



Zhytomyr Ivan Franko State University Journal.  
Pedagogical Sciences. Vol. 2(97)

Вісник Житомирського державного  
університету імені Івана Франка.  
Педагогічні науки. Вип. 2 (97)

ISSN (Print): 2663-6387  
ISSN (Online): 2664-0155

## **TERTIARY EDUCATION**

## **ПЕДАГОГІКА ВИЩОЇ ШКОЛИ**

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**UDC 681.3:528.4**

**DOI 10.35433/pedagogy.2(97).2019.24-33**

### **CRITERIA FOR ASSESSING THE PRACTICAL PREPAREDNESS OF THE FUTURE TECHNOLOGIST-TECHNICIAN IN THE SPECIALTY "PRODUCTION OF BREAD, CONFECTIONARY, PASTA AND FOOD CONCENTRATES" AT THE FOOD INDUSTRY COLLEGE**

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*The article substantiates the criteria for evaluating the practical preparedness of future technicians-technologists in the specialty "Production of bread, confectionary, pasta and food concentrates" in the food industry colleges and their indicators are defined. It is proved that with purposeful implementation of a pedagogical conditions system for their practical preparation for future professional activities, there are significant potential opportunities for the formation of the most important – practical component of their professional competence – the main methodological requirement of a competence-based approach to professional training.*

*In the process of substantiating their practical preparation for future professional activity, with taking into account the structure and professional competence content, both theoretical and practical aspects of training, acquiring a complex of behavioral, activity and subject abilities for future activities, basic practical skills formation and bread production are taken into account, confectionery, pasta and food concentrates. These are the criteria – value-motivational, cognitive, managerial, technological, psychological and subject, which demonstrate their practical ability for future professional activity.*

*It is proved that such a system of criteria makes it possible to comprehensively diagnose the practical readiness of future technicians-technologists for professional activity. In particular, these criteria provide an opportunity to find out their positive attitude to the chosen specialty –*

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technician-technologist in the specialty "Production of bread, confectionary, pasta and food concentrates"; motivation development to master this profession and its modern technologies; the system formation of special professional practical skills and abilities, which is the basis of practical abilities in the specialty; the formation of technician technologist' special practical skills and abilities in this specialty as the subject of professional life; the formation of professionally important qualities and professional thinking of technician technologist necessary for work in modern production; the subject formation of activity in the bread production field, confectionery, pasta and food concentrates. It was found out that for the implementation of job competencies, he must have professionally important qualities that are primarily formed in the practice process. Three levels of practical skills and abilities are characterized: high (creative), medium (practice-oriented) and low (practice-reproductive) level.

**Key words:** preparation, criteria, indicators, formation, assessment, technician-technologist, practical training, level.

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## **КРИТЕРІЇ ОЦІНЮВАННЯ ПРАКТИЧНОЇ ПІДГОТОВЛЕНОСТІ МАЙБУТНІХ ТЕХНІКІВ-ТЕХНОЛОГІВ ЗІ СПЕЦІАЛЬНОСТІ "ВИРОБНИЦТВО ХЛІБА, КОНДИТЕРСЬКИХ, МАКАРОННИХ ВИРОБІВ І ХАРЧОВИХ КОНЦЕНТРАТІВ" У КОЛЕДЖАХ ХАРЧОВОЇ ПРОМИСЛОВОСТІ**

**В. І. Дуганець, А. В. Ткач**

У статті обґрунтовано критерії оцінювання практичної підготовленості майбутніх техніків-технологів зі спеціальності "Виробництво хліба, кондитерських, макаронних виробів і харчових концентратів" у коледжах харчової промисловості і визначено їх показники. Доведено, що при цілеспрямованій реалізації системи педагогічних умов їх практичної підготовки щодо майбутньої професійної діяльності існують суттєві потенційні можливості формування найважливішої – практичної – складової їх професійної компетентності – головної методологічної вимоги компетентнісного підходу до професійної підготовки фахівців.

У процесі обґрунтування їх практичної підготовки до майбутньої професійної діяльності, з урахуванням структури та змісту професійної компетентності, враховано як теоретичний, так і практичний аспекти підготовки, набуття комплексу поведінкових, діяльнісних і суб'єктних здатностей до майбутньої діяльності, формування основних практичних навичок і вмінь щодо виробництва хліба, кондитерських, макаронних виробів і харчових концентратів. Це такі критерії – ціннісно-мотиваційний, когнітивний, управлінський, технологічний, психологічний і суб'єктний, які демонструють їх практичну здатність до майбутньої професійної діяльності.

Доведено, що така система критеріїв дає можливість комплексно діагностувати практичну підготовленість майбутніх техніків-технологів до професійної діяльності. Зокрема, ці критерії дають можливість з'ясувати їх позитивне ставлення до обраного фаху – техника-технолога зі спеціальності "Виробництво хліба, кондитерських, макаронних виробів і харчових концентратів"; розвиток мотивації до опанування цим фахом і сучасними його технологіями; формування системи спеціальних фахових практичних навичок і вмінь, яка складає основу практичних здатностей за фахом; формування спеціальних практичних навичок і вмінь техника-технолога зі цієї спеціальності як суб'єкта професійного буття; формування професійно важливих якостей і професійного мислення техника-технолога, необхідних для роботи в сучасному виробництві; формування суб'єкта діяльності в сфері виробництва хліба, кондитерських, макаронних виробів і харчових концентратів. З'ясовано, що для реалізації посадових компетенцій у нього мають бути сформовані професійно важливі якості, які, насамперед, формуються у процесі практики.

Охарактеризовано три рівні сформованості практичних навичок і вмінь: високий (творчий), середній (практико-орієнтувальний) і низький (практико-репродуктивний)

*рівні.*

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**Ключові слова:** *підготовка, критерії, показники, формування, оцінювання, технік-технолог, практична підготовка, рівні.*

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**Introduction.** Professional training of future technicians in the specialty "Production of bread, confectionery, pasta and food concentrates" (hereinafter referred to as technicians' technologists) in food industry colleges has one significant aspect that concerns their practical training and characterizes its integral interdisciplinary content. This aspect is practical and professional skills formation, and most importantly, professional activities. The main focus of practical training is to facilitate successful professional activities through the integration of practical training within the vocational education system of professional subjects. Furthermore, practical training should facilitate professional needs as future subjects in such sectors of the national economy as bread production, confectionery, pasta and food concentrates. This last point is relevant because technologists cannot be efficient without practical skills and abilities, and ideally, abilities that constitute the foundation of their professional competence. At the same time, they have a multi-vector character. These are: organization of various sectors activities of food industry and restaurant enterprises; an increase in the production of food products; food production organization based on the latest technologies; ensuring strict quality control of raw materials and finished products of food industry enterprises and restaurant industry enterprises; accounting and management of individual technological processes; ensuring occupational health and safety at enterprises; marketing activities; food industry and restaurant facilities management; the design of technological processes of

production of food industry enterprises and restaurant facilities and the technological regimes and operations improvement; compliance with the requirements of national and international food quality standards; resource planning (material, financial, labor); direct realization of production competence as a qualified worker in the bread production, confectionery, pasta and food concentrates, etc.

This list of practical abilities shows that, firstly, formation is impossible without the practical component of professional training. The manifestation of these abilities is interdisciplinary in nature and requires the integration of various practical knowledge, skills and abilities [14]. Secondly, these abilities have a multidirectional nature. On the one hand, they may be considered as managerial skills and abilities, and on the other hand, they are direct executive functions of a specific qualified worker. This paradox is apparent when production requires meta-professionals

(H. P. Shchedrovyytskyi) who are able to work at the junction of several professions and are able to manage various areas. According to Shchedrovyytskyi, where no profession "works", a set of professions and their cooperation work there [12]. A specialist in the field of bread, confectionery, pasta and food concentrates should be just such a meta-professional.

In this regard, the substantiation of objective criteria for diagnosing the future technicians' practical readiness in the specialty "Production of bread, confectionery, pasta and food concentrates" in the food industry colleges and determining their performance is relevant in both theoretical and applied aspects.

An analysis of the scientific literature, the results of scientists' psychological and pedagogical research, shows that the practical preparation problem occupies a key place in the professional competence of any specialists. One such complex area of vocational training is the practical training of future technicians-technologists in the specialty "Production of bread, confectionery, pasta and food concentrates" – college graduates, and such an objective tool for its evaluation is the criteria for diagnosing their practical readiness.

Analysis and synthesis of various scientific sources shows that the rationale for the criteria for diagnosing the practical readiness of various specialists, including technologists, has not been a primary subject of scientific research. The existing scientific literature points to a focus on the practical component of the training of specialists, especially in the process of passing various practices and internships [8–10] agricultural educational institutions [9; 10].

The theoretical foundations of the practical training of future specialists were established by S. I. Arkhangelsky, S. Ya. Batishev, A. A. Bulda, A. I. Demin, B. P. Esipov, S. I. Zinoviev, A. P. Kondratyuk, H. S. Kostiuk, A. A. Lavrinenko, V. F. Mishkurova, N. F. Talyzina, D. A. Tkhorzhevsky, S. A. Shaporinsky and others.

There are topical issues of the practical training of future specialists, including the agrarian sphere, I. I. Blosz, A. A. Bugerko, D. Voitiuk, V. S. Gaponenko, A. A. Gumeniuk, I. Zhivolup, V. M. Krasilnikov, P. Lausha, P. Luzan, I. I. Ponomary, V. I. Raibets, D. A. Smetanin, M. R. Khomenko etc. For this research, the results of such studies are of particular interest: theoretical and practical training of students for production practice (M. T. Levochko and N. L. Gres) [5]; practical training of

bachelors (T. V. Vorobei [2], I. A. Kolosok [4], I. A. Yablohnikov [13]); the formation of college students' professional competence in the process of passing educational and production practice (E. A. Mishaiku [7]), competence approach to the future specialists' training (Z. Falinskaia [1], N. M. Petukh, V. V. Yagupov [14; 15], including in the agrarian sphere (E. M. Lugovskaya [6], V. I. Riabets [11]); students' practical training in agrarian universities (M. P. Khomenko [3] etc.

The problem of adapting the requirements of a competence-based approach and the professional competence formation among future specialists in the agricultural sector at the university is dealt with by D. A. Kostyuk, P. A. Luzan, V. I. Svystun and others.

The analysis and generalization of pedagogical theory and practice according to the criteria for assessing the practical preparedness of specialists, incl. technologists in the vocational education system shows the practical absence of such research.

**The focus** of this article is to substantiate the system of criteria for diagnosing the practical readiness of future technicians in the specialty "Production of bread, confectionery, pasta and food concentrates" in food industry colleges and to determine their indicators.

**Results and Discussion.** In many Ukrainian documents and laws, in particular the National Qualifications Framework (2011), the National Strategy for the Development of Education of Ukraine for the period up to 2021 (2013), and the Law of Ukraine "On Higher Education" (2014), industry standards of higher education in Ukraine note the need to modernize the system of vocational education. One of its most important areas is a significant strengthening of the practical training of future specialists.

The Higher Education Industry Standard of Ukraine for technologists-technologists in the specialty "Production of Bread, Confectionary, Pasta and Food Concentrates", which is used in food industry colleges, pays special attention to the formation of practical skills and abilities such as management, organizational and security, marketing, project planning, production and technology.

The process of determining the criteria for diagnosing practical readiness of future technicians should be guided by the above practical skills and abilities that form the universal basis of their practical readiness for future, post-education posts. Some of these skills and abilities are needed in all cases of employment, but their reference in the Industry Standard of Higher Education of Ukraine provide for their obligatory presence and formation.

In the thesis of Z. Z. Falinska, substantiated criteria for the practical preparation of future social teachers is stated as: "a positive attitude towards practical activities; the formation of theoretical foundations in psychological and pedagogical disciplines; the formation of self-discipline, self-education; the ability to adequately take responsibility for performing tasks; the ability to self-improvement, the development of individual style" [1: 11–12]. There is a certain list of relationships, qualities and abilities that have, on the one hand, no system and logic, and on the other, they do not reflect the practical training of future specialists. Although she rightly notes that "... you need to form clear criteria for evaluation and a list of basic skills and abilities in accordance with the specific objectives of each type of practice" [1: 82].

In the thesis of I. A. Koloska, which is devoted to the practical training of future agronomists on the mechanization of agricultural production, the criterion is stated as

"assessing each student's mastery of skills, which is part of a set of professional subject-practical skills, conducting technological adjustments to MTA for plowing, there are deviations allowed by the student exercises in the practical tasks form" [4: 169]. These criteria concern only the formation of separate skills, but not systems of practical skills and skills, which are formed in the practical training process of a future specialist.

In most dissertations, there are no criteria for assessing the practical preparedness of specialists, including food technologists. The existing classifications do not even correspond to the classical structure of professional activity of any specialists, which include values, motives, content, action and set of operations, result and subject of activity. They are "blurred", have no specifics, and it is impossible to diagnose and mathematically prove the statistical significance of the obtained experiment results.

Taking into account the various types of practices for food technologists which include educational, technological and undergraduate, it is necessary to focus on the system, context and subject-activity methodological approaches to their definition. For example, there must be a value-motivational criterion, which can be used to determine the following: attitude to the profession of technician-technologist; the motivation to be a technologist / master of production in this area; values of being technologist. These indicators measure the practical values and motivation of acquiring the specialty of a technician technologist.

There should also be a subject component that directly manifests itself in the practical training process. This will overcome certain difficulties of practical training, as it will demonstrate the willingness and ability to be a technician-technologist, independent, responsible and autonomous in

professional activities. Similarly, other criteria make it possible to determine the formation of other professional activity components.

The most important thing to take into account, is the fact that they are interdisciplinary in nature and reflect the high subject and technological richness of their activities. These components feature a duality of content, applying to both manager and performer, and are thus considered metaprofessional. As a result, they should evaluate the practical component of their professional and professional types of competence.

According to the classical structure of activity, the contextual and subject-activity approach to practical preparation is highlighted by value-motivational, cognitive, managerial, technological, psychological and subject criteria. These approaches provide the opportunity to systematically and simultaneously measure all of these relationships, motives, qualities, practical skills and professionally important qualities. They also offer the opportunity to diagnose which are formed and manifested in the process of practical training.

1. *The value-motivational criterion* makes it possible to determine the value attitude of students towards future professional activity as a technologist, as well as its true motivation. Motivation may be internal or external and will begin to "emerge" during the process of educational and technological practice. Motivation will thus become final and fixed during the process of externship. This criterion is important in conjunction with the subject component, as these two will ultimately determine whether the student will become a professional within the field of bread, confectionery, pasta and food concentrates, or will choose another profession. Accordingly, the content of these criteria substantially correlates with the

content of other criteria and "shape" their real value and importance for the student as a future technologist.

Main indicators are as follows: focus on the chosen profession and satisfaction with this choice; awareness of the prospects of their professional life as a technologist; positive attitude to their chosen specialty; the presence of intrinsic motivation to master the specialty of the technologist and its modern technologies. These indicators quite fully demonstrate the student's attitude towards the acquisition of their profession and the meaning of mastering it; the motivation nature for the acquisition of specialty technician-technologist; the presence of professional interests and needs. All of these together determine the meaning of the acquisition by the student of a future specialty - technologist. When this content is positive, the other components of practical training will be quite valuable, motivational and informatively rich.

This is researched using the method of studying the professional activity motivation (K. Zamfir in the modification of A. Rean) and a questionnaire aimed at determining the focus of the profession of technician.

2. *The cognitive criterion* is important in the practical training of technicians-technologists because it diagnoses their practical knowledge. Here, the most important thing is not the amount of practical knowledge attained, but how knowledge may be used to form practical skills / abilities and to implement job competencies. This system of professional, scientific knowledge is adapted to the specifics of the chosen professional activities and constitutes the theoretical foundation for the realization of official competencies with the help of theoretical, practical and professional skills. The main indicators of this criterion are the system of specialized, scientific professional knowledge that

are the theoretical basis for practical skills and abilities needed by a technologist.

This criterion was assessed through the utilization of tests meant to gauge practical knowledge, as well as through the determination of educational performance in the main professional disciplines. Various factors, such as entrance control, the quality of homework, frontal surveys or mini-tests to update the necessary educational materials, evaluation of practical work, and an understanding of the most appropriate ways to apply certain technologies were all evacuated.

3. *The managerial criterion* is integral, as it diagnoses the practical skills and abilities that are necessary for a technologist to implement organizational and managerial competence in terms of an official role, which may include head of the laboratory, production masters, production site masters, workshop masters, analytical chemist, industrial training masters, technologist, chief technologist, food controller, etc.

The main indicators of this criterion are managerial skills and abilities as a technologist-technologist who can potentially occupy a managerial position. More specifically these include motivational, organizational, security, and control.

4. *Technological criterion* measures practical skills and abilities that are necessary for the implementation of job competencies as a qualified employee. Main indicators include skills / abilities in managing technological processes, skills / abilities to work with technological equipment, and skills / abilities to observance the technological regimes at the production sites, which will ensure quality control and product safety.

This criterion was diagnosed through the usage of a package of topics for individual projects based on the technological processes of the industry

and creative tasks to diagnose the development of skills and abilities to use technological equipment.

5. *Psychological criterion*. Due to the fact that the technician-technologist simultaneously works in different systems that include "man-machine", "man-sign" and "man-man", they must have many professional important qualities. On the one hand, patience, endurance, consistency, perseverance, operational and technological memory, attentiveness, consistency, and adaptability are formed within the context of technologist training. On the other hand, high efficiency, flexibility, tolerance, practical managerial thinking, communication, organization, etc. are formed within a managerial professional context.

This criterion was diagnosed through the implementation of a package of individual projects and creative tasks for diagnosing the formation of professionally important qualities and professional thinking for the implementation of their job competencies as a technologist and manager.

6. *Subject criterion* is an integral component, as it determines the subject and professional ability of a technologist to the job competencies practical implementation as a technologist and manager. The main indicators are objective self-assessment as a technologist, autonomy and independence in the implementation of practical functions, awareness of responsibility for activity results, the ability to bear responsibility for actions as a technologist and manager, and ability to independently organize both work and staff.

This criterion was diagnosed using a questionnaire to determine the level of skills and abilities formation of self-control, self-assessment and self-determination as a technologist and manager, as well as clarification

reflexivity (adapted by A. Karpov, V. Ponomareva).

These criteria make it possible to diagnose the development of the practical ability of technicians-technologists for their future professional activities and to obtain statistical data regarding their preparedness. Generally speaking, the statistical data that will be obtained using these criteria, provide an opportunity to find out the formation of practical skills and abilities of a college graduate. There are three defined levels: high, medium and low.

The high-creative level is characterized by the following: self-reflection and self-involvement as a future technologist; awareness of the need to acquire the specialty of a technician-technologist and the need to form practical skills and abilities in various directions; the ability to self-analyze and critically self-evaluate results of practical training, internships and internships; stable practical skills and abilities for solving professional tasks and for the implementation of job competencies; professionally important qualities; professional thinking as both a manufacturer and leader; awareness of the responsibility for the results of future professional activities; knowing how to correct quasi-professional actions and having a plan for professional development as a technologist.

The medium, practice-oriented, level is characterized by the following: self-reflection skills and self-assessment as a future technician-technologist; awareness of the need to acquire the technician-technologist specialty and the need to acquire practical skills to become a professional; generally knowing how to self-analyze and critically self-evaluate practical results of quasi-professional activities; forming some professionally important qualities; the basis of professional thinking as a technologist; generally aware of the

responsibility for the results of educational and future professional activities as a technologist; in general able to correct his practical and quasi-professional actions.

The low, practice-reproductive, level is characterized by the following: unformed skills and abilities of self-reflection and self-esteem as a future technician-technologist; poorly aware of the need to acquire the specialty of a technician-technologist and do not understand the need to acquire practical skills for professional development; poorly able to self-analyze and critically self-evaluate results; is able to solve professional tasks only through a template; professionally important qualities are poorly formed; poorly formed professional thinking as a specialist; poorly aware of the responsibility for the results of educational and future professional activities as a technologist; knows how to model the production situation using a template and choose the way to achieve the goals set; weakly able to correct practical and quasi-professional actions and does not have a plan for professional development as a technologist.

**Conclusions.** 1. The practical readiness of a college graduate / technician-technologist has an interdisciplinary nature and demonstrates practical readiness, subject practical ability and readiness for future professional activity.

2. To diagnose the practical readiness development of a technician, it is advisable to apply the following criteria: value-motivational, cognitive, managerial, technological, psychological and subject.

3. There are three levels of practical skills and abilities: high (creative), medium (practice-oriented) and low (practice-reproductive) level.

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TRANSLITERATED)**

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Received: April 04, 2019

Accepted: June 10, 2019