3.3. TECHNOLOGY OF DEVELOPMENT OF ENTREPRENEURIAL COMPETENCE OF FUTURE QUALIFIED WORKERS IN THE PROCESS OF PROJECT ACTIVITIES

Інна Гриценок
кандидат педагогічних наук, доцент,
старший науковий співробітник
лабораторії професійної кар'єри
Інституту професійної освіти НАПН
України
https://orcid.org/0000-0003-0317-3620
e-mail: grihenokinka@ukr.net

Inna Hrytsenok
Candidate of Pedagogical Sciences (Ph.D),
Associate Professor, Senior Researcher
Fellow, Laboratory of Professional Career,
Institute of Vocational Education of NAES of
Ukraine
https://orcid.org/0000-0003-0317-3620
e-mail: grihenokinka@ukr.net

Представлено критерії та показники ефективності реалізації педагогічної технології розвитку підприємницької компетентності майбутніх кваліфікованих робітників у процесі проєктної діяльності на сучасному етапі розвитку суспільства. Висвітлено результати експериментальної перевірки її результативності.

The criteria and indicators of the effectiveness of implementing the pedagogical technology for developing entrepreneurial competence of future skilled workers in the process of project activities at the current stage of society's development are presented. The results of experimental testing of its effectiveness are highlighted.

Ключові слова: *модернізація професійної освіти, педагогічна технологія, підприємницька компетентність, проєктна діяльність, заклади професійної (професійно-технічної) освіти, критерії ефективності.*

Keywords: *modernization of professional education, pedagogical technology, entrepreneurial competence, project activity, institutions of vocational (professional and technical) education, efficiency criteria.*

The use of modern educational technologies in the practice of teaching is a prerequisite for intellectual, creative and moral development of young people. Modern technologies allow students to become more active participants in the educational process. They also help teachers to create new approaches, methods, models of teaching and education (Padalka and Nisimchuk, 1995). For example, a teacher may conduct an online survey at any stage of the lesson to determine the level of mastery of the material being studied. The learning process becomes more dynamic with the use of digital textbooks, when the student can use links to relevant materials or resources. Young people can seek answers to questions, form their active position, and then defend it (Alekseeva ta Sokhatska, 2020; Radkevych, 2019).

Pedagogical theory offers many learning technologies: differentiated-individual, problem-based, heuristic, visual, game, dialogue, information, health-preserving, etc. The choice of the teacher is made depending on the content of

training, psychological features of students, didactic tasks and conditions of activity (Radkevych, Orlov, Bazyl and Radkevych, 2020). We offer for your consideration the pedagogical technology of development of entrepreneurial competence of future skilled workers in the process of project activity.

The problem of ordering and systematization of pedagogical technologies has been considered by such scientists as V. P. Bespalko, E. V. Rudensky, A. Ya. Savelyev, G. K. Selevko, V. A. Slastyonin, V. T. Fomenko and others. Analysis of the training of future teachers based on the introduction of modern and innovative pedagogical technologies is found in the works of foreign and domestic teachers (Yu. K. Babansky, A. Disterweg, L. V. Zankov, J. A. Comenius, J. Locke, A. S. Makarenko, M. Montessori, J.-J. Rousseau, V. O. Sukhomlinsky, V. F. Shatalov and others), and attempts to classify existing pedagogical technologies have been made by G. K. Selevko, S.O. Sysoeva, O. M. Pekhota, D. V. Chernilevsky and others.

The concept of modernization of vocational education among the important goals states: the development of students' independence and ability to self-organization; willingness to cooperate, development of ability to creative activity. Its implementation requires specific pedagogical technologies. In our opinion, the pedagogical technology of development of entrepreneurial competence of future skilled workers in the process of project activity can be important, because it provides a system of step-by-step pedagogical actions on training, education and personal development, aimed at the use of forms, methods, techniques of project activity for the guaranteed development of future professionals' qualities, skills and abilities necessary to open and successfully run their own business. The goal is to form young people's entrepreneurial competence by means of project activity. The task is to create appropriate conditions that promote the activation of cognitive interest and independent acquisition of knowledge from various sources; formation of the ability to use knowledge in order to solve cognitive tasks; development of communication and research skills; active development of critical thinking; personal optimization of time costs, rational use of intellectual, physical and emotional resources, increasing productivity.

The content of technology is aimed at: the use of technological tools for the organization of project activity; creative disclosure of the student's personality in the process of project activity and independent work; combination of game forms and design-research work; creating conditions for a rational combination of cognitive, educational, research, creative activities, economic simulations and other activities important for opening and successful conducting by future skilled workers of own business.

The main idea is that students carry out with great enthusiasm only that project activity which they have chosen themselves; activity is not built in line with the subject. The result – students mastery of the algorithm and the ability to perform

project work contributes to the formation of cognitive interest, the development of entrepreneurial competence; ability to speak and defend their active position, independence and self-organization of educational activities; realization of creative potential in research, subject-productive and project activity (Yershova, 2018, p. 155).

Practical significance: increasing the efficiency of the educational process through the use of interactive teaching methods; filling the variable part of the curriculum with disciplines with innovative content and teaching methods; psychological and pedagogical diagnostic support of the educational process and personal development, which includes a set of socio-economic, psychological-pedagogical and medical-physiological factors; formation of skills important for entrepreneurial activity (to assess the need for resources and plan their use in solving problems in professional activities; to work in a team; the ability to build communication based on goals and communication situations; to evaluate critically and rethink the accumulated experience) (own and someone else's), to reflect on professional and social activities, to solve problems in professional activities on the basis of analysis and synthesis, to offer organizational and managerial solutions and assess the conditions and consequences of decisions taken; to participate in the implementation of technological and product innovations; to plan and implement measures aimed at activity implementation; to analyze the competitive environment; to develop business plans for the creation and development of new organizations, business ideas; the assistance in organizing comprehensive training of future skilled workers for entrepreneurial activity in VET institutions (capable of building a strategy of personal and career development); the use of mechanisms for rapid response to rapid socio-economic, political, cultural transformations; ensuring the development of personality (memory, thinking, creative, communicative and organizational abilities; education of will, ability to manage own emotional states, integrate life experience).

The expected socio-economic effect: increasing the competitiveness of the worker in the conditions of development of small business; meeting the demands of the modern labor market for creative workers capable of self-employment; increasing the ability of graduates of VET institutions to cope with stress in business; accelerating the processes of digitalization of doing business (Osovska, 2003).

During the use of pedagogical technology in the educational process of developing entrepreneurial competence of future skilled workers in the process of project activities, students create a project, comprehend real processes, live specific problem (production) situations, participate in penetrating phenomena, constructing new processes, objects, etc. The teacher is a consultant, motivating and directing research, analytical, project, creative activities of the student. The student independently chooses an effective route for solving a subject, meta-

subject, personal problem from many options, using a variety of sources of information, materials, forms, methods of project activities. It is extremely important to show young students their personal interest in the acquired knowledge, the development of entrepreneurial competence, which can and should be useful to them in professional life to build a trajectory of success. This requires a problem taken from real life, familiar and significant for the student. To solve it, the student needs to apply the acquired knowledge, new knowledge that has yet to be acquired in order to develop entrepreneurial competence.

The teacher can suggest sources of information, or can simply direct the opinion of young students in the right direction for independent search. But as a result, students must independently and jointly solve the problem, applying the necessary knowledge, sometimes from different fields, and get a real and tangible result. All work on the problem, therefore, acquires the contours of the project activity. During the project activity specially created problematic business situations contribute to the formation and development of the student's necessary system of knowledge, skills, key competencies, professional competencies (entrepreneurial), and provide a high level of development of learning and self-learning skills through the formation and development of special style of mental activity, creative business thinking. Problem-based business thinking develops creative activity and independence of students, opens opportunities for creative cooperation between teacher and student.

The advantages of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity are obvious. The use of technological tools for the organization of project activities allows to achieve significant changes in learning outcomes. Teachers have the opportunity to implement new models of organization of the educational process. Rationally and optimally organized group and collective activities can create wonders: to liberate the student's thinking; to develop the ability to cooperate, to work in team; to assess adequately and worthily the ability to put forward interesting non- traditional business ideas, their in-depth analysis. After such work, its participants with interest and desire will perform the functions of organizers, managers, activists, entrepreneurs.

During the implementation of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activities, a number of identified features that may complicate the process of achieving the result provided by technology should be taken into account: to involve young students systematically in independent work with new material, prepare them for self-education; it is not easy to successfully solve problems of an educational nature, especially those related to the assessment of personal and semantic growth of young students; problematic business situations can be applied only on such material, which allows ambiguous, sometimes alternative approaches,

assessments, interpretations; problematic business situations can be applied only on the material of a high level of significance (methodological, general scientific, theoretical); this type of training is justified if the learners have the necessary starting level of knowledge, skills, abilities, key competencies, professional competencies; problematic business situations require much more time to use research methods (Petrenko, Kustrich and Homeniuk, 2015).

It is possible to talk about the content of the procedure for diagnosing the effectiveness of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity only after resolving the issue of performance criteria. In the general case, performance indicates the degree of correspondence between the results achieved and projected (set). Criteria for measuring the effectiveness of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity – an issue from which it is necessary to begin a scientific discussion on the diagnosis of innovative pedagogical technologies. Due to uncertainty of the criterion justification for diagnosing learning technologies, a number of teachers and employers have doubts and concerns about the effectiveness of innovative pedagogical technologies in terms of learning, development of key competencies, professional competencies (the issue of development of entrepreneurial competence is especially acute nowadays) defined by curricula and programs in a given period of time; they are wary of pedagogical innovations, showing in some places justified, but, unfortunately, often unnecessary "pedagogical conservatism".

The analysis of possible complicating factors has allowed us to formulate criteria for the effectiveness of the implementation of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity: technological culture of the teacher; availability of the teacher's own experience of using pedagogical technologies, in particular pedagogical technology of development of entrepreneurial competence of future skilled workers in the process of project activity; creative "refinement" and transformation of technology; creating a situation of success during the joint project activity of students and teacher in the implementation of technology; organic interconnection of technology components; possibilities of technology in actualization, self-development of young people and teacher; noticeable changes in the state of young people (in their motivation for project activity, knowledge, skills, emotions, etc.) in the implementation of certain pedagogical technology (Fomichev, 2014, pp. 32-34).

In order to experimentally test the effectiveness of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity, we find out what entrepreneurial competence is. M.V. Tkachenko (2018, p. 2-3) concretized the essence of the concept of

"entrepreneurial competence of future professionals" as a "complex socio-economic and psychological-activity phenomenon, concretized by a dynamic set of values and worldviews, knowledge, skills, ways of working, experience, professionally significant qualities that holistically determine a person's preparedness for entrepreneurial activity within the implementation of professional and functional tasks, in particular the ability to self- employment (starting own business), the ability to analyze market opportunities of the enterprise, master leading economic roles, objectively assess individual personal abilities to entrepreneurship. The structure of entrepreneurial competence of future professionals includes interrelated components: motivational and valuable; knowledge and content; personal-reflexive; operational and activity".

The experimental base has been the following state educaional institutions: "Higher Vocational School № 11 Khmelnytsky", Vinnytsia Center for Vocational Education of Processing Industry","Lviv Higher Vocational Art School","Odessa Higher Vocational School of Trade and Food Technology","Regional Center for Vocational Education of Garment Production and Services of Kharkiv Region","Cherkasy Professional Road Lyceum", Melitopol Multidisciplinary Center of Vocational Education and Training, Educational and Scientific Center of Vocational Education and Training of the National Academy of Educational Sciences of Ukraine, Art College of Art Modeling and Design. Analysis of the results of experimental pedagogical research on the use of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the process of project activity can be presented in the Tables 6 – 9.

Table 6

Levels of formation of motivational-valuable component of students of VET institutions during the ascertaining and forming experiment (%)

Scales	Ascertaining experiment			Forming experiment		
	high	*medium*	*low*	*high*	*medium*	*low*
Positive attitude to vocational education as the beginning of the implementation of educational and professional trajectory in the field of entrepreneurship	38	35	27	51	37	12
The predominance in the structure of motives for the pursuit of entrepreneurial success	38	47	15	44	51	5
Correspondence of career orientations to entrepreneurial activity as an alternative direction of professional career	33	47	20	37	48	15
Attitude to entrepreneurial activity as personally and socially significant	36	44	20	38	47	15
Shifting the emphasis in the process of creating a business project to the imagination, creating constructive images and their implementation	37	36	27	50	36	14

Organization of economic training practice in really acting commercial firms	36	42	22	37	48	15

Note. Created by the author.

Table 7

Levels of formation of knowledge and content component of students of VET institutions during the ascertaining and forming experiment (%)

Scales	Ascertaining experiment			Forming experiment		
	high	*medium*	*low*	*high*	*medium*	*low*
Awareness of the period of receiving vocational education as a basic stage of a career in entrepreneurship	26	39	35	30	47	23
Knowledge of varied career paths	33	41	26	44	45	11
Requirements of the business environment to the knowledge, skills, general and professional competencies of the entrepreneur, the qualities of his personality	37	45	18	43	40	17
Teacher's readiness to use the project method in preparing students for entrepre- neurship	36	45	19	42	41	17
Success of mastering the necessary knowledge and skills, practical experience in the process of implementing the developed project in the field of entrepreneurship	37	46	17	42	42	16

Note. Created by the author.

Table 8

Levels of formation of operational and activity component of students of VET institutions during the ascertaining and forming experiment (%)

Scales	Ascertaining experiment			Forming experiment		
	high	*medium*	*low*	*high*	*medium*	*low*
Actions aimed at career planning in the field of entrepreneurship as an alternative educational and professional trajectory	28	41	31	32	48	20
Setting and solving educational and professional tasks in accordance with the requirements of entrepreneurial activity	38	46	16	44	50	6
Awareness raising	26	42	32	34	49	17
Development and self-development of personality qualities important for entrepreneurial activity	35	40	25	46	48	6

Orientation of education to personality-oriented education and activity approach taking into account psychological and age features	37	46	17	45	49	6

Note. Created by the author.

Table 9

Levels of formation of personal-reflexive component of students of VET institutions during the ascertaining and forming experiment (%)

Scales	Ascertaining experiment			Forming experiment		
	high	*medium*	*low*	*high*	*medium*	*low*
The ability of the student of VET institutions to analyze personal qualities and perfor- mance results in the process of obtaining professional education in the context of long-term plans for entrepreneurial activity	25	34	41	35	46	19
The ability of the student of VET institutions to analyze professional activity and career development	22	33	45	28	32	40
Adequate personal self-esteem	38	48	14	42	54	4
Development of reflexive analysis	37	47	16	43	53	4
The ability of the student to analyze personal qualities and performance results in the process of obtaining professional education in the context of long-term plans for entrepreneurial activity	36	47	17	42	53	5

Note. Created by the author

The analysis of students' responses shows a significant improvement of students' knowledge in the field of business design, formation of projective skills and positive business thinking. The students of this group have begun to actively use professional terminology and from the test it has become clear that future professionals have a systematic idea of why, when and how they can engage in entrepreneurial activity (Yenyhin, 2011, pp. 155-156).

The results of the formative stage of the pedagogical experiment suggest that the proposed experimental factors have had a positive effect on the dynamics of development of all components of the perception of students of VET institutions regarding entrepreneurial activity, and a significant difference in the relevant indicators has taken place for all components except the operational and activity component. However, we do not consider this result of the experiment for the formation of operational and activity component of the students of VET institutions (regarding entrepreneurial activity) to be negative, as both at the beginning of the

experiment and at the time of its completion, the high and average level of its manifestation was over 90% (91, 3 at the ascertaining stage and 96,6 at the formative), that is, it was already high enough at the beginning of the experiment.

The peculiarity of the use of pedagogical technology for the development of entrepreneurial competence of future skilled workers in the project activity process is its combination with traditional forms of education that provide training with the development of internal potential and entrepreneurial activity of the student's personality. The basis of pedagogical technology, in this case, is a competency-based approach in education, which is implemented through the use of innovative teaching methods in training entrepreneurs who will work in various sectors of the economy. Criteria for the effectiveness of its implementation are: establishing direct contacts between future and existing entrepreneurs; transfer of entrepreneurs' own practical experience in doing business to future professionals; acquaintance with the activities of entrepreneurs through the imitation of their functions by students in the process of project activities; involvement of students in entrepreneurial activity.