	Modelling workplace situations, mastering algorithms of professional actions, reflective processing of experience	Video laboratories, digital simulators, VR/AR simulations, professional online platforms	Acquisition of content aligned with real professional practice
Forms and Methods	Group and individual training sessions, situational and role-based tasks, case method, workplace scenarios	Zoom/Teams, interactive boards (Miro, Jamboard), simulation software	Development of multi-profile competences (communication, technical-technological, managerial)
Process (Stages)	1) motivation; 2) interaction; 3) reflection; 4) application of knowledge	Online simulators, LMS Moodle/Google Classroom, self-assessment chatbots	Ability to plan work, monitor progress, and evaluate learning outcomes
Role of the Educator	Facilitator, moderator, consultant, digital navigator	LMS analytics, testing platforms, electronic gradebooks	Transparency of assessment, targeted feedback, personalised support
Expected Integrated Outcomes	Comprehensive competence development	—	Professional readiness, digital literacy, ability for self-directed learning and collaboration

This model provided the conceptual and methodological foundation for the subsequent pilot implementation of ICT-supported training in vocational education institutions.

To verify the theoretical provisions, a pilot implementation of selected ICT-practice elements within a training-based learning format was conducted in vocational education settings. The pilot study took place at the Ivano-Frankivsk Vocational College of Vasyl Stefanyk Carpathian National University and involved students of the Software Engineering programme. The implementation employed interactive platforms (Moodle, Google Classroom), online communication tools (Zoom, Teams), digital production simulators and virtual learning resources for modelling professional situations. Training sessions were organised as short modules (45–90 minutes) that included practical tasks, group interaction and reflective activities.

The analysis of the pilot results revealed a noticeable increase in professional confidence, improvement in operational and technological task performance, strengthened learning motivation and higher levels of communication activity. These findings confirm that integrating training with ICT practice is an effective mechanism for implementing the competency-based approach, enabling synchronous development of professional, communicative, digital and socio-behavioural competences, and responding to current labour market demands and digital economy trends (Table 3).

Table 3

Dynamics of learners' professional development indicators after implementing ICT practices within the training format (pilot study)

Indicator	Before Implementation, %	After Implementation, %	Growth
Professional confidence	41	63	+22 %
Operational-technological skills	48	70	+22 %
Learning motivation	52	74	+22 %
Communication activity	46	68	+22 %

The data presented in Table 3 demonstrate a positive dynamic across all indicators. The average growth rate of 22 % confirms the effectiveness of ICT-supported training as a tool for developing professional, communicative, technological and motivational components of learners' competence.

CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

The study substantiated training as an effective form of active learning in vocational education institutions and identified its potential when combined with ICT-supported practice. It was established that the integration of digital tools (interactive learning platforms, simulators, online communication instruments, VR/AR technologies) enhances the practical dimension of learning, enables the modelling of professional situations, and creates conditions for the individualisation of learners' educational trajectories.

The results of the pilot implementation confirmed a positive dynamic in indicators of learners' professional development (average growth – 22%), demonstrating the effectiveness of combining training and ICT in developing professional, communicative, and digital competences. These findings justify the further introduction of ICT-supported training programmes as a tool for implementing the competency-based approach in vocational training.

Future research should focus on expanding the empirical evidence base, clarifying criteria and indicators for evaluating the effectiveness of ICT-supported training sessions, and developing evidence-based methodological recommendations and technological guidelines for educators in vocational education institutions.

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