

TECHNOLOGICAL COMPETENCE AS A COMPONENT OF PROSPECTIVE ENGINEERS-PEDAGOGS' PROFESSIONAL COMPETENCE

Стаття присвячена проблемі формування технологічної компетентності як невід'ємній складовій професійної компетентності майбутніх інженерів-педагогів.

Ключові слова: професійна компетентність, технологічна компетентність, інженер-педагог, технологія, діяльність.

Статья посвящена проблеме формирования технологической компетентности как неотъемлемой составляющей профессиональной компетентности будущих инженеров-педагогов.

Ключевые слова: профессиональная компетентность, технологическая компетентность, инженер-педагог, технология, деятельность.

The article is devoted the problem of forming of technological competence as inalienable constituent of professional competence of future engineers-teachers.

Key words: professional competence, technological competence, engineer-teacher, technology, activity.

Statement of the problem. Currently, the Ukrainian society undergoes a series of social, economic and cultural changes. To resolve the problems caused by these changes, the Ukrainian society needs young professionals capable of finding unconventional, creative solutions to a variety of professional tasks; it needs professionals who are ready to work in a competitive environment. At the same time, the garment industry of Ukraine is experiencing a definite decline: only a few large industrial companies, which trace their history back to the Soviet Union time, have been working effectively whereas it is the garment industry that is the area of human activity, without which it will be difficult for the mankind to exist. That is why specialists who've got engineering and pedagogical education are in great demand. After all, it is this specialty graduates that are supposed to train garment industry specialists in institutions of vocational education.

The system of training engineers-pedagogs presupposes the integration of fundamental knowledge and a fairly broad general engineering training. One of the biggest challenges of high-quality training of specialists of engineering and pedagogical orientation in education is to develop their professional competence. The most important component of professional competence to be developed while training prospective engineers-pedagogs of sewing profile associated with the peculiarities of specialist's thinking, his/her main functions and activities directed at construction, organization and control of technological processes, is the technological competence.

Analysis of recent research and publications. The issues involved in the formation of professional competence have been studied by many domestic and foreign scholars (V.E. Bondar, N.V. Grokhol'skii, V.V. Kosarev, N.V. Ostapchuk, A.V. Hutorskiy, etc.). The study of the individual components of vocational and pedagogic competence has been carried out by E.F. Zeer, E.E. Kovalenko, N.V. Kuzmina, N.V. Kulyutkin, E.V. Luzik, M. Yu. Postalyuk, V.A. Steed et al. Competence approach in vocational education in modern conditions has been studied by N.M. Bibik, L.Z. Tarhan, A.V. Khutorskiy, etc.

The analysis of the research in this area has shown that such component of professional competence as technological, a component of the overall structure of professional competence of engineers-pedagogs, is not sufficiently reflected in scholars' research.

The purpose of this article is to reveal the concept of technological competence as a component of professional competence of prospective engineers-pedagogs.

The main material. At the present time, due to the transition of our society from postindustrial to information society, specialists able to act professionally, responsibly meet the challenges of education in the ever-changing conditions of pedagogical reality, are more and more in demand. In this regard, the current problem is the problem of specialists' qualitative training. This training should be directed at the formation of all components of professional competence, including technological.

Analysis of the psychological and pedagogical literature revealed the existence of both a broad and a narrow interpretation of the concept "competence". In a broad sense, competence refers primarily to the degree of human maturity, assuming a certain level of mental development of the individual (training and education). It allows an individual to function successfully in a society. In the narrow sense, competence is seen as activity-related characteristics, that is, the degree of involvement in human activities, providing valuable attitude to the latter. Consequently, competence means readiness and ability of a person to operate in any field.

Different authors view competence as an adequate orientation of a person in various fields of activities: work, school, culture, politics, health, environment and education.

It is not right to contrast competence to knowledge and skills. This is a broader concept; it includes both knowledge and skills. This idea is confirmed by M.A. Choshanov: "Competence, firstly, expresses the meaning of the traditional triad of" knowledge, skills and abilities "connecting them with each other; secondly, it is defined as an in-depth knowledge of the subject or skill mastered. Thirdly, competence is appropriate for describing the real level of specialist's training, which is distinguished by the ability to choose the most optimal decision from a suggested variety, to reject argumentatively false solutions, to question the effectiveness, i.e. to possess critical thinking. In the fourth place, competence requires constant updating of knowledge, knowledge of the new information for the successful solution of professional problems at the present time and in the given circumstances, that is, competence is the capacity for the actual implementation of activities. In the fifth place, competence includes both substantive (knowledge) and procedural (skills) components. This means that the competent person must not only understand the nature of the problem, but be able to solve it practically. A competent person, depending on the specific conditions, may apply a particular method of solving the problem. On the basis of these statements a scientist invents a "Formula of competence", which, according to him, looks like this: competence = mobility of knowledge + flexibility of the method + critical thinking "[1, p. 6].

Renowned researcher E.F. Zeer considers the professional competence of a teacher as a complex consisting of professional knowledge, skills, and also as a way of carrying out the professional activity. E.F. Zeer identifies the following competencies [2, p. 240]:

- social and legal competence: knowledge and skills in the field of interaction with public institutions and people, as well as ownership of the professional techniques of communication and behavior;
- special competence: readiness for self-fulfillment of specific activities, the ability to solve typical professional tasks and evaluate the results of one's own operations, the ability to independently acquire new knowledge and skills in the specialty;
- personal competence: the ability to continuous professional development and skills development; realization of oneself in one's own professional work;
- auto-competence: adequate understanding of one's own social and professional characteristics and ownership of technologies of overcoming professional destruction.

According to N.V. Kuzmina, the concept "professional competence" means teacher's ability to turn his specialty into a means of forming student's personality, subject to such terms and conditions, which must meet the requirements of the educational process. The researcher identifies the following key elements of pedagogical competence:

- a special competence in the discipline being taught;
- methodical competence in the field of methods of forming students' knowledge, abilities and skills;
- psycho-pedagogical competence in the field of motivation, abilities and orientation of the students;
- reflections over pedagogical activity or autopsychological competence [3, p. 90].

L.Z. Tarhan, addressing the issues of engineer-pedagog's professional competence, gives the following definition: "Professional competence of the engineer-pedagog is a quality characteristic of the degree of mastery by him of his professional activities. This degree of mastery is stipulated by engineer-pedagog's deep knowledge of the properties of the transformed objects of labor, by the fluent operation of the means of production and by his/her ability to perform complex cultured kinds of actions "[4, p. 146].

Professional competence is a dynamic personal education as its substantive content and quality level depend on many factors: the level of the development of psychology and pedagogy, anthropology and cultural studies, social and economic reasons, etc.

Professional competence is a multidimensional education; it varies according to the processes taking place in education and in society.

By professional competence we should understand an integrative quality of a specialist including his/her level of mastery of knowledge, skills, professional activities on the basis of his/her generated capacity for self-development, creativity, rapid adaptation to the rapidly changing environment, and due to the capacity to solve problems that go beyond the basic type of his/her professional activity.

Most researchers mark the following features of technological competence:

- 1) in-depth knowledge of various teaching technologies;
- 2) constant updating of knowledge on the subject for a successful solution of professional problems;
- 3) representation of substantial and procedural components.

The notion of technological competence includes the following qualities [5, p. 78]:

- integrative and creative character;

- high efficiency of the result;
- practice-oriented education;
- the ratio criteria of value and meaning characteristics of an individual;
- formation of motivation for self-perfection;
- academic mobility.

Describing the features of technological competence, it should be remembered that technological competence is not only the amount of knowledge and skills in the use of different educational technologies, because technological competence includes in itself motivational, social, and behavioral components as well. It characterizes the integrative qualities of a teacher, i.e. it is one of the aspects of his/her successful professional activity.

Technological competence of the teacher, in the opinion of N.N. Manko, is a system of creative and technological knowledge, abilities and stereotypes of instrumentalized activity on the transformation of objects of pedagogical reality. "Techno-pedagogical basis of managing and forming regulators are the perfection of sensory and intellectual mechanisms of cognitive activity, the organization of the external plan of education and cognitive activities with didactic tools, programming of educational activities, etc. It is a specific section of general professional competence" [6, s. 33].

The training of a prospective engineer-pedagog must ensure that he/she will acquire graphic, technological as well as engineering knowledge, skills and abilities.

The technological knowledge acquired by the future specialists in the course of training incorporates knowledge and skills for developing techniques and methods of joining parts and components, for building the process chart of cuts and elements of the product in accordance with the requirements, properties of materials and processing methods, and the development of engineering-technological documentation on the manufacturing of articles.

In addition, graphic knowledge is very important, because the future specialist has to produce drawings, diagrams, plans, in accordance with the requirements of GOST, using various information technologies and various drawing programs.

Engineering knowledge is required for designing various parts of a product, for designing various charts and tables.

All this knowledge is created not only in the course of study of one specific discipline, but is provided by integrated education. For example, students while studying the subjects "Clothes Design", "Computer Clothes Design", "Clothes Modeling" and others acquire engineering and graphic knowledge and skills. Students learn to develop designs using different methods and computer technology. While studying the subjects "Garments Technology", "Clothing Manufacture Design", "Industrial Training" students form technological knowledge and skills; in the course of study of these disciplines, students learn to develop the schemes, cuts, elements of products, make graphic models of processing products, etc.

It is in the process of teaching special subjects that there is a transition from the use of individual skills and abilities to the systemic perception of engineering and technological professional activity.

Thus, the technological competence is a component of professional competence, which focuses on the formation of personality traits necessary for the implementation of educational activities and solving various technological challenges; it is aimed at the successful implementation of specialist's technological activity with his/her ability to predict and analyze it. It is therefore necessary to take into account the specificity and dynamics of changes in the structure of professional education, which should be directed at the formation of technological competence, increasing the educational and professional level of graduates who can not only learn, but also creatively use the modern achievements of scientific and technological progress.

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