УДК 378.011.3-051:6]: 37.091.39:614
DOI https://doi.org/10.33989/2519-8254.2022.11.275566
ORCID 0000-0003-2362-2876

ОЦІНКА ЯКОСТІ ПІДГОТОВКИ МАЙБУТНІХ УЧИТЕЛІВ ТЕХНОЛОГІЙ ДО ЗДОРОВ'ЯЗБЕРЕЖУВАЛЬНОЇ ДІЯЛЬНОСТІ З УЧНЯМИ ПРИ ВИВЧЕННІ ДИСЦИПЛІНИ «ОСНОВИ ВИРОБНИЧОЇ БЕЗПЕКИ У МАЙСТЕРНЯХ»

Валерій Титаренко,
кандидат педагогічних наук, доцент, доцент кафедри виробничо-інформаційних технологій та безпеки життєдіяльності;
Полтавський національний педагогічний університет імені В. Г. Короленка

У статті з урахуванням актуальної потреби підготовки майбутніх учителів технологій до здоров'язбережувальної діяльності з учнями, особливо у навчальних майстернях закладу середньої освіти, запропоновано діагностичні педагогічні умови такої підготовки при вивченні дисципліни «Основи виробничої безпеки у майстернях (систему критеріїв і показників сформованості готовності; характеристику якісних рівнів; застосування комплексу методів оцінки; визначення ефективності впровадження). Специфіку здоров'язбережувальної діяльності вчителя технологій пов'язано з компонентами компетентності (загальнокультурний, виробничо-технологічний, організаційно-управлінський, проєктно-конструкторський); критеріями їх прояву (мотиваційно-ціннісний, когнітивний, діяльнісний) та рівнями готовності (високий, достатній, середній, початковий).

Запропоновано логічну систему відповідності критеріїв і показників готовності майбутніх учителів технологій до формування здоров'язбережувальної компетентності учнів основної школи у процесі трудового навчання, а також зміст рівневих характеристик такої готовності; охарактеризовано сукупність методів оцінки стану, рівня та якості підготовки майбутніх учителів технологій у процесі вивчення навчальної дисципліни «Основи виробничої безпеки у майстернях».

Проведено висновок щодо можливостей упровадження пропонованих діагностувальних умов у практику роботи закладів загальної та вищої освіти.

Ключові слова: *технології, майбутній учитель, здоров'язбережувальна діяльність, навчально-виробничі майстерні, діагносту вальні умови, основи виробничої безпеки.*

Formulation of the problem. Modern updating of the health-saving aspects of the training of future technology teachers has a deep foundation. The relevance of the problem of professional training of the future teacher of technology to the formation of students' health-preserving competence in the process of labor activity increases due to the fact that the updating of the content of the students' labor education involves the mastering of more than 20 technological operations of manual and mechanical processing of various construction materials and related with the production of various objects of technological activity, therefore the technology teacher must be a high-level specialist who is called not only to implement the complicated content of the curriculum, but also to preserve the life and health of students, to form in them a set of health-preserving competencies, to prepare children for work in conditions close to the sphere of production and service, to ensure safe working conditions for their work.

Among the diagnostic pedagogical conditions within the framework of the research problem, we include:

– definition of a system of criteria (motivational-value, cognitive, activity) and indicators of the readiness of future technology teachers to form the health-saving competence of primary school students in the process of work training;

– a description of the qualitative levels (initial, medium, sufficient, high) of the formation of the readiness of future technology teachers for labor protection and safety activities in the ZNZ;

– substantiation of the application of questionnaire methods, observation, evaluation of independent and creative works of students, final control, expert evaluations, self- and mutual evaluation, etc. in the process of professional training of future technology teachers;

– implementation of research materials and results into the educational process of pedagogical higher education institutions, determination of the effectiveness of this implementation.

Presenting main material. The introduction of a credit-transfer system for the organization of the educational process involves the creation of appropriate conditions that affect the process of training future technology teachers. Among such conditions are the availability of structural and logical schemes for the training of specialists by specialty; modular system of organization of the educational process, system of testing and rating assessment of students' knowledge; ensuring the educational process on the basis of educational plans, which are formed as a set of credits; development of individual schedules of the educational process taking into account the peculiarities of the credit-transfer system; formation of training programs of all educational and qualification levels on the basis of educational and qualification characteristics of graduates and educational and professional programs, which provide for possible changes in the ratio of credits of educational and qualification components of training; the availability of the necessary educational and methodological, material and technical and information support of the credit-module system of the organization of the educational process.

Diagnostic pedagogical conditions take into account that on the path of integration of the national education system into the world, there is a transition to a new generation of industry standards of higher education based on a competency-based approach. The National Framework of Qualifications not only systematically and structuredly describes the qualification levels by competences, but also plays an important role in the modernization of technology teacher training systems, which consists in reorientation to learning outcomes – competence (knowledge, understanding, skills, values, other personal qualities), which a person acquires and is able to demonstrate them after completing professional training.

In view of this, the professional training of a teacher of labor education is an integral component of fundamental professional training, which is organically combined with the study of psychological-pedagogical, socio-cultural and professionally oriented disciplines. Like every future teacher, a technology teacher must be able to integrate the acquired knowledge and skills when solving problems, think creatively, objectively analyze his activity with the aim of improving it, use the experience of innovative teachers in his pedagogical activity, be ready to solve pedagogical tasks of developing technical thinking of schoolchildren.

In order to determine the criteria as a system for assessing the state of readiness of future technology teachers, it is necessary to orientate yourself regarding the concept of «criterion» and the attitude to the set of indicators of each of the selected criteria. In the scientific literature, there is no unanimity in determining the criteria and indicators of preparation for professional activity. Yes, E. Kulyk believes that the criterion is the main feature by which one decision is chosen from the majority of possible ones; L. Kravchenko (Кравченко, 2009) notes that the criterion provides the function of a working management tool, substantiates and determines the ultimate goal of the research, the means of the criterion must necessarily be isolated indicators and intermediate levels. It is clear that the criteria must meet certain requirements: the relevancy of the criterion is determined by its significance as a systemic measure of the efficiency of professional activity; completeness of the criterion reflects important signs of professional activity; the reliability of the criterion is substantiated by the correlation of repeated measurements of its indicators after a certain time interval; the practicality of the criterion means the simplicity and convenience of obtaining relevant results.

We proceed from the fact that the criterion is the degree of manifestation of the qualities, properties and signs of the subject being studied, which make it possible to observe its condition, determine the level of functioning and development. Most often, the criteria for the effectiveness of the training of future technology teachers are considered along the lines of competence, personal-activity and axiological approaches as conceptually united by the problem of researching knowledge, skills, skills, motives and values expressed by a certain assessment. At the same time, personal qualities necessary for the professional activity of a future teacher are rarely included in the criteria – this does not allow to give an objective and comprehensive assessment of the process of training future technology teachers for professional activity. Taking into account the above, we determined the criteria that allow us to find out the state of readiness of future technology teachers for the formation of health-saving competence of primary school students in the process of on-the-job training.

When determining the criteria and justifying them, we first update the specifics of the activity of a modern specialist, which is related to four components of competence:

– general culture, which involves: the ability of the technology teacher to effectively use the provisions of regulatory and legal documents in the work of students, to master the basic methods of health-preserving activities and to support the work capacity of schoolchildren;

– production-technological, which includes: justification of the choice of safe modes, parameters of labor processes in the school workshop; effective performance of functions, responsibilities and powers for occupational safety at the workplace, in the student body; implementation of elimination measures causes of accidents and occupational diseases at students' workplaces;

– organizational and management, which ensures: conducting measures to prevent student injuries and illnesses; preservation of health; the ability to organize the activities of the student body with the mandatory consideration of life and work safety requirements; methodological competence in conducting training and testing knowledge on occupational safety issues among students of the institution;

– design and construction, which determines: the readiness of technology teachers for the formation of health-saving competence in students; the introduction of safe technologies by the teacher, the choice of optimal conditions and modes of work in the process of labor training of students of grades 5-9; design and organization of students' workplaces based on modern scientific and technological achievements in the field of health-saving technologies, which create safe conditions for staying, studying and working at school, which is achieved by rational organization of the educational process (taking into account age, gender, individual characteristics and hygienic norms) in school production workshops; correspondence of educational and physical loads to the capabilities of each student.

On the basis of the above, in order to identify the state of formation of the readiness of future technology teachers for the formation of health-preserving competence of elementary school students in the process of work training, we identified motivational, value, cognitive and activity criteria. These criteria are closely related and mutually determined, their integrity indicates the development of those personal and professional qualities of the future technology teacher that characterize his readiness. Since the criteria always have a reflection, in order to justify the levels of readiness of future teachers of technologies for the formation of health-saving competence of elementary school students in the process of work training, we summarized the system of criteria and their corresponding indicators (*table 1*).

Taking into account the competence ratio and the degree of manifestation of the criteria and indicators of the formation of readiness, the levels of readiness of future teachers of technologies for the formation of health-saving competence of primary school students in the process of work training are determined. We interpret the level as a measure of quantitative and qualitative manifestations of all signs of readiness. Our understanding of determining the levels of readiness of the technology teacher for the formation of health-saving competence of primary school students in the process of work training is based on the research of H. Ball (*Балл,*

Бастуй, & Видра, 2005), O. Kobernyk (Коберник, 2016), O. Korts (Корець, 2015), V. Sydorenko (Сидоренко, 2011). Based on these works, the following conclusions can be drawn:

1) readiness is formed in the process of activity, accumulating everything learned in the process of preparation and reaching a higher level;

2) the previous level of readiness is the basis for the formation of the next one;

3) with the timely detection of the level of readiness to form health-saving competence of primary school students in the process of work training, it is possible to plan the operative correction of deficiencies in professional training.

Table 1

System of criteria and indicators of the readiness of future teachers of technology for the formation of health-preserving competence of primary school students in the process of on-the-job training

Criterion	Indicator
Motivational and valuable	– Awareness of the need for the formation of health-saving competence of primary school students in the process of vocational training as one of the main tasks of the professional activity of a technology teacher; – a positive attitude towards the formation of health-saving competence of UOSH in the process of TN and taking into account the need for its systematic development; – conscious mastery of knowledge and skills of formation of health-saving competence of UOSH in the process of TN training for further application in professional activity.
Cognitive (knowledge)	– Psychological and pedagogical; – methodical; – professional disciplines; – basics of state administration, state supervision and civil control over labor safety; – the basics of physiology and occupational hygiene of students; – basics of fire safety and prevention; – basics of educational and industrial safety; – general issues of labor safety of the UOSH; – legal and organizational foundations of occupational safety in educational workshops
Active (skill)	– Ability to apply methods, conditions, means and forms of formation of health-saving competence of UOSH in the process of TN and ensure their implementation; – to predict the results of the activity on the formation of the health-saving competence of UOSH in the process of TN and to diagnose its level; – choose the optimal combination of traditional and innovative methods; – apply specialized methods of safety and occupational health professional activity in school workshops; – use special means of determining the state of educational and industrial safety in school workshops; – to comply with sanitary and hygienic norms during production technological practice; – conducting various types of safety training with students; – to consciously monitor the results of one's activities; – to conduct a self-analysis of one's own readiness and prediction of the results of professional activity.

We identified four levels of readiness of future teachers for the formation of health-saving competence of elementary school students in the process of on-the-job training: high, medium, sufficient, elementary.

A high level of readiness of the future teacher for the formation of health-preserving competence of primary school students in the process of work training has the following features: the student has a constant, purposeful positive attitude towards the formation of health-preserving competence of primary school students in the process of work training, is aware of the need for the formation of such competence of students; shows a desire for deep mastery of knowledge and skills on the problem; possesses, with a high degree of integration, professional psychological-pedagogical, methodical and special knowledge on the problem of the formation of health-saving competence of elementary school students in the process of labor training; is able to creatively combine existing and specially organized conditions, methods, means and forms of formation of health-saving competence of primary school students in non-standard situations; knows how to predict the results of one's own activities, diagnose the level of health-saving competence of students and objectively evaluate it; adequately evaluates the results of his pedagogical activity, is capable of self-analysis of the level of his own professional development and the achievements of other students on the problem.

A sufficient level of teacher readiness for the formation of health-preserving competence in primary school pupils in the process of on-the-job training is distinguished by the following features: the student has a generally positive attitude towards the formation of such competence in pupils, realizes the need for its development, demonstrates a persistent desire to master the knowledge and skills of its formation; has satisfactory or good psychological-pedagogical, methodical knowledge and knowledge of special disciplines for the formation of health-saving competence of primary school students in the process of work training; knows how to apply traditional methods, conditions, means and forms of working with students in typical situations of the educational process; is able to predict the results of activities on the formation of students' health-saving competence and diagnose its level; systematically monitors the results of his activity, tends to foresee its consequences.

The average level of readiness of the future teacher for the formation of health-preserving competence of primary school students in the process of work training has the following features: the student shows an episodic interest in the health-preserving of students; has an unstable interest in mastering knowledge and skills in the formation of health-saving competence of elementary school students in the process of work training; has satisfactory, but differentiated psychological and pedagogical, methodical knowledge and knowledge of special documents of the disciplines; knows how to apply the conditions, methods, means and forms of formation of health-saving competence of elementary school students in the process of work training in standard situations; does not predict the results of his professional activities on the formation of students' health-saving competence; sometimes controls the results of activities, but does not demonstrate his own culture of health; reveals the need for self-improvement only in the event of difficulties in one's own activities.

The initial level of readiness of the future teacher for the formation of health care competence of primary school students in the process of on-the-job training is characterized by the following signs: the student is indifferent to this problem, does not realize the need to acquire knowledge and skills on this issue; demonstrates insufficient (unsatisfactory) psychological-pedagogical, methodical knowledge and knowledge of special disciplines for the formation of health-preserving competence of elementary school students in the process of labor training; the application of conditions, methods, means and forms of health protection of students causes him difficulties, he does not know how to use special equipment; unconsciously controls the results of his own activity; the future teacher lacks opportunities for introspection and a desire for self-improvement on the issues of forming the health-saving competence of elementary school students in the process of work training.

Conclusions. So, based on the results of scientists in the field of theoretical research on issues of professional readiness of specialists, we determined the criteria and indicators of the readiness of future technology teachers for the formation of health-saving competence of primary school students in the process of on-the-job training, and also identified four levels of such readiness. Achieving a high or sufficient level of readiness of future technology teachers for the formation of health-preserving competence of primary school students in the process of work training is considered possible under the condition of a comprehensive combination and integral use of the proposed substantive, organizational, methodological and diagnostic pedagogical conditions of professional training of this category of specialists with the application proposed diagnostic and corrective methods (questionnaire, research observation, written and oral survey, expert evaluations).

Questionnaire as a method of empirical research, which is based on the survey of a significant number of respondents and is used to obtain information about the typicality of certain psychological and pedagogical phenomena, was used in order to find out the content of the above components of readiness, their significance in the professional activity of future teachers of technologies aimed at forming the health-saving competence of primary school students in the process of labor training.

We consider research observation as an empirical method of scientific knowledge, the essence of which is a purposeful, planned and systematic perception of psychological and pedagogical processes and phenomena. The observation serves as a source of information for clarifying the purpose of the research, checking and harmonizing experimental data obtained with the help of other methods of research and experimental work, for collecting and systematizing information about the general level and state of formation of the components of the readiness of future technology teachers for the formation of health-preserving competence of primary school students in the process of on-the-job training. Thus, the indicators indicating the level of development of the cognitive component of the health-preserving readiness of the technology teacher were clarified: knowledge of the essence and content of the concepts of health and a healthy lifestyle, the main components of human health (physical, mental, psychological, social and spiritual); knowledge of somatics, physical properties of the human body, sanitary and hygienic requirements for the organization of the educational process; understanding of factors affecting children's health; knowledge of the main characteristics of modern health-saving technologies; the ability to study, analyze and evaluate the state of one's own health and the health of students, predict possible changes in the state of health of students depending on the created conditions.

Written and oral surveys are used mainly to determine the level of formation of cognitive indicators (complex of knowledge) in future specialists, independent and creative works – to identify the state of formation of activity indicators of such readiness. At the same time, the developed modular control works and questions for the final control from the discipline «Fundamentals of industrial safety in workshops» were used:

1. In what sequence is the implementation of the stages of occupational safety at school carried out?
2. What groups are dangerous and harmful production factors divided into?
3. What are considered important elements of preserving life, health and working capacity of a person in the process of work?
4. Name the main areas of work in the occupational safety management system in the educational institution.

Answers to these questions can be given orally or in writing during the exam or assessment; provided they are objectively evaluated by the teacher, this will contribute to the accumulation of points (grades) in the process of experimental work.

Therefore, diagnostic conditions as a component of the complex of pedagogical conditions for the implementation of the research problem create opportunities for the introduction of materials and results of scientific research into the process of training future technology teachers in pedagogical institutions of higher education.

ЛІТЕРАТУРА

Балл, Г. О., Бастуй, М. В., & Видра, О. Г. (2005). *Розвиток психологічної культури учнівської молоді в системі неперервної професійної освіти*. Київ: ІПППО АПН України.

Барабаш, О. Д. (2012). Становлення компетентнісного підходу у сучасній освіті. *Нова педагогічна думка*, 4(72), 133-136.

Вітвицька, В. В. (2003). *Основи педагогіки вищої школи*. Київ: Центр навчальної літератури.

Дмитренко, П. В. (2004). Підготовка учителів трудового навчання у вищих педагогічних навчальних закладах. *Український соціум,* 3(5), 102-107.

Кириленко, С. В. (2004). *Соціально-педагогічні умови формування культури здоров'я старшокласників*. (Дис. канд. наук). Інститут проблем виховання Академії пед. Наук України, Київ.

Коберник, О. М. (2016). *Креативні технології навчання*. Умань: ВЦП «Візаві».

Корець, О. М. (2015). *Формування технічної компетентності майбутніх учителів технологій у процесі вивчення фізико-математичних дисциплін.* (Дис. канд. наук). НПУ імені М. П. Драгоманова, Київ.

Кравченко, Л. М. (2009). *Наукові основи підготовки менеджера освіти у системі неперервної педагогічної освіти*. (Автореф. дис. д-ра наук). Ін-т вищ. освіти АПН України, Київ.

Мадзігон, В. М. & Нісімчук, А. С. (2011). *Технологія креативної педагогічної освіти*. Луцьк: Твердиня.

Сидоренко, В. К. (2011). Проектний підхід і вимоги до вчителя. *Трудова підготовка в сучасній школі,* 5, 5-11.

Шинкарук, В. І., Бистрицький, Є. К., Булатов, & М. О. (Ред.). (2002). *Філософський енциклопедичний словник*. Київ: Абрис.

REFERENCES

Ball, H. O., Bastui, M. V., & Vydra, O. H. (2005). *Rozvytok psykholohichnoi kultury uchnivskoi molodi v systemi neperervnoi profesiinoi osvity [Development of psychological culture of students in the system of continuous professional education]*. Kyiv: IPPPO APN Ukrainy [in Ukrainian].

Barabash, O. D. (2012). Stanovlennia kompetentnisnoho pidkhodu u suchasnii osviti [Development of the competence approach in modern education]. *New pedagogical thought*, 4(72), 133-136 [in Ukrainian].

Dmytrenko, P. V. (2004). Pidhotovka uchyteliv trudovoho navchannia u vyshchykh pedahohichnykh navchalnykh zakladakh [Training of vocational training teachers in higher pedagogical educational institutions]. *Ukrainian Society*, 3(5), 102-107 [in Ukrainian].

Kobernyk, O. M. (2016). *Kreatyvni tekhnolohii navchannia [Creative learning technologies]*. Uman: VTsP "Vizavi" [in Ukrainian].

Korets, O. M. (2015). *Formuvannia tekhnichnoi kompetentnosti maibutnikh uchyteliv tekhnolohii u protsesi vyvchennia fizyko-matematychnykh dystsyplin [Formation of technical competence of future technology teachers in the process of studying physical and mathematical disciplines]*. (PhD diss.). NPU imeni M. P. Drahomanova, Kyiv [in Ukrainian].

Kravchenko, L. M. (2009). *Naukovi osnovy pidhotovky menedzhera osvity u systemi neperervnoi pedahohichnoi osvity [Scientific basis of education manager training in the system of continuous pedagogical education]*. (Extended abstract of PhD diss.). In-t vyshch. osvity APN Ukrainy, Kyiv [in Ukrainian].

Kyrylenko, S. V. (2004). *Sotsialno-pedahohichni umovy formuvannia kultury zdorov'ia starshoklasnykiv [Socio-pedagogical conditions of formation of health culture of high*

school students]. (PhD diss.). Instytut problem vykhovannia Akademii ped. Nauk Ukrainy, Kyiv [in Ukrainian].

Madzihon, V. M. & Nisimchuk, A. S. (2011). *Tekhnolohiia kreatyvnoi pedahohichnoi osvity [Technology of creative pedagogical education]*. Lutsk: Tverdynia [in Ukrainian].

Shynkaruk, V. I., Bystrytskyi, Ye. K., Bulatov, & M. O. (Eds.). (2002). *Filosofskyi entsyklopedychnyi slovnyk [Philosophical encyclopedic dictionary]*. Kyiv: Abrys [in Ukrainian].

Sydorenko, V. K. (2011). Proektnyi pidkhid i vymohy do vchytelia [Project approach and requirements for the teacher]. *Labor training in a modern school*, 5, 5-11 [in Ukrainian].

Vitvytska, V. V. (2003). *Osnovy pedahohiky vyshchoi shkoly [Basics of higher school pedagogy]*. Kyiv: Tsentr navchalnoi literatury [in Ukrainian].

OF THE QUALITY ASSESSMENT OF FUTURE TECHNOLOGY TEACHER TRAINING IN HEALTH-PRESERVING ACTIVITIES WITH PUPILS WHILE TEACHING THE DISCIPLINE «FUNDAMENTALS OF INDUSTRIAL SAFETY IN WORKSHOPS»

Valerii Tytarenko,
Candidate of Pedagogical Sciences, Associate Professor, Associate Professor of the Department of Production and Information Technologies and Life Safety;
Poltava V. G. Korolenko National Pedagogical University

In the article, taking into account the urgent need for future technology teacher training in health-preserving activities with pupils, especially in educational workshops at a secondary education institution, diagnostic pedagogical conditions for such training are proposed while studying the discipline «Fundamentals of industrial safety in workshops (a system of criteria and indicators of the readiness formation; characteristic quality levels; application of a set of assessment methods; determination of implementation efficiency)». The specificity of the technology teacher's health-preserving activity is related to the components of competence (general cultural, production-technological, organizational-management, project-design), criteria for their display (motivational-value, cognitive, activity), and levels of readiness (high, sufficient, average, initial).

A logical system of matching criteria and indicators of future technology teacher's readiness to the formation of health-preserving competence of elementary school children in the process of work training is proposed, as well as the content of the level characteristics of such readiness, a set of methods for assessing the state, level, and quality of training of future technology teachers in the process of studying the educational discipline «Fundamentals of Industrial Safety in Workshops» are characterized.

A conclusion was made regarding the possibilities of introducing the proposed diagnostic conditions into the work practice of general and higher education institutions.

Keywords: *technologies, future teacher, health-preserving activities, educational and production workshops, diagnostic conditions, fundamental of industrial safety.*

Надійшла до редакції 21.03.2022 р.