UDC 378.2

### ADLER OKSANA

PhD, associate professor of the department of enterprise economics and production management, Vinnytsa National Technical University ORCID ID: 0000-0002-4673-366X e-mail: oksana\_adler1983@ukr.net

## **PRYCHEPA IRYNA**

PhD, associate professor of the department of enterprise economics and production management, Vinnytsa National Technical University ORCID ID: 0000-0002-0805-2732 e-mail: prychepa.iryna@gmail.com

### **RUDA LILIIA**

PhD, associate professor of the department of finance and innovation management, Vinnytsa National Technical University ORCID ID: 0000-0002-1598-8301 e-mail: rudalist\_ok@ukr.net

# MODEL OF FORMATION OF ECONOMIC COMPETENCES OF SPECIALISTS IN TECHNICAL SPECIALTIES IN THE CONDITIONS OF EUROPEAN INTEGRATION

The quality of education is an important condition for the competitiveness of the economy, it determines the political, scientific and socio-economic direction of the state's development. Global processes of integration significantly change the requirements for the training of educational specialists for professional development. The modern human resources system should be focused on the training of highly qualified specialists who are able to think strategically and are ready to work in complex modern conditions. It was established the internationalization of all spheres of social life requires the integration of educational process.

An important prerequisite for the creation of a single European educational space is the provision of commonwealth and cooperation, as well as the preservation of one's own ethnic and cultural diversity. It was established that the rapid development of scientific and technical progress and new forms of organization of production put forward new requirements for the training of specialists in technical specialities. An innovative vector of development based on the integration of education and science at all levels has been determined. The importance of forming a basic level of economic competence among specialists in technical specialties is emphasized.

The ability and skills to achieve an effective solution of professional tasks, taking into account economic factors, by a specialist in a technical specialty are highlighted.

The educational space of a competitive specialist has been formed. An important point in the training of a technical specialist of the European model is the integration of his personal qualities with the assimilation of the disciplines of professional and practical training and relevant economic competencies

On the basis of the conducted research, modeling of the process of formation of the system of economic competence of technical specialists was carried out, taking into account the requirements of the highly competitive labor market and in the context of the European vector of modernization of modern educational process. It was determined that the developed model covers all stages of professional training of specialists, ensuring the achievement of the set goal: the formation of a system of economic competence among specialists in technical specialties, which will be manifested in their readiness and ability to solve professional technical tasks with their qualified economic justification.

**Key words**: higher education, specialist, economic competence, model, competitiveness, European education

JEL classification: I1, I10 DOI: https://doi.org/10.31649/ins.2023.1.106.117

# 1. INTRODUCTION

One of the determine factors of economy competitiveness is the quality of education, which provides development of the intellectual, spiritual and economic potential of society. Education has always been ascertaining factor in the political, socio-economic, cultural and scientific spheres of vital activity of society. The development of the national education system is impossible without its interconnection with modern globalization and European integration processes which impose strict requirements for the training of an educated, competent, fully developed person, which is capable of professional flexibility and mobility, continuous learning and professional development.

Global integration processes of the modern world make their adjustments and impose significant requirements for the restoration and development of the national economic system competitiveness, that is impossible without the formation of a powerful human resource potential of the country, the basis of which are modern highly skilled specialists: managers, engineers, researchers, designers, programmers, economists, etc. [1].

The modern approach in the field of domestic personnel system requires the training of highly qualified professionals who possess the appropriate professional qualities, think strategically, mobile and ready to work in market The complication of labor conditions [2]. relations, as well as the intensification of the knowledge role in modern society, requires taking into account the latest social aspects that increase the requirements for the individual professionalization, and formation of interdisciplinary ties and integration of various knowledge on this basis. Creation of economic competence system among specialists in various fields of activity is the significant direction in the market conditions. This issue is especially actualized in relation to the specialists of technical specialties due to the peculiarities of their professional activities, modern requirements to their knowledge system and the lack of attention to this issue during acquiring technical education.

# 2. ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

Problems of training students of technical specialties are widely discussed theme in the scientific lliterature and it was investigated in works of O. M. Alekseev [3], I.V Gerasimenko [4], N.M. Kijanovskaya [5], Y. V. Krupsky [6], A. M. Kokareva [7], N.V. Rashevskaya, O.G. Romanovskaya [8], S.O. Semerikov, A. M. Stryuk [9], Y. V. Trius [10], and others. The problems of the formation and development of economic competences were researched by O.P. Amend, D.S. Antonyuk P. [11]. G. Banshchikov [12], V.Y. Pazdriy [13], V.V. Divak [14], D O. Zakatnov, et al. At the same time, the issue of training highly skilled technicians through the prism of formation system of their economic competence in the conditions of European integration processes of education is insufficiently studied and requires further research and improvement of the relevant educational process.

The purpose of the study is modeling of the formation process of economic competence system of specialists of technical specialties during obtaining high-quality higher education as a requirement of a highly competitive labor market in modern conditions.

The following scientific tasks were identified to achieve this goal: 1) to investigate the features of European modernization vector of a modern specialist training;

2) to distinguish features of teaching economic subjects for students of technical specialties;

3) to study modern innovative technologies in higher school, training of technical specialists;

4) determine the criteria for assessing the

quality of training of a modern technical specialist;

5) to study the space of the formation of a modern competitive specialist in the technical direction of the European model;

6) to model the formation process of economic competence system of specialists of technical direction.

Intenationalization of all social life spheres (economic. socio-cultural. scientific and technical and other relations) determines the way of the world life, requires and quality international integration educational and processes. The system of national education is modernized purposefully and consistently with the aim of joining the educational and scientific space of Europe in accordance with the requirements of the Bologna process, which ensures a correlation between the requirements of a highly competitive labor market and the level of knowledge of specialists, by establishing common criteria and standards in the national educational systems of Europe.

The need of the creation of single European educational space is specified by real changes in the world: the problems of globalization, the formation of the information society, increase of migration processes, the mobility of the labor market, intercultural exchanges and most important - to learn the community and cooperation while preserving its own ethnic, cultural, religious and other diversity, respecting each other.

The main task proposed by Bologna process countries is to unite the educational systems of European countries, providing their preservation of national identity, historical traditions and specifics. The first attempts to give higher education in European countries the unifying, common features took place in the 1950s, since the signing of the Treaty of Rome. The further development of such efforts was realized in a series of events that took place in Europe [15].

Innovative strategies of the educational and scientific fields, considering European principles, are proclaimed in the program state documents, in such as, the National report "New course: reforms in Ukraine 2010-2015" (2010), "National strategy of development of education in Ukraine for 2012-2021" (2012), "Strategies of innovative development of Ukraine for 2010-2020 in the context of globalization challenges" (2009). The new version of the Law "On Higher Education" (2014) defines the main directions of the state policy, which includes: promoting sustainable development of society by forming a competitive human capital and creating conditions for lifelong education; international integration and entry of Ukrainian higher education system into the European space providing the achievements and progressive traditions of the national higher education are maintained and developed; continuity of getting higher education; state support of the training specialists in the priority sectors of economy, fundamental and applied scientific researches, scientific pedagogical activities [16].

The rapid development of scientific and technological progress, new forms of production organization, the development of information technology radically change the approach to business administration and interaction of employees in the economic process. Integration processes in science, technology and production require the optimization of modern vocational education, which is aimed at the comprehensive development of the individual, providing a broad orientation in modern social and economic life, sufficient competitiveness on the labor market and successful professional activity within specific professional direction.

Accordingly, taking into account current requirements, European educational orientations are aimed at innovative development based on the integration of education and science at all levels and characterized by interpenetration of different branches of knowledge.

Such direction of European development was caused by the fact that market relations and the latest technologies require from young specialists not only education and activity, but also autonomy, confidence, responsibility, ability to live and work in new rapidly changing conditions, to be socially oriented and economically educated.

## 3. METHODS AND WAYS OF ECONOMIC COMPETENCE FORMATION OF TECHNICAL SPECIALISTS

Dynamic socio-economic conditions of people's lives and activities of economic entities, the rapid development of scientific and technological progress require from specialists of all spheres the ability to adapt to innovative technologies and readiness to implement them in the economy, which in turn requires the formation of a basic level of economic competence and a culture of economic relations regardless of the professional field of activity.

Economic competence enables specialists of various professional directions:

- to improve their competitiveness on national and European labor market;

- to adapt to the growing demands of the market environment, thereby self-asserting and self-realization;

- to ensure the formation of competitive advantages of the company on local and European markets;

- to make fast and adequate decisions in professional and everyday life;

- be able to creatively and independently approach to the solution of urgent problems in the socio-economic, industrial and technical environment of dynamic changes, etc.

In general, competence is a complex system that reflects the appropriate ability of an individual based on a complex system of knowledge, experience, values, abilities that are integrated learning outcomes.

In this context, the systematic approach to the interpretation of «economic competence» proposed by G. Kovtun and O. Martynenko is interesting, considering the concept as "the totality of economic knowledge and practical skills, experience, economic culture and thinking, the availability of a sustainable need and interest in professional competence, and the components of economic competence are: a set of economic knowledge, economic consciousness, economic thinking, economic quality" [17].

Economic education and formation of basic economic competencies of every member of society as the basis of life-support in the future is a priority task of modern education, therefore, the formation of basic economic competences of specialists of technical specialties should become an important direction. The importance of such orientation is caused by the fact that these specialists direct their knowledge and efforts to solve the technical, industrial and innovative problems, on which the success of the enterprise in the market conditions of management depends to a large extend.

Today's requirements make it necessary for specialists of technical specialties not only to have knowledge in the profiled industry, but also to have an essential understanding of the functioning of economic systems at macro- and micro- levels, skills and abilities of integration economic principles and economic thinking into their professional activities. Such knowledge, skills and abilities will provide the opportunity to direct their own technical and creative activities, based on the economic needs and capabilities of the enterprise, the country and the world society as a whole. It is also necessary to create the economic competencies of specialists with higher education for effective use in their own domestic activities.

Accordingly, the economic competence of students and specialists of technical specialties is characterized as the ability to knowingly and effectively carry out professional, in technology and technology, and life activities based on main economic knowledge, skills, attitudes, beliefs, personal qualities and experience [11].

The task of modern higher education is the preparation of a specialist who, besides technical knowledge, would have a professional idea of the regularities of the functioning and the development of the economy, the operation of market mechanisms and the peculiarities of the organizational and production activities of the modern business entity.

In the modern world, the activity of a specialist in the technical field is designed to solve professional problems, taking into account the economic opportunities, realities and consequences of such activities for the organization, industry, country or international technical and economic systems. It is possible to achieve an effective solution of professional tasks taking into account economic factors by specialist in the technical field, having acquired the following skills and abilities [11]:

- analysis of the influence of the economy on the sector of such activity;

- maintaining modern knowledge in the field of behavioral economics;

- analysis of current technical innovations and their economic consequences;

- forecasting changes in economic models of the industry;

- fundamentals of organization and planning of production in such field;

- understanding of inter-branch economic relations;

-understanding the basics of consumer behavior in B2B (business for business) and B2C (business for the consumer);

- understanding of the economic component

of the relationship employer - performer;

- personal finance skills;

- skills of economic interaction in everyday life.

The activity and behavior of students and specialists of technical specialties is motivated by internal needs, awareness of their place in the life of society, team and family. Therefore, in the structure of economic competence we allocate a personal component. Its meaning will be revealed through personal qualities and personality experience in the field of economic relations.

It is clear that the economic education of students of technical specialties should take into account certain features and focus on the basic fields of economic science with the allocation of the knowledge and skills necessary for the implementation of the relevant professional activities (specialization and profiles).

Educational qualification requirements for a modern specialist, whose level should correspond to the progressive trends of European education, require the formation of a clear system of criteria for assessing the quality of specialist training [1]. The developed system of criteria should integrate the main indicators, which can be used to evaluate both the quality of the educational process itself and the quality of training a specialist.

It should be noted that the training of technical specialists in the context of their economic competence requires an appropriate assessment, which will be based on a system of relevant indicators including technical and economic peculiarities of knowledge, and will comply with the basic principles ensuring the objectivity of such an assessment. The basic principles of such evaluation include: planning of the introduction of economic disciplines into the curriculum and control of their study; systematic and systematic use of economic knowledge by students of technical specialties; objectivity of assessment; ensuring the principle of content in the context of studying economic disciplines; an individual approach with a combination of unity of requirements to a specialist.

The problem of forming a system of criteria for assessing a modern specialist is that the priority of the assessment is the determining the quality of a specialist from the point of view of assimilation of technical special disciplines. However, this approach does not make it possible to assess a specialist on the subject of its universality, mobility, adaptability, and flexibility. That is precisely those basic requirements which should be put forward for the competitiveness of a specialist on the European labor market. In this regard, the assessment of the level of quality of specialists of technical specialties in the context of their economic competence should be carried out according to the following basic criteria:

- Competitiveness of a specialist, which is reflected in the benefits derived from the possession of a set of relevant economic knowledge and skills of their application in the main activities;

- Competence of a specialist, representing a set of knowledge, skills, experience, ability and readiness to solve problems and tasks that arise in concrete situations of life, evaluating them from the economic point of view;

- Professional mobility of a specialist, which testifies of his readiness for obtaining and mastering new knowledge, the level of adaptability and flexibility on the changing labor market.

The above criteria enable to provide an integrated and systematic approach to assessing the quality of a technical specialist from the point of view of its economic competence. This approach makes it possible to train specialists of technical specialties, which will correspond to the international standards of education.

The system of the above qualitative demands, bring forward to a modern specialist, first of all, requires application of appropriate innovative means and methods of their training. Innovative methods of teaching disciplines in higher education should provide psychological and pedagogical, scientific and production, socioeconomic components of the development and formation of a modern specialist. Today, pedagogical and educational innovations are oriented on the training of a creative, adapted, mobile specialist who has all the necessary competencies to make non-standard decisions and to ensure the appropriate level of their quality.

Among the most common techniques today, methods of context-based learning, simulation and problem-based learning, modular and distance learning, as well as full knowledge acquisition are most often used. The above methods can be applied both separately and in a complex combination, characterized by It should be noted that the essence of innovative teaching methods in a high school is to change the role of the teacher. For innovative approaches in teaching disciplines, the teacher acts as the manager-organizer, whose purpose is to reveal the student's personal development, to form his creative abilities, increase the level of activity, cognitive activity. As a result of this training, the ultimate goal is not the student's ability to reproduce the theoretical material, but his ability to solve specific practical problems and to solve non-standard situations.

An analysis of modern higher technical education suggests that, despite the rapid development of information and computer technologies which ensure the quality and competitiveness of adopting various technical solutions modern technical specialists lacks knowledge concerning the adaptation of these solutions in the conditions of functioning of the market system.

Thus, the main tendency to increase the level of quality of training specialists of technical specialties is diversification of their educational process, which should ensure the principles of conformity, quality education, personal orientation, freedom of choice. In the case of the training of specialists in technical specialties, particular attention should be paid to ensuring interdisciplinary integration - the correspondence interdisciplinary connections, didactic of synthesis and integrity.

Thus, today there are many different approaches to the introduction and application of innovative methods of training specialists, but the problem is that during the teaching of economic disciplines specialists of technical specialties need to use specific approaches and tools in order to form a modern competitive specialist, who has appropriate economic competencies. That is, such a specialist who would be capable of competent economic substantiation of all his technical decisions. Particularly important is ensuring the economic literacy of students of technical specialties at the final stages of their training when it comes to substantiating technical decisions when writing bachelor's or master's papers.

One of the most common methods for introducing economic knowledge into the system of formation of specialists in technical specialties is the application of case-technologies. The essence of this innovative method is that the student must analyze the specific technical problem through the prism of its economic components, as well as form conclusions on the solution of this problem. The case-technology method involves the use of a variety of techniques, among which the most relevant during the assimilation of economic subjects by students of technical specialties are: reception of situational analysis, reception of design, reception of discussions. It is worth noting that the case-technology method is used in conditions of practical and seminars, during doing course work (when each task is a separate simulated problem or when the task is formed in accordance with the topic of bachelor's or master's work).

Especially popular today is the application of higher school various methods of facilitation. The essence of this group of methods is to encourage students to the development and personal growth. Such methods involve the use of a set of algorithms and methods of interaction teacherstudent, which ensure the creation of conditions for the development of experience, creativity, self-actualization. Methods of facilitation are designed for group sessions in which a group of students is formed in the form of a single team, which makes it possible to develop teamwork skills, but at the same time to develop the value component of each group member. All receptions of the facilitation are based on the understanding of the psychological approach, the collective mind, the theory of multiple intelligences. The main methods of facilitation include the use of moderation cards, rankings, world cafe method, brainstorming. These techniques give the opportunity to depart from standard practical and seminar classes, which are reduced to the technical fulfillment of the design tasks and the formal reproduction of theoretical information.

Application of methods of facilitation enables students to focus on constructive interaction with the teacher, to allow students to have their views that do not substantially coincide with the position of the teacher, to support the independence of students, to allow students to choose the most suitable methods for them to study. Facilitation is especially important when teaching economic disciplines for technical students, as students often have a false idea of the insignificance of the component of economic competence in the structure of their learning.

Despite the fact that the main result of the mastering of the relevant disciplines during the formation of specialists in higher education is their ability to apply the acquired knowledge in practice, it is worth noting that the practical aspect is not possible without the student obtaining relevant theoretical knowledge. In this regard, methods of teaching the theoretical material in lecture classes should be of an active nature and ensure maximum interest of students. Sufficiently high communicative effect can be achieved through the use of storytelling in lecture practice. Storytelling is a powerful way of reporting information to an audience by retelling real or fictitious stories, examples that are instructive, and sometimes amusing. Such a method integrates psychological and managerial aspects, makes students to be more active and motivate them for better results. It is clear that creation the entire lecture material by such an approach is difficult, and sometimes impossible at all. However, when the lecture is full of various digressions, identified with actual examples of the lecturer or by the students themselves (in the case of the dialog format of the lecture), level of remembering of the theoretical material increases at times. In addition, storytelling provides an opportunity not only to enhance the motivational component of students during the lecture, but also to develop their communicative abilities. This innovative approach is quite convenient in applying in the teaching of economic disciplines for students of technical specialties, since most economic information can be demonstrated by illustrating examples of domestic and foreign experience.

Storytelling is a non-formal teaching method and can be used as an additional to the academic ones. The main pledge of effective use of storytelling is the examples that are appropriate and timely given to the audience, illustrating the lecture theoretical material.

Quite a positive result in the training of specialists of technical specialties can be achieved by means of Kolb's Learning Cycle. Cycle model of cognition provides the professional orientation of students in the introduction of new educational standards. The Kolb's Cycle anticipate the presence of four processes, which promote to the full mastery of knowledge. The first stage stimulates the student of technical direction to solve specific economic task. According to the results of the initial analysis, the student achieves certain results in solving the problem. The following conclusions are verified by means of experimental simulation of the situation, which enables one to see the problem situation in a different way. The main task of the teacher of economic subjects is to provide students with the opportunity to go through all phases of the Kolb's Learning Cycle by the most optimal methods for them.

This approach provides the formation of accommodation and convergent learning styles of the main features of which are active experimentation, abstract conceptualization and own experience. According to the research, students with such skills become leading specialists in engineering and technology, widely apply modeling, laboratory studies, and have the ability to apply research results in their practice.

Modern approaches to the formation of a competitive, active, business, and mobile specialist of high quality first of all foresee the formation of a creative personality, who not only possesses a certain amount of economic knowledge, but can also use them in real life. In this regard, the main idea of innovation education is the use of problem-based approach, research methods, methods of business activity, as well as the active use of information and communication technologies.

The use of the above-mentioned innovative methods of teaching economic disciplines for students of technical specialties will ensure active participation of students in the educational process, the possibility of using basic knowledge in real conditions, approximation the approach to collective activities, emphasize the student's attention to the learning process, rather than memorizing information.

Significantly increase the efficiency of the application of the above innovative methods is possible also under conditions of their use in conjunction with international educational and scientific programs. Today, Ukrainian universities are actively participating in international programs such as TEMPUS, DAAD, which are programs of trans-European mobility in the field of higher education, promote its modernization and development, and provide teacher giving mobility for students and opportunities for advanced training and internships. Competitive and creative professionals often put forward their own projects to participate in INCO, INTAS, COBAS research and innovation funding programs, which ensure the implementation of new ideas in accordance with current market requirements. It is also a very significant stimulus to take part in various European Union science and technology programs - TACIS, USAID, USIA, CIDA.

The participation of native technical specialists in the mentioned programs and projects is quite real, but it is important to remember that a market economy requires technical solutions which are characterized by qualitative indicators including not only a set of technical characteristics, but above all meet the modern requirements of investment policy and commercial utility.

# 4. RESULTS AND DISCUSSION

Now it is possible to determine the educational space of the formation of a competitive specialist. From the above analysis it becomes clear that the determining moment of training a specialist in the technical direction of the European model is the integration of one's personal qualities with the mastering of subjects of professional and practical training and relevant economic competences (Fig. 1).



Fig. 1. The space of a modern competitive specialist formation of the European technical direction

It should be noted that the units of economic subjects shown in Fig. 1 provide for the formation of specialists of technical specialties such characteristics [18, 19, 20]:

- understanding of the basic economic laws and principles of management in market economy;

- mastering the means of entrepreneurship in conditions of efficient use of limited production resources and organization of modern production processes;

- formation of modern managerial thinking and system of special knowledge in the field of production management, identification of the basic needs of the modern market; - skills of carrying out economic substantiation of development and realization of technical decisions.

The given space of formation of the modern competitive specialist of the technical direction of the European model enables to visualize the realization of interdisciplinary connections in the process of forming their professional competence.

competence system of specialists of technical direction taking into account the requirements of a highly competitive labor market and in the context of the European vector of modernization of modern educational processes (Fig. 2).



Fig. 2. Model of formation process of economic competence system of the specialists of technical direction

The developed model is system-structured in relation to the application of principles, methods and means of providing a holistic pedagogical process. The model includes interconnected and complementary structural units: target, theoreticalmethodological, informative and technological and resulting, providing integrity and phased training of specialists.

Target unit is formed considering the requirements of modern highly competitive labor market and dynamic market relations and it determines the goal of the model: the formation of a system of economic competence of technical specialists.

The conducted research and the obtained results give opportunity to model the formation process of economic

The theoretical and methodological component provides the use of a system of principles and methodological approaches to the formation of the readiness and ability of specialists of technical direction to efficiently solve professional problems including economic factors.

The informative and technological unit provides the use of traditional and innovative forms in their interrelation, methods and means of learning of

#### Innovation and Sustainability

The resulting unit enables to assess the level of performance of tasks and the degree of achievement of the goal in accordance with the identified criteria and indicators.

To conclude, it can be noted that the developed model covers all stages of professional training, ensuring achievement of the set goal: the formation of the system of economic competence of specialists of technical specialties, which will be manifested in their readiness and ability to solve professional technical problems with their qualified economic substantiation.

### **5. CONCLUSIONS OF RESEARCH**

The priority vector of the development of modern higher education in Ukraine is to aim on the process of entry of the national high school into the European and world educational space, considering relevant demands of the modern labor market, as well as close and distant prospects in such a direction.

The modern higher professional education of the technical direction, therefore, should focus on providing all areas of activity with highly skilled professionals capable of working in new, rapidly changing conditions, being socially oriented and economically educated. It requires acquiring economic knowledge, through of skills. considering economic factors and a qualified economic justification of the developed innovative solutions.

Economic education of students of technical direction should consider certain features and focus on the basic fields of economic science using innovative methods and means of training

The model developed by the authors is complex and involves the introduction into the educational process of innovative technologies of training highly skilled technicians having actual economic knowledge, skills, and the necessary economic competence, which enable to solve the problem of employment of technical specialists on national and international labor markets.

### References

1. Pshenichna L. A. (2018) Osoblyvosti rozvytku systemy vyschoi osvity Ukrainy v konteksti formuvannia suspil'stva znan' [Peculiarities of the development of the higher education system of Ukraine in the context of the formation of a knowledge society]. *The Sources of Pedagogical Skills*, no 11, pp. 278–284.

2. Tovkanets G. V. (2018) Tendentsii rozvytku ievropejs'koi vyschoi osvity na pochatku XXI stolittia [Trends in the development of European higher education at the beginning of the 20th century]. *Scientific Bulletin of the Mukachevo State University. Series "Pedagogy and Psychology"*, vol 1, no 1, pp. 28–33.

3. Alekseev O. M. (2019) Theoretical and methodological bases of technologies of distance learning of disciplines of professional and practical training of students of mechanical engineering specialties, Abstract of Dr.D. Thesis, Sciences: 13.00.10, National acad. Sciences of Ukraine. Kyiv, Ukraine.

4. Gerasimenko I. V. (2019) Stvorennia navchal'noho kursu v systemi elektronnoho navchannia na bazi Moodle [Creation of an educational course in the system of electronic learning based on Moodle]. *Pedagogical Almanac*, no 16, pp. 109–115.

5. Kiyanovskaya N. M., Rashevskaya N. V., Semerikov S. A. (2018) Etapy rozvytku teorii i metodyky vykorystannia informatsijno-komunikatsijnykh tekhnolohij u navchanni vyschoi matematyky studentiv inzhenernykh spetsial'nostej u Spoluchenykh Shtatakh Ameryky [Stages of the development of the theory and methodology of the use of information and communication technologies in the teaching of higher mathematics for students of engineering specialties in the United States of America]. *Information Technologies and Learning Tools*, vol. 43, no 5, pp. 68–83.

6. Mikhalevich V. M., Krupsky Ya. V., Tyutyunnik O. I. (2018) Orhanizatsiia samostijnoi roboty studentiv shliakhom vykorystannia systemy komp'iuternoi matematyky Maple [Organization of independent work of students by using the system of computer mathematics Maple]. *Bulletin of the Vinnytsia Polytechnic Institute*, no.3, pp. 114–118.

7. Kokareva A. M. (2019) Methodological bases of professional training of engineers in technical universities. *Bulletin of the National Aviation University. Series "Pedagogy and Psychology"*, no 6, available at URL: <u>http://jrnl.nau.edu.ua/index.php/VisnikPP/article/view/10202/13404</u>.

8. Romanovskaya O. (2020) Preparation of university students in the conditions of internationalization of higher education: the experience of Ukraine and the USA. *Native school, no.* 3, pp. 70–74, available at URL: <u>http://nbuv.gov.ua/UJRN/rsh\_2010\_3\_21</u>.

9. Semerikov S. O., Stryuk A. M. (2019) Kombinovane navchannia: problemy i perspektyvy zastosuvannia

#### Innovation and Sustainability

v udoskonalenni navchal'no-vykhovnoho protsesu j samostijnoi roboty studentiv [Combined teaching: problems and perspectives of application in improvement of educational process and independent work of students]. *Teoriia i praktyka orhanizatsii samostijnoi roboty studentiv vyschykh navchal'nykh zakladiv : monohrafiia* [The theory and practice of organization of independent work of students of higher educational institutions: a monograph]. Krivoy Rog: Book Publishing House of Kireevsky, pp. 135–163.

10.Trius Y.V. (2019) Kombinovane navchannia iak innovatsijna osvitnia tekhnolohiia u vyschij shkoli [Combined learning as innovative educational technology in higher education]. *Theory and methods of e-learning*, no. 3, pp. 299–308.

11.Antonyuk D. S. (2018) Ekonomichna kompetentnist' studentiv i fakhivtsiv tekhnichnykh spetsial'nostej ta ii strukturni komponenty [Economic competence of students and specialists of technical specialities and its structural components]. *Suchasni informatsijni tekhnolohii ta innovatsijni metodyky navchannia u pidhotovtsi fakhivtsiv: metodolohiia, teoriia, dosvid, problemy* [Modern information technologies and innovative methods of training in training of specialists: methodology, theory, experience, problems], Mizhnarodna naukovo-praktychna konferentsiya [International scientific-practical conference], Kyiv-Vinnitsa: LLC "Planer" LLC, vol. 47, 323 p.

12.Banshchikov P. G., Pazdriy V. Y., Uramova A. V. (2018) Dosvid zaprovadzhennia dystsypliny «Sotsial'ne pidpryiemnytstvo» z vykorystanniam praktychno oriientovnoho pidkhodu do formuvannia kompetentnostej cherez realizatsiiu proektiv [Experience in introducing the discipline "Social Entrepreneurship" with the use of a practically oriented approach to the development of competencies through the implementation of projects]. *Sotsial'ne pidpryiemnytstvo: teoriia, praktyka ta mizhnarodnyj dosvid* [Social entrepreneurship: theory, practice and international experience], Mizhnarodna naukovo-praktychna konferentsiya [International scientific-practical conference], Kyiv: KNEU, pp. 173–176.

13.Banshchikov P. G., Pazdriy V. Y. (2018) Otsinka ekonomichnykh ta upravlins'kykh kompetentnostej u vypusknykiv-mahistriv: osnovni polozhennia i dosvid aprobatsii [Estimation of economic and managerial competences in graduate-masters: basic provisions and experience of approbation]. *State University "Vadym Hetman Kyiv National University"*, no. 3, p. 46–48.

14.Divak V. V. (2018) Rozvytok ekonomichnoi kompetentnosti dyrektoriv zakladiv seredn'oi osvity zasobamy informatsijno-komunikatsijnykh tekhnolohij [Development of economic competence of directors of secondary education institutions by means of information and communication technologies]. *Open and distance education: from theory to practice*, pp. 49–51.

15.Antoniuk D. S., Vakaliuk T. A. (2018) Metodychni rekomendatsii z doboru ta vprovadzhennia prohramno-imitatsiinykh kompleksiv ekonomichnoho spriamuvannia u navchalnyi protses VNZ [Methodical recommendations on selection and implementations of business simulations to the educational process of the higher education institutions]. Zhytomyr: Vyd-vo FOP "O.O.Ievenok", 80 p.

16.Adler O. A., Prychepa I. V., Ruda L. P. (2019) Mistse ekonomichnoi kompetentnosti v systemi pidhotovky profesijnykh fakhivtsiv tekhnichnykh spetsial'nostej v konteksti ievropejs'koho vektoru modernizatsii suchasnoi osvity [The place of economic competence in the system of training professional specialists in technical specialties in the context of the European vector of modernization of modern education]. Perspektyvy rozvytku maschynobuduvannia ta transport [Prospects for the development of mechanical engineering and transport], Mizhnarodna naukovo-praktychna konferentsiya [International scientific-practical conference], Vinnytsia: PE "TD "Edelweiss and K", May 13–15, pp. 340–341.

17.Prychepa I. V., Ruda L. P., Adler O. A. (2021) Kontseptual'ni zasady intelektualizatsii ekonomichnykh vidnosyn i protsesiv na riznykh rivniakh hospodariuvannia [Conceptual principles of intellectualization of economic relations and processes at different levels of management]. Infrastruktura rynku, no 54, pp. 42–47.

18.Adler O. O., Lesko O. Y. (2017) Strukturno-lohichna model' metodyky ekonomichnoho obgruntuvannia innovatsijnykh rozrobok [Structural-logical model of the methodology of economic substantiation of innovative developments]. *Economic analysis*, vol 27, no. 1, pp. 164–170.

19.Kavetsky V. V., Prychepa I. V., Nikiforova L. O. (2019) Ekonomichne obgruntuvannia innovatsijnykh rishen'. Samostiina ta indyvidualna robota studentiv : navch. posib. [Economic justification for innovative solutions. Independent and individual work of students: teaching. manual]. Vinnytsia: VNTU, 143 p.

20.Ruda L. P., Adler O. A. (2018) Pytannia ta problemy otsinky efektyvnosti upravlinnia personalom pidpryiemstva [Questions and problems of assessing the effectiveness of enterprise personnel management]. *Modern Economic Research: Theory, Methodology, Strategy*, Mizhnarodna naukovo-praktychna konferentsiya [International scientific-practical conference], Poland: The Baltic Publishing, September 28, pp. 12–15.

### Анотація

### АДЛЕР Оксана Олександрівна, ПРИЧЕПА Ірина Валеріївна, РУДА Лілія Петрівна Модель формування економічних компетентностей фахівців технічних спеціальностей в умовах європейської інтеграції

Якість освіти є важливою умовою конкурентоспроможності економіки, визначає політичний, науковий та соціально-економічний напрям розвитку держави. Глобальні процеси інтеграції суттєво змінюють вимоги до підготовки освітян для підвищення кваліфікації. Сучасна кадрова система має бути орієнтована на підготовку висококваліфікованих спеціалістів, здатних стратегічно мислити та готових працювати в складних сучасних умовах. Встановлено, що інтернаціоналізація всіх сфер суспільного життя потребує інтеграції освітнього процесу.

Важливою передумовою створення єдиного європейського освітнього простору є забезпечення співдружності та співпраці, а також збереження власного етнічного та культурного розмаїття. Встановлено, що бурхливий розвиток науково-технічного прогресу, нові форми організації виробництва висувають нові вимоги до підготовки фахівців технічних спеціальностей. Визначено інноваційний вектор розвитку на основі інтеграції освіти і науки на всіх рівнях. Підкреслено важливість формування базового рівня економічної компетентності у фахівців технічних спеціальностей.

Висвітлено здатність та вміння досягати ефективного вирішення фахівцем технічної спеціальності професійних завдань з урахуванням економічних факторів.

Сформовано освітній простір конкурентоспроможного фахівця. Важливим моментом у підготовці технічного спеціаліста європейського зразка є інтеграція його особистісних якостей із засвоєнням дисциплін професійної та практичної підготовки та відповідних економічних компетенцій.

На основі проведеного дослідження здійснено моделювання процесу формування системи економічної компетентності технічних спеціалістів з урахуванням вимог висококонкурентного ринку праці та в контексті європейського вектору модернізації сучасного навчальний процес. Визначено, що розроблена модель охоплює всі етапи професійної підготовки фахівців, забезпечуючи досягнення поставленої мети: формування у фахівців технічних спеціальностей системи економічної компетентності, яка виявлятиметься в їх готовності та здатності вирішувати професійні завдання. технічні завдання з їх кваліфікованим економічним обґрунтуванням.

*Ключові слова:* вища освіта, спеціаліст, економічна компетентність, модель, конкурентоспроможність, європейська освіта

#### Бібліографічний опис статті:

### Стаття надійшла до редакції 27.01.2023 р.

Адлер О.О., Причепа І.В., Руда Л. П. Модель формування економічних компетентностей фахівців технічних спеціальностей в умовах євроінтеграції. *Innovation and Sustainability*. 2023. № 1. С. 106-117.

Adler O., Prychepa I., Ruda L. (2023) Model of formation of economic competences of specialists in technical specialties in the conditions of European integration. *Innovation and Sustainability*, no. 1, pp. 106-117.