

FUNDAMENTALS OF DEVELOPING PROFESSIONAL COMPETENCIES USING AN INTEGRATIVE APPROACH

Ismoilov Elmurod Olloberdi o'g'li

Teacher of Tashkent State Pedagogical University named after Nizami

Tashkent city, Republic of Uzbekistan

E-mail: elmurodismoilov170191@mail.ru

Abstract. The article describes the basics of developing students' professional competencies using an integrative approach. Using the definitions of competence and professional competence given by Uzbek and foreign scholars, explanations of these concepts are provided. The analysis fully substantiates the need to use the integration of mathematics and specialization subjects in the development of students' professional competencies.

Key words: competence, professional competence, integration, integration of disciplines, integrative approach, fundamental knowledge, curriculum, interactive method, professional adaptation, professional formation.

In order to master the basics of modern science, it is necessary, first of all, to study the basics of mathematics. Even an experienced, qualified teacher will not be able to help a student who has no basic training in mathematics and related subjects (physics, computer science, chemistry, biology and mechanics) to master the basics of these subjects.

Today, 70% of the world's countries use integrated curricula and textbooks in their education systems. As a result of the use of educational integration, favorable conditions are created for the implementation of pedagogical and psychological educational goals; general didactic requirements are met; saves student time and energy; excessive mental and physical stress will be prevented, and the effectiveness of education will increase. Students will have the opportunity to master the necessary skills and competencies, concepts and knowledge in a comprehensive way by combining the content of the subjects. Integration in the educational process is a specific and interdisciplinary approach, and its implementation in the classroom is an *integrative approach*. An integrative approach is used to integrate content that is relevant, logically interdependent, and deepens and expands the learning disciplines, forming a holistic logic of perfect knowledge, ways of acting, and personal qualities. An integrative approach is the equal development of knowledge, skills, competencies and experiences gained from mastering different disciplines, reliance, integration, communication in foreign languages, professional formation, professional adaptation, professional communication, professional competence.

It is one of the leading disciplines in higher education in terms of the amount of time devoted to teaching mathematics compared to the various specialties taught. Mathematics as an integral part of the educational process helps students understand the role and importance of their chosen field in the process of scientific and technological development, it also provides students with confidence that they can use their knowledge of mathematics as a means of solving professional problems. Mathematical knowledge expands students' creative thinking and professional competencies, helping them to develop mathematical modeling techniques and the ability to predict the outcome of events. All this requires expanding the scope of teaching mathematics in higher education, developing the professional skills of students, the formation of theoretical knowledge, practical skills and competencies. At the same time, the materials mastered in the process of teaching mathematics serve to shed light on some general rules for improving the professional training of students through general and specialized disciplines.

Today, the requirements for the level of theoretical and practical knowledge acquired by graduates of higher education institutions allow for certain changes in teaching based on an integrative approach. There is a practical importance of mathematics and specialties disciplines, as well as the need to increase the level of fundamental training of students. In order to improve the level of teaching mathematics in higher education, it is necessary to create a clear, comprehensive program for each specialty. General mathematics education is

the main foundation for higher mathematics, which is taught in higher education institutions that train specialists. This is important for students to successfully learn the basics of general and special disciplines provided for in the curricula developed in various specialties. The Mathematics Curriculum for Higher Education Institutions reflects the new demands placed on modern education. Its practical orientation and the ability to direct students to solve practical problems are of paramount importance. The content of mathematics consists of a large set of knowledge, and the time allotted for its study is limited. This situation does not allow students to master the complex of knowledge. Among the problems related to mathematics and specialties disciplines in the educational process in higher education institutions are:

- 1) bringing the content of mathematical knowledge of the specialist closer to the needs of modern technology and production;
- 2) ensuring the continuity between mathematics and the special disciplines;
- 3) development of programs and textbooks in mathematics in accordance with the needs of future specialists;
- 4) improving the methods of narration of educational material and increasing the activity of students in the teaching process;
- 5) creating interactive teaching methods;
- 6) increase the mathematical literacy of teachers of specialty departments;
- 7) organization of research work on specialties of higher education institutions in special departments;
- 8) provide the necessary guidance in mathematics for the activities of employees of specialties (industry, agriculture, construction, etc.);
- 9) to organize the integration of mathematics and special disciplines based on the requirements of the employer.

The solution of the problems listed above requires improving the content of mathematics education as close as possible to the needs of the future specialist. For example, a math program should take into account not only the logical mathematical integrity of the course, but also the needs of the student's chosen major. However, some general ideas of modern mathematics need to be incorporated into the curriculum of specialized disciplines. Curricula for the training of different specialists should be based on the level of knowledge required in the field of mathematics. The content of the mathematics program taught in higher education institutions should include, first of all, systematic expression of natural phenomena and technical processes, their study, setting of mathematical problems, creation of new mathematical concepts and integration of mathematical theories with practice. The math curriculum should be designed to provide students with an excellent education that will prevent them from making logical errors and unreasonable conclusions.

Today, there are some challenges in training qualified professionals for historical, cultural, social, and economic reasons. Some aspects of the education system, such as the auditorium system, the generalization of the curriculum for teaching and educating students, and the adaptation of the content of the curriculum to the requirements of those with an average level of knowledge, have lost their relevance. Although much has been done in this area, they are not enough. The key to solving both socio-political and economic problems is to train highly qualified, well-educated people who can think in accordance with modern requirements. The state must be responsible for building its intellectual potential, using it effectively, and meeting the needs of human resources. Based on the requirements of natural, general, specific and general education, graduates should know the features of analysis and generalization of social, economic, organizational indicators of determining the state of production and management, mathematical modeling of complex systems and processes. The teaching of all disciplines should be systematically coordinated, with the sole purpose of training professionals in the field who are able to adapt professionally to the requirements of the time. Improving the quality of education is one of the most pressing issues facing the world community today. To address this, it is necessary to modernize the content of education, to reconsider the technology of the educational process and the ultimate goal of unconditional education. Education can be seen as a specially organized process of developing students' ability to independently solve problems of various personal and social significance in various fields of activity, based on the acquisition of community culture. Such an understanding of the purpose of education, in turn, provides the basis for a competency approach.

Now let's look at the meaning of "competency" and "competently". Dictionaries define the concept of "competently" as the ability of institutions to make judgments on matters that are within their jurisdiction or that require resolution. The concept of "competency" occurs in different languages with different meanings. For example, competent (French) – competent, legally competent, *competentia* (Latin) – relevant, capable, *competere* (Italian) – to demand, to fit, to be fit, competent (English) – ability (competence) used in the sense of. Clearly, competency and competently are complementary and interdependent concepts. Foreign researchers interpret the concept of “competency” not as a set of skills, knowledge and abilities, but as the ability or willingness to mobilize all the resources (system of knowledge and skills, abilities and mental qualities) necessary to perform a task at a high level in accordance with the conditions and purpose of the action (C.I.Beelisle, M.Linard, B.Rey, G.Le.Booterrf, L.Turkal, N.Guignon, M.Joras and others).

In terms of the requirements for the level of professional training of graduates of higher education institutions, competence means the ability of a future specialist to apply a set of knowledge, skills and competencies, methods of activity in certain situations. From the point of view of pedagogical activity, competence is the ability to establish a link between knowledge and situation, or in a broad sense, the ability to demonstrate the process (action and knowledge) needed to solve a problem. Competence is not only a set of knowledge and skills, but also characterized by the ability of students to mobilize their knowledge and apply it in practice in real situations.

We have divided the competencies into basic and core competencies. Basic competence is defined by its description and level of application. The core competency is the competence that corresponds to the specialty under consideration in terms of its description and level of application. It can also be called *professional competence*. Basic competencies are defined at the level of educational blocks and academic disciplines for each stage of higher education. *Basic competencies* require the constant enrichment of knowledge, the study of new information, the ability to understand important social needs, the ability to search for new information, process it and apply it in their work. In order for a student to be competent in a field of professional activity, he or she must have the relevant professional qualifications. *Professional competence* is the acquisition by a professional of the knowledge, skills and competencies required to carry out a professional activity and the ability to apply them in practice at a high level. Professional competence does not mean the acquisition of individual knowledge and skills by a specialist, but the acquisition of integrative knowledge and actions in each independent direction. Competence also requires the constant enrichment of professional knowledge, the study of new information, the ability to understand important social requirements, the ability to search for new information, process it and apply it in their work.

Professional competence is manifested in complex processes, in the performance of uncertain tasks, in the use of conflicting information, in the ability to have a plan of action in an unexpected situation. A professionally competent specialist constantly enriches his knowledge, learns new information, has a deep understanding of the requirements of the time, searches for new knowledge, processes it and applies it effectively in his practice. The development of professional competence is a set of important activities such as students' professional preparation, professional formation and professional adaptation. Vocational training is defined as a specific manifestation of a person's social competence, which arises on the basis of the acquisition of the necessary professional knowledge, skills and abilities. Vocational training does not happen by itself, but involves specific stages that are planned based on specific goals. The formation of professional training in a person is initially determined by the composition of professional perceptions and concepts, and then explained by the acquisition of professional knowledge, skills and abilities, the determination of professional qualities and the degree of professional adaptation. Vocational adaptation is the level of professional competence of the future specialist in the conditions of objective and subjective education, mastering the requirements of future professional activity, adaptation to the process of activity. Professional development is one of the most important aspects of a person's maturity, reflecting only his needs and interests related to the choice of technological and professional activities. The content of professional qualities and their formation is related to the choice of a particular type of work or profession, and is an expression of a clear and conscious decision.

In short, professional competence is an important characteristic of professionalism and can be seen as a personal quality that demonstrates the willingness and ability of students to succeed in their professional

careers. The work of a future specialist in any field is important. For example, in order to solve professional problems, a future specialist must develop general solutions to the problem, analyze options, predict the consequences, find compromise solutions in a multimedia environment, resolve uncertainties, improve the project. In doing so, career-oriented tasks will be developed and their place in the content of education will be determined. Once the forms and methods of teaching have been selected, ways to integrate with such tasks and develop professional competence skills will be developed. The integration of mathematics and specialized sciences helps to develop professional competence and provides quality training for future professionals.

References:

1. Ismoilov E.O., Tangirov A.E. Opportunities to develop students' professional competencies based on the integration of disciplines // International Journal on Integrated Education (ISSN 2620-3502) (Journal impact factor 7.242). – Indonesia, 2022. Volume 5, Issue 3, March 2022. – p. 36-44.
2. Дмитриева А.Б. Самостоятельная работа по решению прикладных задач в курсе математики как условие повышения качества профессиональной подготовки обучения в ВУЗе. Автореф. дис. канд. пед. наук. - М., - 2004. - 18 с.
3. Alimardonov Z.Sh. Improving the professional competence of future officers in higher military education institutions. Abstract of the dissertation for the doctorate of philosophy in pedagogical sciences. – Samarkand, 2019. – p. 12.
4. Вербицкий А.А., Ильязова М.Д. Инварианты профессионализма: проблемы формирования. Монография. – М.: Логос, 2011. – 288 с.
5. Власов Д.А. Проектирование развития современной профессиональной компетентности будущего учителя математики. Автореф. дис. канд. пед. наук. - Москва, - 2001. - 17 с.
6. Гостев С.В. Интегративный методический инструментарий для подготовки в области информатики и математики специалистов железнодорожного транспорта. Автореф. дис. канд. пед. наук. - М., - 1999. - 18 с.