

A Model For Improving The Professional Competencies Of Future Technology Teachers Based On An Integrative Approach

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Abstract – This article highlights interdisciplinary integration and some of the requirements and conditions for establishing integrative education in higher education institutions. It also provides a detailed description of the general characteristics of integrative lessons. The integration of general professional and specialized subjects in higher education institutions, along with the implementation of career-oriented education, plays a crucial role in the preparation of future professionals. The teaching of all subjects should be systematically coordinated and aimed at a single goal: to prepare networked specialists who can professionally adapt to the demands of the times. In this regard, ensuring the content of educational materials is of paramount importance. To achieve this goal, it is advisable to develop the scientific and pedagogical foundations for integrating academic subjects within the educational content, to improve the curriculum based on the requirements of liberalizing the educational process, to create a new generation of educational programs and textbooks with integrative content, and to develop and adopt the integration of educational content.

Implementing the integration of sciences is an effective method for developing the professional competence of future technology teachers, requiring interconnectedness of subject topics and interdisciplinary connections. Introducing various levels of integration into the educational process saves students' time and effort, expands their cognitive abilities, and creates mechanisms for predicting the outcomes of the learning process based on inter-subject integration. Furthermore, it establishes the legal and methodological framework for training and developing the skills of teachers who manage integrated educational processes. The economic efficiency of the learning process is determined based on integrative programs. Additionally, it creates favorable opportunities for widely utilizing international experience in organizing the learning process based on integral programs.

Keywords – Integration, Integrative Approach, Interactive Approach, Methodological Approach, Professional Competence, Pedagogical Activity, Science Integration, Technical And Technological Competence

Introduction. Integration of disciplines is an effective way to develop the professional competence of future specialists, which requires mutuality of subjects and interdisciplinarity. The purpose of technological education is to provide professional skills, but also to teach the student to get out of various social and professional situations. Research within the competence-based approach in scientific research is mainly focused on the connection between competence and educational content. The difference between a competent specialist and a qualified specialist is that a competent specialist has not only a certain level of knowledge, skills, qualifications, but also the ability and readiness to implement them at work. Competence is the internal motivation of a person to carry out his professional activities in a high-quality way, as well as the acquisition of professional skills and values and the ability to apply them at a high level in practical activities.

Analysis of literature on the topic. V. S. Bezrukova, M. N. Berulava, A. Ya. Danilyuk, Yu.S. Tyunnikov, N. K. Chapaev and others; E. O. Galitsky, O. M. Kosyanova, B. A. Slastenin, I. P. Yakovlev, etc., the rules of the pedagogical integrative

approach; K. A. Abulkhanova-Slavskaya, B. A. Vyatkin, A. N. Leontiev, etc., the basic rules of the integral property; theoretical foundations of the integration problem B.M. Kedrov, V.P. It was studied by Kuzmin, A.P. Ogursov, V.S. Stepin and others.

Pedagogical integration is one of the main concepts in our research, so it is necessary to consider the pedagogical image of integration in more detail.

The theoretical, conceptual and technological foundations of pedagogical integration were reviewed by R.Kh. Dzhoraev, N.A. Muslimov, A.R. Khodzhaboev, R. Mavlonova, N. Rahmonkulova. The theoretical and methodological foundations of pedagogical integration, integration technologies of the content of preparation for professional activity were studied by E. Turdikulov, O. Avazboev, M.J. Toshov, Yu.N. Cemin, N.K. Chapaev and Sh.E. Kurbanov. However, the problems of integrating the preparation of future teachers for professional activity, the specificity of this activity consists in the process of integrating pedagogical and technical knowledge. Otherwise, it is not possible to effectively diagnose the activity of a technological education teacher[2].

Research methodology. Today, integration is considered one of the most important innovative efforts in education. However, there is no generally accepted definition of the concept of integration in the science of pedagogy.

V. S. Bezrukova defines pedagogical integration as a type of scientific integration within the framework of pedagogical theory and practice. Naturally, such integration has its own pedagogical principles, forms and methods [1].

In his monograph, N. K. Chapaev identified the global directions of pedagogical integration:

- meaningful, interdisciplinary; biosciences (symbiosis of three or more disciplines), including two disciplines and multiple subjects; development and implementation of integrated online courses, programs, educational projects.

- organizational and technological (cultural-educational center, humanitarian-psychological center), integrative technologies, including the development of integrative forms of education (integrative lectures and seminars, exams, integrative day), integrative forms of education (problem-based and contextual learning)[7].

Scientific work on the problems of integration in the science of technology was carried out by S.N. Babina, G.N. Nekrasova, V.D. Simonenko, Yu.L. Khotuntsev and others.

G.I. According to Kruglikov, the "Technology" subject at the school is an integrated education that synthesizes scientific knowledge obtained from the courses of mathematics, physics, chemistry, biology and shows its application in industry, energy, communications, agriculture and other areas of human activity. considers lim area [3].

Yu. L. Khotuntsev emphasizes that it is not appropriate to separate the study of information and material technologies, because in his opinion, the creation of material wealth using material processing technologies, as a rule, is related to the transformation of information, that is, information technologies [8].

D. O. Khimmataliev's research highlighted the uniqueness of the technological approach in the future teacher's professional training and pedagogical activity [6].

D.N. Zokirova's scientific research shows that finding solutions to problems such as developing the intellectual potential of future teachers of vocational education, research, creativity, entrepreneurship, and the formation of organizational skills is one of the most important tasks in the current era.

D.N. Zokirova's researches tried to create the scientific-methodical basis for improving the general professional training of future engineers-pedagogues in the professional pedagogical education system by means of imitation model devices [6].

Analysis and results. A competent professional should be able to go beyond the scope of his profession, as well as have creative potential for self-development. Some authors define personal and professional development as complementary processes, that is, the professional development of a person - the formation, growth, integration of personal qualities and abilities, professional

competencies in professional work, but most importantly - the inner world of a person in terms of active quality its change leads to its radically new structure and lifestyle, creative self-awareness in the profession [4].

The introduction of mutual integration of general professional and specialized sciences and profession-oriented education in higher education institutions is of great importance in the training of future personnel. The teaching of all subjects should be systematically coordinated, this single goal should be aimed at preparing branch specialists who can adapt professionally in accordance with the requirements of the time. Improving the quality of education is one of the most urgent problems of the world community today. In order to solve it, it is necessary to modernize the content of education, to review the technologies of the educational process and the ultimate goal of education. In this context, it is necessary to develop the professional competence and professional adaptation of specialists, to be able to apply the acquired knowledge in their professional activities and to adapt to the requirements of the employer.

Integration of disciplines is an effective way to develop the professional competence of future technology teachers, which requires interdependence of subjects and interdisciplinarity.

As a result of transferring knowledge from one subject to another with the help of an integrative approach, mutual enrichment and development of various subjects takes place. This is definitely its strong point. The implementation of this approach involves the implementation of four main levels of integrative processes:

- interdisciplinary integration - the interdependence of the fundamental ideas, principles, and content of all disciplines, which provides a comprehensive understanding of the essence of professional activity and readiness for its implementation;

- intra-disciplinary integration aimed at establishing semantic, meaningful, structural and technological connections between departments of one discipline. This type of integration makes it possible to identify the connections that make up the system, as well as the connections between theory and practice;

- interpersonal integration that ensures the learning of achievements and the formation of new personal experience, which is manifested in the formation of reflexive readiness and professional thinking.

An integrative approach in pedagogy involves considering various aspects of the pedagogical process as a whole, which provides a new qualitative result, a new systematic and integrated education.

Formation of professional competence becomes one of the main functions of the process of training future teachers. Each professional task, by its nature, requires an interdisciplinary, interdisciplinary and objective systematic analysis, the creation of a holistic model of its solution. Today, teachers are faced with the task of introducing an integrated approach to activities that ensures the growth of professional and personal competence of a specialist, which is manifested in an integral way of thinking, as well as in the ability to combine theory with practice. All this creates the need to further improve the content of education and increase the quality of the educational process. The concept of competence acts as an integral characteristic of a person due to the student's personal qualities - knowledge, skills, practical experience, abilities, a set of value-semantic orientations that ensure and strengthen his professional readiness. The essence of the integrative approach is the interaction of the subjects of the educational process aimed at organizing and implementing students' research activities, their active and independent acquisition of knowledge, and mastering the methods of application in the conditions of interdisciplinary and interdisciplinary synthesis. The implementation of an integrated approach to the educational process involves solving the following problems:

- maximally reveal the possibilities of students' personality;

- creating conditions for self-discovery and self-realization of students' inner potential;

- development of skills of cooperation, communication, effective building of balanced interpersonal relations; development of orientation to work in a group or team.

The main goal of integrated courses is to ensure that students master interrelated scientific concepts. The choice of teaching methods and tools largely depends on the purpose of teaching. There are several ways to develop modern educational technology.

1. Creation of innovative technologies with new ideas, elements, educational concepts that qualitatively change educational forms, methods, and educational content.

2. Development of combinatorial, integrative technology, in which a new one is created based on the combination and integration of certain elements, changes of elements and connections between them.

Thus, the main educational competences, that is, the integration of different educational areas and, accordingly, subjects, can be formed only through mutual cooperation. Integration is possible only under the following conditions.

1. The objects of study and research should be compatible with each other or close to each other in terms of content.
2. Integrated academic disciplines use the same or similar research methods.
3. Integrated academic subjects are based on general laws, general theoretical concepts, rules.
4. Common or identical methods of student activity are used in integrated academic subjects.

Today, interdisciplinary integration is the most important factor in the development of education, especially in the implementation of a competency-based approach, which requires more detailed consideration.

In the process of integration, each element of general and specialized subjects (each academic subject) has a certain degree of autonomy, therefore, in the course of learning, it should be evaluated separately, depending on the level of mastery of the whole system.

In the course of the integration process, the volume and intensity of interaction between general and specialized subjects as system elements increases, which increases the effectiveness of the process of preparing future technology teachers for professional activity. As a result of the integration of theoretical and practical knowledge of general professional and specialized sciences, their interdependence, and according to the description of the manifestation of knowledge between them, a regular relationship appears. According to the type determined by the integration of theoretical and practical knowledge, it will be demonstrated in the relations of existence (showing activity).

In implementing the integration of general and specialized sciences, a model of mutual integration of general and specialized sciences was developed, taking into account the following principles: systematicity, continuity, change, integration, mobility, and a set of pedagogical conditions. (Figure 1).

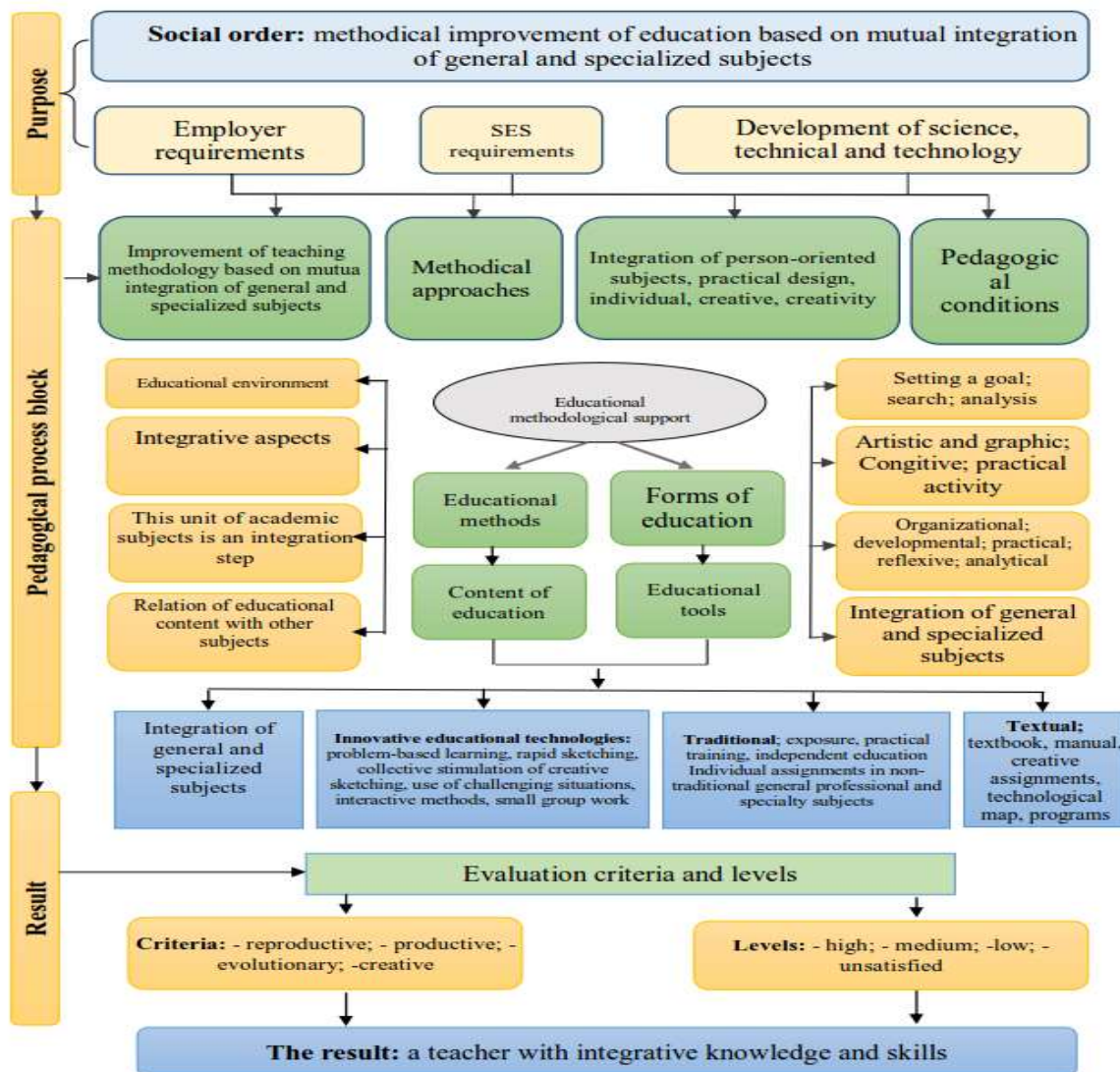


Figure 1. Model of methodical improvement of teaching based on mutual integration of general and specialized subjects

Building the educational process on an integrated basis includes significantly more technological possibilities. The existing experience of implementing an integrated approach is related to the development of various integrated courses. The Encyclopedia of Technology Education presents three levels of integration between academic disciplines:

Level 1 is the highest level of integration, where complete content and process integration occurs within a newly integrated subject.

Level 2 is the level of didactic synthesis, in which each topic is preserved and integration is carried out on the basis of one of them. The unifying factor is the common learning objects.

Level 3 is the level of interdisciplinarity, in which the integrating factor is the common elements of the content of academic subjects.

Implementation of the interdisciplinary level of integration helps to form learning and work motivations, develops generalization and comparison skills in students, creates a certain opportunity for intellectual activity, students' transfer from one activity to another, to a higher level of mastering knowledge and skills. provides the tooth, which in turn has a direct impact on the

formation of the future teacher's professional knowledge, skills, practical experience, professional personal qualities, professional interest does and contributes to the mastery process. Integrated lessons allow summarization, systematization of the material and compliance with the requirements of information integrity. In integrated classes, students learn all possible ways to understand the world around them, nature, society, and people by analyzing, synthesizing and systematizing knowledge, skills, and abilities in various disciplines [5].

Conclusions and suggestions. In short, the combination of teaching forms based on the integration of general and specialized subjects, the use of integration at different levels and directions will help to develop the technical and technological competence of future teachers of technological education.

Based on this conclusion, we found it permissible to mark the following as suggestions:

- in preparation for professional activity, on the basis of the integration of general and specialized sciences, pedagogic-psychological features, i.e. adaptation to students and teachers, professional interests, cognitive knowledge, thinking, perception, and communicative relations between people. going is desirable;

- on the basis of the integration of general and specialized sciences, to improve the competence of students in pedagogical higher education institutions, to form specific professional competencies at each stage (course) of students' preparation for professional activity and the organization of courses through special programs on improvement is considered a requirement of the present day.

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