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## **PEDAGOGICAL CONDITIONS FOR THE FORMATION OF PROFESSIONAL COMPETENCE OF FUTURE BACHELORS IN CONSTRUCTION AND CIVIL ENGINEERING**

**M. V. Nakonechna\***

*The article is devoted to the coverage of priority basic pedagogical conditions for the formation of professional and vocational competencies of future bachelors of construction and civil engineering. The requirements for a modern specialist focused on the current labor market, scientific and technological progress, innovation and international cooperation are highlighted. The modern specialist must be ready for new challenges, be able to adapt quickly to scientific and technological progress and have innovative technologies in his/her professional activity. The article analyzes the pedagogical, psychological and philosophical literature and reveals the meaning of the concept "condition" and "pedagogical conditions". The term "conditions" is interpreted as certain circumstances, condition or environment, and "pedagogical conditions" – as circumstances, as components of the pedagogical system: content, methods, forms, tools, technologies that ensure the successful achievement of the goal and effectiveness of the educational process. The vision of leading teachers on pedagogical conditions in the field of vocational education is highlighted. The basic pedagogical conditions such as: formation of motivation, introduction of effective methods and technologies of training, integrative approach to formation of the maintenance of professional and professionally-oriented disciplines, modernization of educational process are singled out. The article offers its own vision of the basic pedagogical conditions for the training of future bachelors of construction and civil engineering and highlights the priorities. Taking into account such pedagogical conditions as motivation, providing professional competence through the content of professionally-oriented and fundamental disciplines, application of innovative pedagogical teaching technologies, introduction of effective methods, techniques and innovations in the educational process is the basis of fundamental professional training of future competitive specialists.*

**Key words:** *conditions, pedagogical conditions, professional competence, bachelors in construction and civil engineering, objective and subjective pedagogical conditions, modernization of professional education, formation of motivation of future specialists, teaching methods and technologies, content of professionally-oriented and fundamental disciplines.*

\* Teacher

(Lviv Technical and Economic College Lviv Polytechnic National University)

nakonechna.m.v79@gmail.com

ORCID: 0000-0001-58-83-8828

## ПЕДАГОГІЧНІ УМОВИ ФОРМУВАННЯ ФАХОВОЇ КОМПЕТЕНТНОСТІ МАЙБУТНІХ БАКАЛАВРІВ З БУДІВНИЦТВА ТА ЦИВІЛЬНОЇ ІНЖЕНЕРІЇ

М. В. Наконечна

Стаття присвячена висвітленню пріоритетних базових педагогічних умов формування професійних та фахових компетенцій майбутніх бакалаврів будівництва та цивільної інженерії. Висвітлено вимоги до сучасного фахівця, що орієнтований на теперішній ринок праці, науково-технічного прогресу, інновацій та міжнародну співпрацю. Сучасний фахівець повинен бути готовий до нових викликів, вміти швидко адаптуватися до науково-технічного прогресу та володіти інноваційними технологіями у своїй професійній діяльності. У статті проведено аналіз педагогічної, психологічної та філософської літератури та розкрито зміст поняття "умови" та "педагогічні умови". Термін "умови" трактуємо як певні обставини, умови чи середовище, а "педагогічні умови" – як обставини, як компоненти педагогічної системи: зміст, методи, форми, засоби, технології які забезпечують успішне досягнення поставленої мети та ефективність навчально-виховного процесу. Висвітлено бачення провідних педагогів щодо педагогічних умов у галузі професійної освіти. Виокремлено базові педагогічні умови: формування мотивації, впровадження ефективних методів та технологій навчання, інтегративний підхід до формування змісту фахових і професійно-орієнтованих дисциплін, модернізація освітнього процесу. У статті запропоновано власне бачення базових педагогічних умов підготовки майбутніх бакалаврів будівництва та цивільної інженерії та виокремлено пріоритетні. Урахування таких педагогічних умов як мотивація, забезпечення фахової компетентності через зміст професійно-орієнтованих та фундаментальних дисциплін, застосування інноваційних педагогічних технологій навчання, запровадження ефективних методів, методик та інновацій в освітній процес є основою фундаментальної професійної підготовки майбутніх конкурентноздатних фахівців в умовах швидкісних темпів розвитку суспільства.

**Ключові слова:** умови, педагогічні умови, фахова компетентність, бакалаври з будівництва та цивільної інженерії, об'єктивні та суб'єктивні педагогічні умови, модернізація професійної освіти, формування мотивації майбутнього фахівця, методи та технології навчання, зміст професійно-орієнтованих та фундаментальних дисциплін.

**Introduction of the issue.** The modern labor market in all sectors of the economy places new demands on specialists in general and on specialists in the construction industry in particular. New building materials and technologies, customers needs and the principles of modern urban planning arise before the specialist in construction and building, as well as the requirements of general and professional competencies specified in the educational standards. In addition to professional competence, the specialist must be ready to demonstrate general competencies, among which the dominant, as employers say, are the ability to work in a team, think abstractly and creatively, master information technology, make informed

decisions in unusual situations, speak foreign languages, which forms the basis of professional competencies. This puts before educational institutions the search for new approaches and taking into account a number of pedagogical conditions, which are focused on training competitive specialists in the field of construction and civil engineering. According to A. Lytvyn, the construction industry is dominated by complex information processes based on the use of accurate and coordinated data at all stages: from the design of the building to its construction and commissioning. Therefore, future professionals must be ready to apply the latest technologies in practice, quickly adapt to electronic communications, professionally-

oriented software, data banks of regulatory, technological, economic information and acquire the relevant competencies in advance. However, the capabilities of teaching staff and logistics of educational institutions that prepare bachelors in construction and civil engineering lag far behind the demands of the labor market. The quality of professional training does not meet European standards, so researchers of the conceptual foundations of training in higher education note the need to develop new pedagogical thinking, the introduction of new educational technologies and teaching methods. The presence these contradictions became the basis for the formulation of the topic of our study.

**Current state of the issue.** Analysis of pedagogical, psychological and philosophical scientific literature shows that the problem of substantive and informative analysis of the concept of pedagogical conditions is considered by scientists in various aspects. Thus, the study of pedagogical conditions as a theoretical basis are the scientific positions of modern pedagogical science regarding professional training of future specialists in higher education institutions (A. Aleksyuk), in particular, professional training of specialists in higher education institutions (O. Gulay, A. Dyomin, V. Luzan), the use of information technology in the vocational process by higher education institutions (R. Gurevich, V. Klochko, M. Kozyar, V. Monakhov, V. Strelnikov, N. Tverezovskaya); monitoring of the organization of educational work in higher education institutions (A. Denisenko), the formation of professional competencies of future professionals in the professional and technical field are covered in the studies of V. Baidenko, O. Dubasenyuk, I. Zymna, O. Zubyk, A. Markova, N. Nychkalo, K. Mykhasyuk.

**The outline of unresolved issues brought up in the article.** Today, we have numerous studies and significant

results of scientific teachers in the field of forming a competitive professional and technical specialist. However, the issue of formation of professional competencies of future bachelors in construction and civil engineering remains insufficiently disclosed. In particular, the pedagogical conditions of their preparation require more detailed study. In the works of researchers we do not find a single interpretation of the term "conditions" and "pedagogical conditions". The meaning of the term "condition" was studied by E. Berezhnov, N. Dyachenko, N. Nychkalo. The concept of pedagogical conditions was substantiated and covered by Yu. Babansky, Y. Boychuk, A. Dyomin, I. Zyazyun, V. Lozova, P. Oliynyk and others. R. Gurevych, L. Dolnikova, V. Radkevych and others studied the conditions that ensure the formation of competitive specialists.

**The aim of research.** To analyze the essence of pedagogical languages as a separate scientific category, to single out and theoretically substantiate the pedagogical conditions for the training of future bachelors in construction and civil engineering.

**Results and discussion.** The analysis of scientific researches shows that in the literature we meet different, author's substantiated interpretations of pedagogical conditions as a scientific category. Thus, in the reference book of vocational education, pedagogical conditions for vocational pedagogy are defined as circumstances on which depends and is a holistic productive pedagogical process of training, which is mediated by the activity of the individual [24: 143].

In the psychological dictionary, the statement: "condition" is characterized as "on which depends something else that makes possible the existence of a thing, state, process in contrast to the cause, which is a logical condition of the consequence of action" and as "an essential component of a complex of objects. from the existence of which

necessarily arises the existence of this phenomenon" [25: 207].

In the large explanatory dictionary of the modern Ukrainian language we find several meanings of the term "condition":

- a necessary circumstance that allows the implementation, creation, formation of something;

- circumstances, features of reality, under which something happens or is done [5: 1506].

In scientific research of teachers and researchers we find the following interpretations of the term "condition" – environment in which they are and without which they can not exist, the definition is given by (L. Karpenko) [17: 326].

Based on the above, we can state the generalized concept of the term "conditions" as interrelated circumstances, facts, processes and factors that directly affect the educational process.

In pedagogical researches, scientists use the term "pedagogical conditions". According to V. Budak, O. Pekhota and A. Stareva, pedagogical conditions are a system, the components of which are certain norms, methods, conditions, situations that have objectively developed and are necessary to achieve a certain pedagogical goal [14: 183]. A. Belkin, L. Kachalova interpret pedagogical conditions as a key factor in the success of the educational process and a comfortable pedagogical environment [3: 15]. L. Kachalova [17: 98], Yu. Babansky defines pedagogical conditions as "a situation in which the components of the educational process are presented in the best interaction, which allow the teacher to work effectively, manage the educational process, and those who study - to work successfully" states [2]. T. Furman understands pedagogical conditions as a tool for motivating students' learning activities, the development of didactic support for classroom learning and independent work of students on the

basis of a competency approach [26: 85]. M. Zvereva considers pedagogical conditions as semantic characteristics of components of pedagogical system (content, methods, forms, means, features of interaction of participants of pedagogical process, etc.) [13: 29-32]. S. Dinina and B. Kupriyanov consider pedagogical conditions as stable connections of the educational process [17]. In their works I. Zyazyun, O. Pekhota, A. Nain, and Y. Yutsevych interpret pedagogical conditions as a system of certain forms, methods, material objects and real situations, objectively formed or subjectively created, necessary to achieve a specific pedagogical goal [14]. Researchers led by R. Seryozhnikova outline pedagogical conditions as a set of objective possibilities, content, forms, methods, pedagogical tools and techniques [16]. V. Semichenko argues that conditions are an element of pedagogical activity that is integrated into its structure through the set of emotions and mental states that they generate (emotional background) [15: 315-316]. K. Dubych sees pedagogical conditions as a set of interdependent measures of the pedagogical process, which ensure the achievement of a specific goal [10:79]. N. Zhytnyk highlights pedagogical conditions as those that provide quality professional training, namely: the implementation of the content of education; methodical support of the educational process; introduction of innovative educational technologies; providing a person-centered approach in the organization of training; the state of educational work in higher education; professional skills of teachers [12: 233]. A. Ayurzanain and N. Yeroshyina consider them as a certain circumstance that affects (constructively or destructively) the formation and development of pedagogical phenomena, processes, systems, personality quality [11: 12]. R. Gurevich interprets pedagogical

conditions as a structural shell of pedagogical technologies or pedagogical models; due to pedagogical conditions the components of technology are realized [8: 72]. S. Vysotsky defines pedagogical conditions as a set of objective possibilities of content, methods, organizational forms and material capabilities of the pedagogical process, which ensures the successful achievement of the goal [6: 91]. T. Yudyna considers organizational and pedagogical conditions quite broadly and refers to them "the widespread use of information technology in order to obtain educational and scientific information that is necessary for teachers and students; "availability of scientific and educational literature"; "reorientation of teaching from the standpoint of teaching the subject from the transfer of ready-made knowledge given in textbooks to the process of forming in students the need to extract and process information"; "methodological support of the educational process"; "introduction of methodical, technological innovations into the educational process"; "implementation of monitoring of students' academic achievements"; "formation in the educational process of readiness for professional activity"; "the presence of a system of criterion assessments to determine the effectiveness of training" [29]. O. Fedorova understands the pedagogical conditions as a set of objective possibilities of the content of education, methods, organizational forms and material possibilities of its implementation, which ensure the successful solution of the task [25].

We, in our study will be guided by the hypotheses of M. Zverev and N. Zhytnyk, as well as Yu. Kostyushko to activity in a new socio-cultural situation [18: 46].

In our opinion, the division of pedagogical conditions into subjective and objective is interesting and effective in organizing scientific research.

Subjective, internal (psychological) include factors associated with the formation of a favorable psychological environment, interest, creative search and stimulation of students' mental activity. Objective, external (pedagogical) factors are divided into three groups: methodological, organizational and logistical [22: 152-154]. Based on the multicomponent content of pedagogical conditions, scientists emphasize the basic pedagogical conditions. Thus, O. Melnyk in his dissertation research identifies the following basic pedagogical conditions:

- modernization of professional training;
- optimal ratio of general education and professional training;
- providing motivation for future professional activity;
- professional orientation of academic disciplines [22].

K. Dubych, O. Gura, N. Zhytnik, M. Zvereva, O. Pozhidaeva, Y. Kostyushko, O. Meshchaninov, V. Stasiuk distinguish the following basic pedagogical conditions:

- formation of motivation of the future specialist in order to see himself in the chosen profession. Motivating factors include the prestige of the profession, demand in the labor market and informed choice;
- available effective teaching methods and technologies (research method, stimulation method, use of innovative learning technologies, interactive tools, etc.);
- integration of the content of professional disciplines, which must provide professional knowledge and meet the standard of education;
- training technologies that form the relevant competencies and abilities of future specialists, provide their targeted and meaningful training [10; 13; 15].

The process of training construction specialists is based on basic pedagogical conditions and has its own characteristics. O. Gulay in his works

identifies the main pedagogical conditions for the effectiveness of training of builders:

- integration of the content of natural science and professional training with the approach to the level of modern construction technologies-determines the content of education;

- formation of positive motivation for learning aimed at achieving success – motivational motives;

- according to the form of educational activity and individual features of students methodical techniques;

- providing systematic methodological support of the educational process taking into account educational innovations and trends in modern construction production – a means of implementing the pedagogical system [7: 169-171].

The pedagogical conditions for the formation of professional competencies during the preparation of bachelors in the field of vocational education are analyzed in detail by O. Derevyanko and the following pedagogical conditions are identified, combining them into groups:

- motivational: the focus of education on the formation of students' stable professionally-oriented motivation to master professionally significant knowledge and skills;

- organizational: ensuring the relationship of professional disciplines with the content of professional activities of relevant enterprises in the process of acquiring knowledge, skills and abilities by students;

- technological: the use in the learning process of students of active forms, methods and innovative teaching aids that provide an opportunity to model situations, the functionality of which is the basis for the formation of their professional competence;

- methodical: development of educational and methodical support for the formation of students' professional competence [23: 152-153].

The analysis of these studies, the subject of which is the concept and meaning of the term "pedagogical conditions", allowed to specify some of the problems of education, which can be solved in the presence or in the case of creating (providing) specific conditions. Among them: increasing the efficiency of education and vocational training at the national, sectoral, regional levels and in a separate educational institution; proper implementation of the social order for personal training; improvement of organizational structure, qualitative characteristics of the educational system and its components; ensuring internal and external links of the educational system, inclusion in a single information and educational space. The very range of covered educational and educational problems involves different approaches to the interpretation of the concept of "pedagogical conditions. According to most researchers, pedagogical conditions are in some way subject to regulation, increase, and in the absence or incompleteness – complicate, reduce the effectiveness of pedagogical interaction. However, as a rule, the stated conditions apply only to certain aspects of training. In addition, reasonable conditions are often too general, do not have a strong focus on the specifics of the educational institution, the profile of future professionals – means in his article A. Lytvyn [21: 65-78].

In our opinion, the implementation of pedagogical conditions during the training of specialists, which is offered by scientists, will contribute to the formation of professional and professional competencies of future bachelors of construction and civil engineering. It should be noted that among numerous studies and interpretations we are impressed by the definition of professional competence as a quality that allows a person to effectively carry out their work

professionally and achieve high results in professional activities. The direction of professional activity forms a variety of components of professional competence and their features that must meet the demands of the modern labor market, ensuring the competitiveness of the specialist [23: 35-41].

Based on our own experience, taking into account the specifics of professional activities of construction professionals, modern labor market requirements, innovation and international cooperation and, based on the analysis, we can identify pedagogical conditions for the formation of professional competencies of future bachelors in construction and civil engineering:

✓ motivation: prestige and demand for the profession in the labor market, awareness of the importance and responsibility;

✓ ensuring professional competence through the formation of the content of professionally-oriented and fundamental disciplines;

✓ pedagogical learning technologies that will ensure the formation of future professionals' competence, in accordance with the target and content component;

✓ introduction and use of effective methods, techniques and innovations in the educational process.

All the pedagogical conditions we have identified are mandatory interconnected tools of the educational process, which, based on the interaction of all participants in the process, will contribute to the formation of a qualified, competitive, professionally competent specialist.

**Conclusions and research perspectives.** Thus, under the pedagogical conditions of formation of professional competence of future bachelors in construction and civil engineering, we understand a set of interrelated objective and subjective factors, requirements, conditions and

factors, which provide a high level of training. Each of the conditions we have identified is aimed at the effective formation of professional and professional competencies. Under the condition of positive motivation, the subject of the educational process forms an idea of the chosen professional activity and this, in turn, determines the formation and acquisition of professionally significant personality characteristics. Professional and professional competencies are formed with the help of pedagogical technologies, methods and techniques by integrating the content of professionally-oriented disciplines. As a result, a constructive educational process can take place only in the case of direct communication and the availability of the necessary priority pedagogical conditions. Also, substantiation and analysis of external, internal factors influencing the educational process and the views of scientists allow us to say: pedagogical conditions are conditions created purposefully, especially in the educational environment in order to most effectively implement and form a specialist.

The directions of our further research include the substantiation of the criteria of pedagogical conditions for the formation of professional competence of future bachelors in construction and civil engineering.

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