

**PEDAGOGIKAL ANALYTICAL
BASIS OF VOCATIONAL
ORIENTATION OF STUDENTS
BASED ON DUAL
EDUCATION**

MONOGRAPH

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In the monograph, the necessary conditions for today, the analytical approach, principles and mechanisms of vocational orientation with the help of teaching students by adapting them to dual education based on pedagogical conditions, the orientation of modern educational and teaching-methodical literature to dual education concept and didactic requirements for the creation of electronic textbooks, as well as the methodology of creating and teaching electronic textbooks of dual education subjects.

The monograph serves as a methodological basis for the development of education and training of secondary school students on the basis of dual vocational training for teachers, scientific researchers and specialists working at all levels of the continuous education system.

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PEDAGOGICAL ANALYTICAL BASIS OF DIRECTING STUDENTS TO PROFESSIONS ON THE BASIS OF DUAL EDUCATION

CHAPTER I VOCATIONAL EDUCATION: PHENOMENOLOGY AND METHODOLOGY

Current problems and development principles of continuing professional education

According to the state educational standards (SES) and qualification requirements, professional education is a special field of education, within which training of teachers of general, specialized and special subjects is carried out for higher courses of educational units and professional educational institutions in higher educational institutions, enterprises [1, 174 -175-p].

The social need to organize the special training of the future professional education specialist for the vocational training system arose due to the emergence of techniques and technologies that require a lot of knowledge in the field of production during the period of rapid industrial development, their complexity and improvement, and the qualitative change in the field of production. This, in turn, objectively substantiates the demand for the professional description of workers, ultimately the quality of their professional training, which is determined to a large extent by the professional skills of specialists who carry out this training [8].

Development of professional education in CIS countries

For the first time, the issue related to the need to carry out special training of pedagogues for professional education arose in the middle of the 20th century. For example, since the 1920s, several attempts have been made in the CIS countries to create a system of training pedagogical personnel for vocational and technical educational institutions. In particular, special institutes and technical schools, usually called "Industrial pedagogy", were created, pedagogical departments were established under technical higher education institutions and technical schools, special course training was introduced for teachers of special and general technical subjects and instructors of production education. However, this goal was fully realized only after the Second World War [16].

Since the 1960s, training of teachers of special subjects was organized in dozens of technical colleges and technical higher education institutions

in the CIS countries, mainly in engineering and pedagogic faculties. According to the data, the engineer-pedagogue specialty is included in the relevant branch specialty groups, such as "Mechanical engineering", "Construction", "Electric power" and others. The specialty given to specialists in this direction was called "Engineer-Teacher". The training of such specialists had to meet the requirements of professional mobility, as well as conceptual requirements such as the need for education in a vocational educational institution to be carried out in an integral connection with the process of professional training [11].

Development of vocational education in the Republic of Uzbekistan

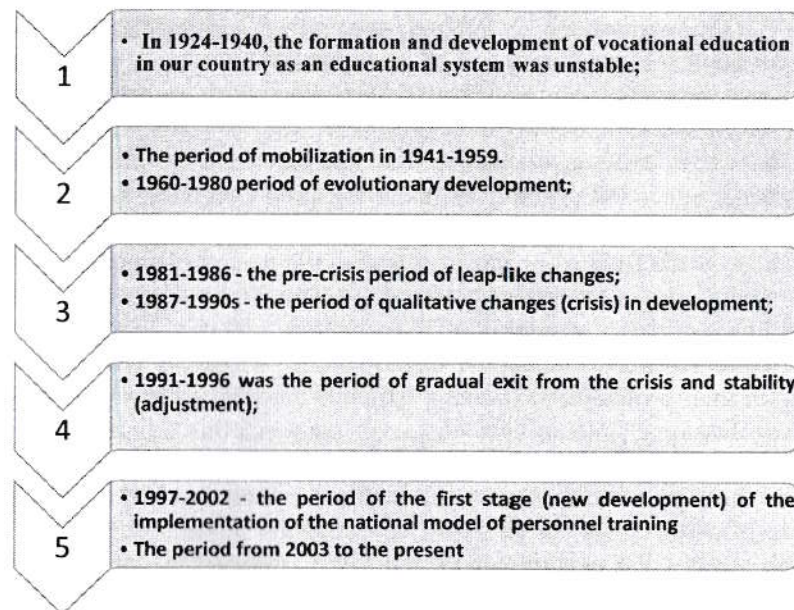


Figure 1. Development of vocational education in the Republic of Uzbekistan

At first, all large enterprises began to organize student courses in factories and industrial-technical schools. General education subjects are taught in them along with special subjects. Since the technical equipment of the enterprises was at a low level at that time, the equipment of the educational institutions was also limited to a certain extent. Due to the lack of large industrial enterprises in our republic, until the 30s of the 20th century, technical schools, factory-factory training courses, vocational-

technical schools, educational production workshops and various vocational-technical educational institutions were regularly increasing [25].

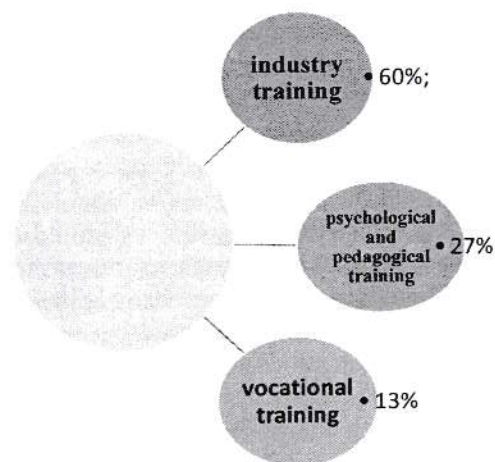
The new name "Vocational-pedagogical education" has become widespread in the scientific-pedagogical literature in recent years, and has been normatively strengthened in the name of the educational-methodological association of educational institutions in this field of education, and it has been recognized by a number of researchers that it corresponds to the essence of this field of education in many ways. At the same time, this name has an important drawback, even if it is, the quality "Professional-pedagogical" in the explanation of the concepts of pedagogy has another meaning. This concept is used to describe phenomena that describe pedagogical activities performed by qualified pedagogues, as opposed to pedagogical activities performed by unqualified teachers (for example, parents). In this sense, this phrase is not narrow, but rather widespread.

For this reason, according to tradition, the term "Vocational education" continues to be used in pedagogy along with the term "Vocational-pedagogical education" to express this meaning in general.

In fact, the new name of the specialty called "Professional education" is not fully satisfactory, because in such a short name it represents the field of activity of graduates in higher education. As a matter of fact, taking into account the specific nature of this type of education with a wide range of specializations, the name of the specialization should reflect what type of social production or household sphere the pedagogue is preparing to teach. Therefore, in 2000, during the development of the second-level state education standards, an addition was made to the name of the specialty, "By Sectors".

The special nature of vocational training programs and state educational standards in higher engineering-pedagogical education allows them to include training with three different characteristics in addition to general professional and humanitarian training.

These are: engineer-technical (field), psychological-pedagogical and production-technological (according to the profession) training. The interrelationship of these elements in professional training is as follows:



In this case, the specific nature of the professional activity of the future professional education teacher requires not simply adding them, but integrating them in the educational process [234, p. 29-30].

In secondary professional education, the content of educational programs is less integrated. Here, educational activities are regulated by two educational standards at the same time: 0308 "Professional education (on networks) specialization and related branch specialization.

At present, vocational-pedagogical education is providing various regional educational institutions and structural structures with pedagogical personnel.

The main field of this educational field is still the field of primary vocational education, in which educational institutions are engaged in training personnel for many branches of social production and socio-cultural field. As a result of the goal-oriented activities of the organizers of this field of education, there has been a qualitative change in the structure of professional education personnel in our country over the last 15 years. According to statistical indicators, the weight of workers with higher professional pedagogical education among vocational colleges was more than 10 times, among teachers about 7 times, among masters of industrial education 5 times [15, 157-b]. However, in general, the share of such specialists is still insignificant: 22.2%, 17.1% and 6.3%, respectively [14, p. 100]. Thus, despite the significant increase in the number of higher vocational and pedagogical education specialists, the share of workers

without higher education in the lower professional education system remains high.

By its essence, professional-pedagogical education includes the process of forming a person capable of working in a specific profession, performing a wide range of professional-pedagogical tasks, and preparing for self-expression in professional activities.

The analysis of the research problem shows that U.N. Nishonaliev [10], R.Kh. Djuraev [9], A.R. Khodjaboev [31] among the pedagogic scientists of our republic on the problems of improving the preparation of vocational education specialists for professional activity based on an integrative approach. , N.A. Muslimov [23], Q.T. Olimov [34], Sh. Qurbanov [20], J. Khamidov [33], D.F. Jalalova [29], Sh. Kulieva [43], M. Tashov [48] and many other scientists conducted scientific research.

Pedagogical theory is distinguished by its great potential in the field of integration. The trend of integration, the problems of approaching the educational process as a whole phenomenon R. It was expressed in the researches of scientists such as Safarova [23], E.O. A.P. Belyaeva [35], M.H. on the objective basis of pedagogical integration, identification of factors and categories of the integration approach, integration of theoretical and practical knowledge, integration of pedagogical and technical knowledge, integration of general education and professional training of students. Berulava [37]; V.S. Bezrukova [44], V.I. Zavyazinsky [60], V.T. Sopegina [62], V.A. Degterev [56] and others conducted research.

The socio-pedagogical and theoretical methodological foundations of the development of secondary special vocational education in Uzbekistan were researched by H.F. Rashidov [39].

O.I. Inoyatov scientifically based the theoretical and organizational methodical foundations of quality control and management of education in vocational education institutions [30].

In the fundamental studies of B.Mirzakhmedov and Q.T.Olimov, the theoretical and practical aspects of creating educational literature for vocational education were studied. In these fundamental studies, the concept of creating a new generation of educational and methodical literature for the process of training a vocational teacher is scientifically based, and scientific and methodical recommendations for improving the quality of the educational process are given [42].

Pedagogical scientist N.A. Muslimov researched the scientific-methodical foundations of the formation of pedagogical qualities in the

future vocational education teacher and focused on the issues of forming a new generation of specialists, bringing up a morally and morally mature, independent worldview, a creative thinker, a well-rounded person who is loyal to universal and national values. special attention is paid [48].

Professor N.N.Azizkhodzhaeva conducted research on the problems of applying pedagogical technologies to the educational process and improving pedagogical skills, and emphasized in her research that teaching technologies in the professional education system ensure the acquisition of fundamental and practical knowledge [45].

V.V. Latyushin's article entitled "Anthropological-centered approach to professional-pedagogical training of a future teacher" shows the four main stages of professional development of a person in higher education institutions: content, dynamic (the individual's conscious and independent expression of professional creativity after entering a higher education institution); institutional (environment of professional development of the person) and technological (means, methods and forms, situations of managing anthropological focus in professional training) [24].

In the research work of V.I. Danilova on the topic "The didactic structure of the process of teaching students in higher educational institutions of pedagogy", he spoke about the theoretical and methodological foundations of the design of the educational process in higher education, the systematic approach to the structure of the educational process [54].

The theoretical and organizational-methodological foundations of management and control of the quality of education in vocational colleges are reflected in the researches of U.I. Inoyatov [48].

The existence of these shortcomings indicates that the engineering-pedagogical education system in our country is still not smooth and needs to be updated in terms of rapid development and quality. First of all, the above-mentioned opinion applies to higher engineer-pedagogical education, which is undoubtedly an important link in the entire field of education.

At this point, it should be noted that during the development of professional education, the question of the appropriateness of its functioning as an independent type of education in terms of normative and organizational aspects has been raised several times. However, social practice and scientific research show that vocational education satisfies an objective need, that is, it satisfies the public need for highly qualified pedagogues for the vocational education system.

Such a functional feature of professional education is based on the content of professional education for a whole group of related working professions, not the important goals and tasks directed to a separate academic discipline, educational technologies (like traditional pedagogical education) [64 23-b].

The third educational model (form) is dual, occupying an intermediate position between the production and educational institution forms of education, and reflects the form of education controlled by the state. This educational model can be found mainly in German-speaking countries such as Germany, Austria, and Switzerland. The dual system of professional education includes two organizationally and legally independent carriers of education, two educational and production environments - an enterprise and a professional educational institution, which work together to achieve the common goal of professional training of students. The role of the state is expressed as follows, that is, private enterprises and non-production entities of education (funds, associations, unions, etc.) carry out professional education according to the conditions established by the state.

One of the new trends in the development of professional education is related to the restoration of individual economic activity in the field of home economics, that is, production, and it also implies strengthening of professional and economic training of students and pedagogues.

A number of researchers (A.T. Glazunov, A.M. Novikov, E.V. Tkachenko, etc.) emphasize that different types of professional education - primary, secondary and higher education do not correspond to their essence. For example, A.M. Novikov said, "Secondary special educational institutions and technical schools are a type of secondary vocational education, when they differ in their nature by the level of professional education. At the moment, they are separated only by departmental boundaries, and they are being reorganized as vocational education lyceums and colleges. Therefore, it is appropriate to combine primary and secondary education and call it basic professional education, which naturally has many levels and stages" [63, 63-b]. Currently, this principle has been implemented in various organizational and practical forms for the development of professional education.

In particular, the positive experience of organizing educational-scientific-research-production complexes uniting educational institutions, scientific-research structures, as well as base institutions and enterprises intended for pedagogical and production practice is of great importance.

Vocational college students, students of higher educational institutions, and trainees of the institute for improving the skills of engineers and workers of the enterprise undergo professional training at the production enterprise. On the basis of this experience, it is possible to organize an educational-scientific-production complex called "Technical-higher education-production". Within this complex, the main direction of continuous multidisciplinary professional technical education will be created.

Currently, the technical school and the higher education institution agree on the curriculum in advance, and the graduates of the technical school are admitted to the second year of the higher education institution after two years of education.

In our opinion, the solution of these problems is a priority today, and the success of practical changes in this field of education is determined by the appropriateness of the selected conceptual frameworks and their compatibility with modern socio-pedagogical requirements and conditions.

Socio-pedagogical conditions of creating a continuous professional education system

Each of these directions is reflected in certain ideas, theoretical views, and is accepted by the world community as the guiding ideas of fundamentally changing social activities in different directions.

For the first time, the conceptual rules of the new education were reflected in the concept of Lifelong Education, which was developed by the State Committee of Higher Education of the Former Union and was discussed at the All-Union Congress of Public Education Workers in 1988. In the following years, these rules were developed in the reform of the education system, taking into account the new ideology and social reality.

To date, the main direction of the activities in this direction is the concept of sustainable development. rather, it is aimed at improving the quality of life of the next generation.

Today, the analysis of the modern socio-pedagogical situation in terms of determining the conditions and factors that directly and descriptively affect the development of vocational education shows that the main directions and goals of its renewal and improvement are determined by the following leading directions of gradual development:

the increasing importance and humanistic orientation of education in modern conditions. In turn, its content and quality demands the introduction of optimal forms and technologies of education;

- the change in the role and place of technology and technology in human development, their importance in overcoming the crisis situations of man-made civilization, and finally, the origin of the need to change the ideology of technical, especially engineering education;

- emergence of the need to form a certain type of socialization, which ensures the stabilization of educational processes and ultimately leads to the change of social requirements for a modern specialist.

Most researchers and practitioners in the field of education argue that reorienting education in line with humanitarian goals requires a large-scale change in the mindset of educators and society in general. The extraordinary complexity of this task and the fact that it takes a lot of time to solve it also emphasizes the process of truly humanizing education.

From the point of view of the teachings that guide the development of engineering-pedagogical professional education in the current socio-pedagogical conditions, its methodological, axiological, ontological and technological bases are being formed in accordance with new, promising social needs.

Methodology of professional education: conceptual approaches, principles, basic concepts

A number of scientists who researched vocational education stated that its emergence and development as an independent field of education over the past years had an empirical nature, that is, it did not have the required scientific-theoretical and methodological evidence. Therefore, it is no exaggeration to say that the new quality indicator of professional

education relies on a scientific approach in its development and implementation. Researches in the field of professional education are becoming more and more deep and multi-faceted, which, in turn, can provide a fully scientifically based content and provide a solid methodological basis for the training of professional education pedagogues.

Researches devoted to the development of the organizational and pedagogical foundations of the development and management of this educational network have important methodological importance. For example, Yu.N.Petrov developed a regional model of multi-level continuous engineering-pedagogical professional education, which is one of the main contradictions of the transition period - "the goals of the professional education system with the new socio-economic processes occurring in society and with the principle of transition to business management in market conditions provides a solution to "realignment" [214, 5-b].

Also, in the development of this field of education, researches devoted to the issues of improving the educational processes in higher educational institutions that prepare graduates of professional education, humanizing it, increasing the quality of training of graduates, acquiring modern effective pedagogical technologies by them are of great importance (K. Ya. Vazina [24], A. O. Velijanina [23], M. V. Goronovich [26], V. I. Kondrukh [37], O. M. Kuznetsova [43], E. V. Romanov [53], M. L. Shkurkin [58], L.A. Shkutina [62], M.V. Shurkina [62] and others).

The analysis of these studies and the generalization of the research results allow us to distinguish methodologically important dimensions and qualities that justify the integrity of professional education as a unique pedagogical phenomenon.

The systematic approach is based on the rules of the general theory of systems as a general scientific methodological tool (A.P. Averyanov, I.V. Blauberg, D.P. Gorsky, M.S. Kagan, V.N. Sadovsky, A.I. Uemov, E. G. Yudin et al.), and in social and humanitarian studies, social, especially in pedagogical studies, the laws of various principles (concepts) are used (V.G. Afanasev, V.P. Bepalko, N.V. Kuzmina, C.A. Sarkisyan, E.H. Stepanov and others).

From the point of view of the systemic approach, the phenomenon under consideration is considered as a system, that is, a set of elements forming a whole in relation to each other [300,584-b].

This approach is a traditional phenomenon in the research and theoretical presentation of pedagogical situations today. From a normative point of view, the field of education in our country consists of an educational system, which represents the "internal structure" of education, its construction, characteristics, and the specific aspects of relationships based on interrelationship, mutual coherence, which unites a large number of objects of different nature into a single integrated system. According to the Law "On Education", "the educational system is interconnected: coherently interrelated educational programs and state educational standards at different levels and directions; the network of educational institutions that implement them, regardless of their organizational and legal form, type and variety; constitutes a complex consisting of educational management bodies and departmental subordinate organizations and institutions" [300,584-b].

In current social practice, education is a set of many systems. From a normative and legal point of view, the indicators of the systematicity of education will consist of the following:

- Level of educational content;
- Degree in Educational Management.

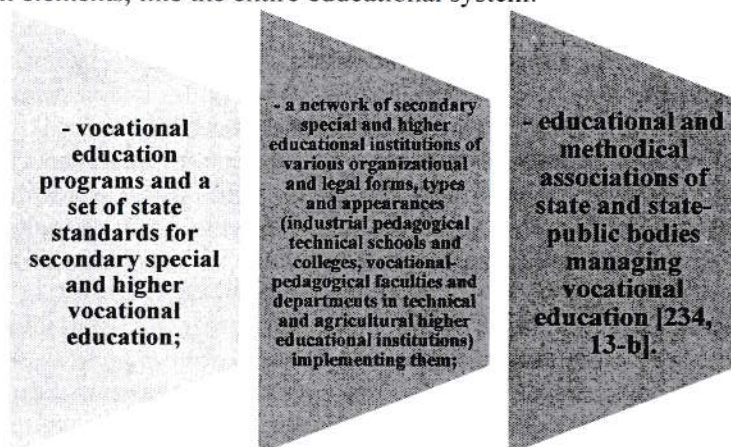
According to the first indicator, preschool, general education (primary, basic, incomplete secondary), professional (secondary special, higher, post-higher education) education, etc. systems are distinguished. According to the second indicator, regional, urban and other systems of education are considered.

In fact, today, when general tasks for the development of education are changing significantly, specialized education remains, but despite this, the separation of specialties is changing in its essence. In the new situation, G.N. Shtinova said that specialized education first of all meets the needs of forming a continuous education system, since there is an obvious need in the following:

- content relatedness and consistency of some professions, specialties and directions at different levels;
- their orientation to specific educational activities based on general uniform educational principles [324,126-127-b].

Specialization systems of education are also isomorphic to the educational system. These specialty systems include engineer-pedagogical professional education.

Engineering-pedagogical (vocational-pedagogical) education as an independent specialty system of the educational system includes three main elements, like the entire educational system:



In accordance with the specific goals and aspects of the research, along with this normative-organizational systematic view, engineering-pedagogical professional education can be considered through other systematic descriptions. However, in any case, certain elements of the system that give a clear structural structure to this objective whole are distinguished.

However, any phenomenon of real reality studied from the point of view of a systematic approach, especially a social phenomenon, can always be more complex than any abstract systematic structural view. Such systems can be diverse in nature, be it electrons, atoms, molecules, cells, neurons, mechanical parts, photons, body parts, animals, humans and their communities. However, the common property for them is that they are constantly changing, changing under the influence of various factors of internal and external nature, and therefore have the properties of openness, unevenness, instability, as well as the ability to self-regulate. A unique direction of interdisciplinary research with the study of such systems is synergetics (from the Greek synergetikos - acting in mutual cooperation).

From the general point of view of the synergetic approach noted by its founder, G. Haken, it can be said that synergetics studies the gradual development of systems over time, and it can be said to be a part of the general system analysis, since in the system analysis the general principles underlying the operation of the system are of main interest [50, p. 361].

In fact, there is no doubt that the synergetic laws that have shown their generality in different systems of natural processes are not reflected in pedagogical systems. However, when transferring the methods of exact sciences to the field of humanities, according to researchers, significant problems arise in adapting the concepts and views of other fields of science to the field of social and humanities.

Thus, the use of methodological views of synergetics in the analysis of pedagogical phenomena can allow not only to deeply research their essence from all sides, but also to implement practical pedagogical professional activity more effectively. In particular, understanding the limitations of any one-sided approach to education, be it cognitive, social, or person-centered, ecological, or cultural approaches, can ultimately serve as a catalyst for the search for an integrative educational paradigm. By its essence, the competent approach in education has an integrative nature.

Due to the fact that the competent approach in education has become increasingly important, the concepts of "competence", "competence", "basic (key) competences" are often used in the discussion of new educational quality issues and are increasingly being confirmed. In the pedagogy of our country and abroad, the processes of understanding the essence of the concepts of competence and competence, which of them are considered basic (universal), and the methods of their formation and evaluation are becoming more and more active, as well as active negotiations are being conducted to clarify these concepts. Research of this methodological nature is the main condition for transforming the general idea of basic competencies into pedagogical concepts and reality, which ensures the realization of this idea in pedagogical practice (as a theoretical constructor).

The main category of the competent approach in education is "competence", which arose in the field of labor and management organization and professional psychology and is still actively used, but it has developed further as a result of the new socio-educational principle.

The description of competence given to a specialist, i.e., his ability to perform effective professional activities, emphasizing its complex, integral nature, distinguishes three levels of it in foreign models of management:

1) integrative competence - the ability to integrate knowledge and skills and use them in the rapidly changing external environment;

2) socio-psychological competence - understanding and understanding human behavior, motivation of their behavior, having knowledge and skills in the field of high level empathy and communication culture;

3) competence in certain areas of management activity - decision-making, information gathering, working with people, etc.

According to I. V. Grishina, competence is a part of professional skill, which can condition it and be interrelated as categories of opportunity and reality. In order for competence as a potential opportunity of a person to lead to effective professional activity, certain objective conditions, appropriate motivation, will power and a certain level of activation of acquired knowledge are necessary. He also stated that competence is not a completely stable sign (attribute) of a person. On the contrary, it is an extremely dynamic product, which is the result of achieving practical perfection and continuous development of professional skill" [80, 102-b].

A.M. Novikov proposed to use the concept of "competence" as an alternative to the concept of "professional skill", and noted that the concept of "competence" is used instead of the concept of "professional skill" in the evaluation of work qualities. According to him, the first concept concerns technological training. The second concept contains content that is superior to the profession, and its components are called "basic skills". These are the qualities of a person such as independence of behavior, creative approach to any work, constant updating of knowledge, mental toughness, readiness for systematic and economic thinking, ability to communicate, cooperation in a team, communication with colleagues. Also, A.M. Novikov includes knowledge of foreign languages, computer knowledge, environmental and economic knowledge, marketing, intellectual property protection in the concept of competence.

The use of the concept of "competence" in the description of not only professional, but also "pre-professional" and "above-professional" qualities of a person suggests introducing the concept of "professional competence" into scientific and professional interaction. However, today it is used in two senses.

In a narrow sense, professional competence is understood as a description of the qualities of a person that are directly important for

performing work tasks within the framework of qualification requirements. From this point of view, professional competence refers to the acquisition of professional competencies that form the basis of professional qualities of a person, it is the ability to analyze work and technological processes, technical documents and assignments, to perform the work process without errors, to meet technological requirements, to acquire additional skills, to have a high level of civility and high includes elements such as organization of the labor process at the level, timely elimination of deviations occurring in the technological process [335, t1, 454-b].

In a broader sense, professional competence is understood as a synonym for the word "competence" in relation to professional activity, where it covers all professional and non-professional competencies that are important for the effective implementation of this activity. Within this approach, professional competence is expressed as a multicomponent phenomenon, consisting of several components.

A.K. Markova distinguishes the following types of professional competence:

special competence - to be able to perform one's professional activity at a sufficiently high level, to have the ability to plan one's professional development in the future;

social competence - to engage in joint (group, team) professional activities, cooperation, as well as to know the methods of professional communication accepted in this profession; social responsibility for the results of his professional work;

personal competence - knowledge of methods of personal self-expression and self-development, means against personal professional disorders;

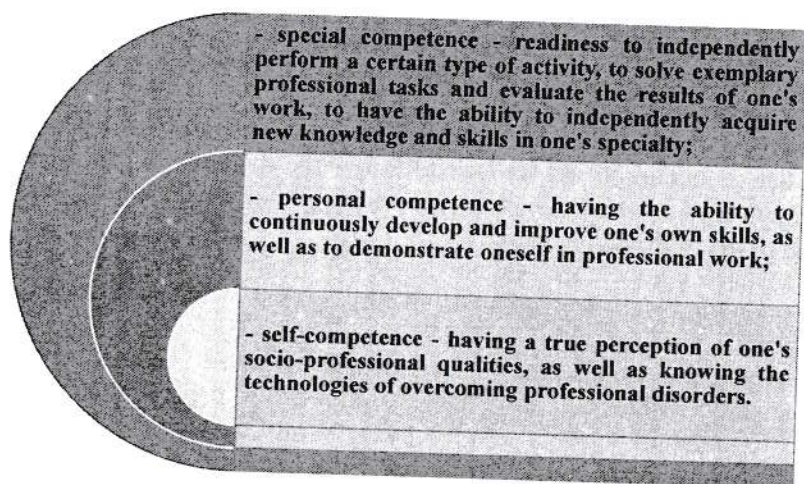
individual competence - self-expression and development of individuality within the profession, readiness for professional growth, ability to maintain personal self, not prone to professional aging, knowing how to organize one's work rationally without spending too much time and effort, performing work without strain, without fatigue and even in a refreshing mood.

The mentioned types of competence, the author clarifies, may not reflect one person. A person can be a good narrow specialist, but he may not know how to communicate and implement the issues of his professional development. Naturally, it is possible to recognize a high level of special competence and a much lower level of social, personal competence.

Each considered type of professional competence includes a certain set of general professional elements. For example, special competence is planning production processes, working with equipment, reading technical documents, manual skills, personal competence - planning, controlling and organizing one's own activities, as well as finding non-standard solutions (creativity), challenging theoretical and practical thoughts, problem solving vision, the ability to independently acquire new knowledge and skills; individual competence includes qualities such as motivation, success, striving for quality work, self-motivation ability, self-confidence and optimism [60, p. 34-35].

According to E.F. Zeer, professional competence "incorporates a set of professional knowledge, skills and methods of performing professional activities, the main elements of which are as follows [61, p. 118]:

- socio-legal competence - knowledge and skills in the field of interaction with public institutions and people, as well as compliance with the rules of professional communication and behavior;



The above author considers professional competence to be a system of the professionally determined structural structure of the professional personality, which, like other systems, is part of it, including:

- professional orientation of a person, refers to the desire to achieve achievements and successes in one's profession, unity, reliability, professional identity (mentality) and others;

- important professional qualities, including honesty, reflection, independence, responsibility, social intelligence, assessment and prediction skills, communication skills, professional mobility (quickness) and problem-solving skills, etc.;

- occupationally important psychophysiological characteristics, for example, diligence, dexterity in manual work, psychomotor skills, well-developed visual skills, etc.

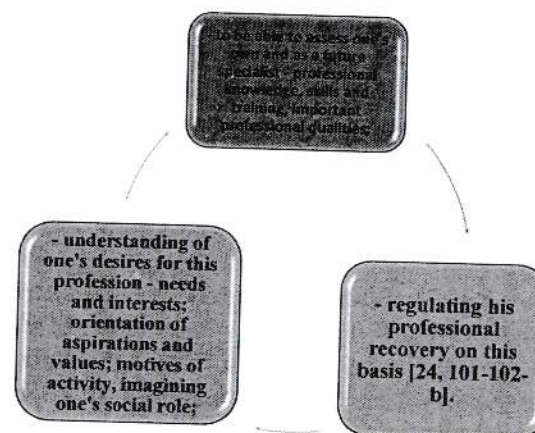
Summarizing the various views on professional competence presented in the psychological and pedagogical literature, I.V. Grishina emphasizes that professional competence is expressed through:

- acquiring personal skills, an intermediate stage on the way to professional skills;

- unity of need-motivational, operational-technical spheres and self-awareness (reflection) of a person;

- level of professional skill.

Professional competence is defined as the quality level of a person's professional activity and implies the following:



Common to all approaches to defining competence is its formation and manifestation in practical activities.

From the perspective of the problem of defining basic competencies, the concept of "competence", which has several meanings in the Uzbek language, has been filled with new meaning.

In particular, several different classifications of core competencies have been proposed by scholars. In particular, the following should be reflected in the core competencies:

- competence in activities related to independent knowledge based on mastering the methods of obtaining knowledge from various information sources;

- fulfilling the roles of competence (citizen, discoverer, consumer) in the field of civil-public activity;

- competence in the field of social and labor activities (as well as the ability to assess the situation in the labor market, one's own professional opportunities, to observe ethical norms in labor-related interactions, and to have self-regulation skills);

- competence in the field of life (personal health, family life, etc.);

- competence in activities in the field of cultural recreation (taking into account the choice of using methods and means of useful leisure time, cultural and spiritual enrichment of a person).

According to the authors of this document, this approach to the definition of core competencies is consistent with the experience of countries that have undergone changes in the content of education aimed at acquiring core competencies during the last decade (which includes practically all developed countries). At the same time, the mentioned approach is in accordance with the traditional values of education (understanding and realization of the scientific picture of the world, spirituality, social activity).

The pedagogues of the country, in our opinion, the classification that arose in the process of scientific and practical activity of many of them (I.B. Budik, M.V. Rizhakov, etc.), including professional education, includes the following basic competencies that are suitable for the educational system:

- the subject's social activity, his participation in the activities and improvement of democratic institutions, political life, ability to resolve conflicts without violence, willingness and need for continuous self-improvement in both professional and personal life;

- multicultural competence (openness to the culture of representatives of other nationalities, prevention of racism and xenophobia, respect and understanding of other cultures, tolerance of different thinking);

- language competence (knowledge of several languages, communication skills, ability to establish "dialogue of cultures");

- information competence (readiness to live in a single information environment, ability to work with various information sources, understanding and mastering the importance of using information

technologies, having a critical attitude to information and advertising disseminated by mass media, the global network of the Internet);

- subject-activity competence (having a broad worldview combined with deep knowledge in the field of professional activity, resourcefulness, quick and efficient use of one's knowledge and experience in solving practical tasks, professional-ethical qualities) [39].

V. G. Gorb said that the main competences of the specialist should be strengthened in educational standards along with other basic didactic units, it is necessary to separate them based on the future work activities. Under the characteristic of activity, the author understands the interaction between the main objects of human professional activity: "man - man", "man - machine", "man - theoretical knowledge". In fact, if the socially based requirements of the level of training of a specialist are called competence, then compliance with these requirements, he says, should be called competence [76].

Reorientation of the educational process to a competent approach requires a significant revision of the methodological and didactic foundations of educational activity, a significant revision of the development of methodological conditions and tools for its implementation at all levels of educational practice. However, the decisive factor for the successful implementation of this new educational approach is the continuity of the quality of the educational system, because it is the continuous educational system that provides the continuous deepening, improvement and expansion of the level of education in accordance with any subjective and objective characteristics and needs of various forms. Ultimately, it allows to apply universal methods of practical action based on knowledge from the process of acquiring knowledge during study and to constantly update one's knowledge and skills.

The considered methodological approaches and principles serve as a foundation for purposeful development and appropriate change of professional education, which is a special branch of professional education. Their application allows to ensure the systematization and integrity of education based on self-organization and self-management, to rely on mechanisms of self-organization and

self-development at the personal level (learner, pedagogue), as well as all stages of educational systems.

The considered methodological bases allow the use of different educational approaches, goal-oriented guidelines, pedagogical

technologies, various didactic tools, without violating the methodological integrity.

Thus, in our opinion, the selected methodological framework fully corresponds to the goals of our research.

CHAPTER II. METHODOLOGY FOR IMPLEMENTING THE PREPARATION OF STUDENTS FOR PROFESSIONAL ACTIVITY ON THE BASIS OF THE DUAL SYSTEM

Didactic foundations of continuous education in the training of future vocational education specialists

The dual system of professional education in higher education institutions requires the practical development of a conceptual model for the determination of didactic conditions, which reflects the construction of the conceptual-theoretical basis of the dual system of training vocational education specialists in higher education, as well as the systemic-component features of the educational process, as well as their interdependence and relevance.

According to modern systematic-pedagogical ideas, the educational process is systematically interrelated and it is desirable to interact with the following components: 1) goals of activity, 2) teacher, 3) student, 4) content of activity, 5) forms of activity, 6) means and methods of activity, 7) result of activity.

The systematic feature of the pedagogical process is its integrity, which means the internal connections of all its elements. The integrity of the pedagogical process is external and internal (direct and reverse) connections (structural units) between its elements. The structure of the pedagogical process is characterized by a strict and logical arrangement of elements in the system.

However, in real educational practice, the important qualities of the pedagogical process cannot always be achieved. In general, the educational process differs significantly from the goals of educational activity due to the conflicting, discrete, weak internal connections, the fragmentation of components.

The integrity of the educational process occurs only in the conditions of purposefully organized educational activities based on certain methodological relations and scientifically based approaches. Such pedagogical conditions are of great importance in the framework of innovative education.

Today, innovative approaches are implemented that change the quality of the educational process, such an approach brings the interaction between the teacher and the student to a certain level. The possibility of innovation ensures a high level of independence of educational institutions in the development of the content and technologies of the educational

process and a responsible approach to the quality of education, as stated in the Law "On Education".

The innovative models that are being developed and implemented in terms of their goals, the level of coverage of the components of the educational process, and their content have different appearances in modern educational practice. Based on this, various conceptual ideas and principles serve as a basis for achieving integrity. In our opinion, the most important principles for vocational education are:

- processes with modern scientific knowledge and practice of the democratic structure of society, reflecting the relationship between scientificity, educational content and methods. Based on the educational content, this principle introduces students to objective scientific facts, theories, laws, reflects the current state of scientific knowledge;

- fundamentalism, strengthening of methodological preparation of students, expansion of professional training profiles and programs that strengthen the components of general education in education, etc.

One of the most important aspects of ensuring the integrity of the educational process is the continuity of education.

- the educational process is controlled on the basis of an individual-personal approach through the advisory board of teachers;

- individual - personal and group training is carried out not only in the course of academic training, but also in additional educational services and independent work conditions;

- the continuity of the stages of the modular content of the educational process is ensured.

As mentioned above, the most important aspect and condition for updating the educational process in accordance with the requirements of the times and achieving its integrity is to change the position of the participants of the educational process - teachers and students-learners, aimed at strengthening their subjectivity.

This didactic problem is solved on the basis of the principle of humanization, which means that a person-oriented approach to education is implemented using the program. From the point of view of this approach, an important methodological package in the organization of the educational process is the recognition of the social nature of the development of the individual, which depends on the variety of interaction, the variety of interpersonal relations and communication, the natural development of a person's individuality. The success of the educational process is related to reducing the role of the teacher by rejecting

repression, as well as changing the criteria for evaluating the quality of education.

In the educational process, the personally oriented position of the teacher is focused on science, in which the information-control function and the authoritarian-directive management style prevail, which in turn reduces the initiative of students. In the educational process, if the student is considered as a whole person who interacts with all participants, this includes a new educational method that encourages the initiative of students, and the motivational and semantic point of view changes: the closure of the teacher's personality, ignoring the personal experience of the requirements, establishing an active semantic interaction, each student's goal setting, participation in decision-making (A.G. Gostev, M.E. Duranov, L.V. Zankov, A.B. Petrovsky, A.D. Sazonov, G.N. Serikov, etc.).

Reorganization of the educational content is a necessary condition for the organization of the educational process in accordance with the theoretical-methodological foundations of the Dual system of professional education in higher education.

The content of education is pedagogically sound, logical educational documents arranged and recorded (programs, textbooks, etc.) scientific information determines the essence of education in the activities of teachers and the knowledge activities of students. As a result of personal and professional qualities of a person, the interrelated activities of teachers and students are carried out through scientific content.

The content of education has a two-fold nature: on the one hand, it is a social experience, a program and a textbook in a fixed form, and on the other hand, the activity of the student is organized by the teacher. The educational content and process adopted in unity define the educational subject as a whole.

We still use the demonstration-explanation system of education, and it is mainly aimed at the acquisition and reproduction of ready-made facts. In terms of content, these structures correspond to the structure of traditional science. (S.Ya. Batyshev, A.P. Belyaeva, K.Ya. Vazina and others).

In our opinion, training on the basis of a modular system is optimally suited to the goals of building a dual system in professional education, special attention is paid to social-structural interactions in the professional field of training engineer-pedagogists.

The basis of the engineer-pedagogical professional education process in a higher educational institution is the methods of preparation for professional activity, and the content of this educational process is formed. Systematic and active assimilation of educational content, in turn, requires the use of active forms of education. In the arsenal of modern pedagogy, various forms of education are collected, which ensure students' activity in the educational process. The most important forms of active learning from a research point of view are presented in Figure 3.1.

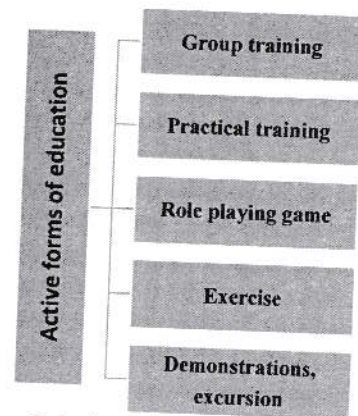
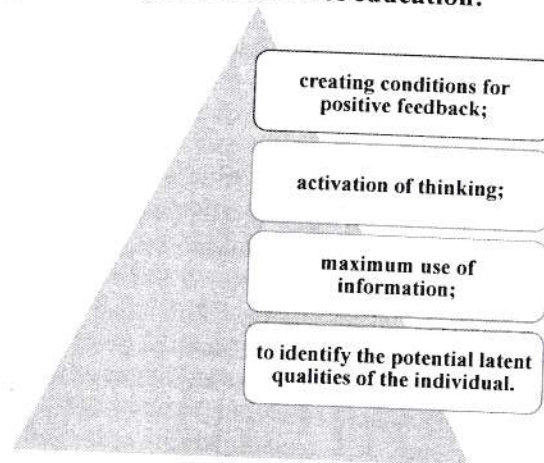
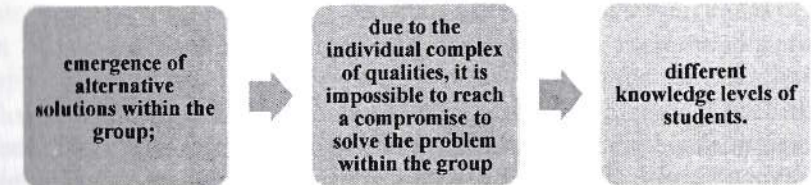


Figure 3.1. Active forms of education

Advantages of using active forms of education:



Disadvantages:



In modern education, the use of didactic and technical tools plays an important role, that is, it increases the quality of the delivery of materials by the teacher, and also helps students to remember the topic well. The evaluation characteristics of various technical tools used in the educational process are presented in Table 3.1.

Table 3.1

Technical means of teaching

Technical means of teaching	Description	Value	Frequency of use	Applicability
Blackboard, chalk	Simple and cheap	Very low	Very high	In any training
Handouts	Students can use	Low	High	In any training
Flip chart	In special cases	Average	Average	In any training
Projector	Visual materials	High	Average	In any training
Video	In visual and audio format	High	Low	Demonstration process
Models	Material visualization	High	Low	Demonstration process

The effectiveness of using different methods and tools of teaching depends on their correct inclusion in the curriculum, module, and individual class. When choosing them, you should consider the following:

- Need. A method or tool should be used to facilitate the perception or presentation of information (material).
- Compatibility. Existing methods and tools are not always the most suitable for achieving the goals, so such situations require the teacher to use imagination and improvisation (taking into account the type of audience being trained, its interests).
- Simplicity. Various tools and methods are used to simplify the learning process, so they should include only what is necessary and be as simple as possible.

- Interest. It is recommended to use educational methods and tools that help to maintain the interest of the audience.

A characteristic feature of the modern educational process is its technological description.

In fact, the goal of technological education is to obtain a huge amount of theoretical and practical knowledge and various information in a limited time today. On the other hand, teachers objectively face interaction within the framework of a typological process, situations using repeated operations, actions and procedures in interacting with students several times, their certain sequence and algorithm.

Currently, various educational and pedagogical technologies are used in the field of education, the basis of which is the educational process on the one hand: content of science; the skills and abilities of students or the relationship between teacher and student. From this point of view, all technological approaches known in world pedagogy can be divided into two different groups: reproduction technologies and development technologies. It should be noted that both of these approaches solve the problem of innovative education.

The process of self-development and development of creative activity of students in the space of educational technologies requires the achievement of the goal, a qualitatively new construction of the content. K. Ya. Vazina developed the technological possibilities of these innovative approaches in the most complete, complex, self-development natural-reflexive technology [65].

The development of an active, responsible, professionally literate person occurs in the process of natural and imperceptible interaction between teachers and students. This is ensured by mutual understanding of mistakes, open cooperation for criticism and self-criticism, formation of new ways of thinking, personal and professional relationships.

New ways of thinking of teachers allow to get rid of traditional models in the educational process, to act based on the situation, where individual capabilities are creatively manifested in different conditions.

At the same time, such a pedagogical approach not only requires the teacher to master all its main theoretical approaches and practical methods, but also includes independent professional development.

Such purposeful technological organization of socio-professional relations in the educational process (in a study group, production practice, etc.) also becomes a didactic condition for the implementation of the Dual

system of engineering-pedagogical professional education in higher educational institutions.

Vitagen technology (from the Greek *vita*-life; *genos*-appearance) emphasizes the human experience and its dual nature. On the one hand, it is based on innate (natural) personal capabilities, and on the other hand, it is based on the level of manifestation in the process of self-development of a person in the field of biosocial life. Vitagenic, that is, duality, includes destructiveness and creativity, the ratio of which is adjusted and developed in the human mind.

2.2. Future professional education in the dual system is a method of preparing specialists for professional activity

The dual system of vocational education is related to the practical organization of the development of the structure and content of the professional training of future vocational education specialists in accordance with the conceptual-theoretical and didactic foundations. At the same time, it is necessary to take into account the problems that characterize the state of this field of education today.

Especially such problems, noted by researchers in the field, are the formation of a continuous system of professional education in higher education, the uniqueness of this type of vocational education is the integration of Dual education.

From this point of view, it is important to take into account that the personal development of a person in different periods of life and especially in professional activity is distinguished by its uniqueness. In particular, an important feature is the possibility of crisis events related to slowing down of mental development or even falling in an adult. In this process, self-esteem and development of professional activity play an important role in the individual.

In the professionally active approach of an adult, his general attitude and needs to education are determined by the acquisition of knowledge in the process of education. The main thing that characterizes the characteristics of the acquisition of knowledge by adults is their life experience. The interaction of theoretical knowledge acquired by adults is determined by life experience, firstly, it helps to improve the quality of learning theory, and secondly, it leads to the expansion of personal experience.

Using a systematic approach allows not only to understand the various stages - from the identification of professional training needs to the

evaluation of program implementation, therefore, it allows to imagine the interdependence of these stages in the management and implementation of training. The structure of the professional training cycle built according to this approach is presented in Figure 12.

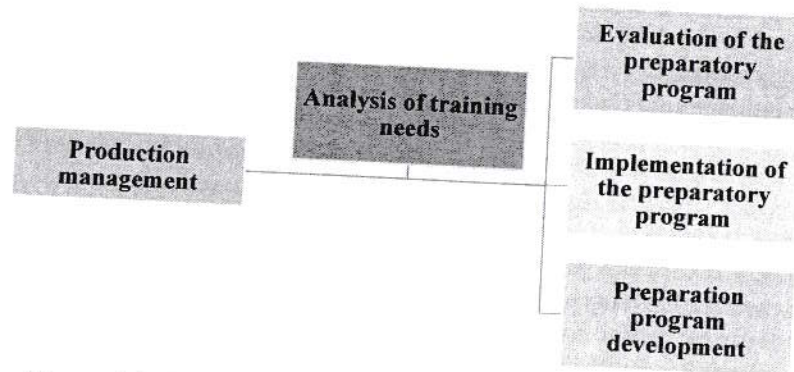


Figure 3.2. The structure of the professional training cycle

The stages of the vocational training period are schematically illustrated in Figure 3.3. The learning process was divided into its components for a deeper understanding of the content of these stages. It should be noted that training is not one of the stages of the preparation period, but the implementation of preparation.

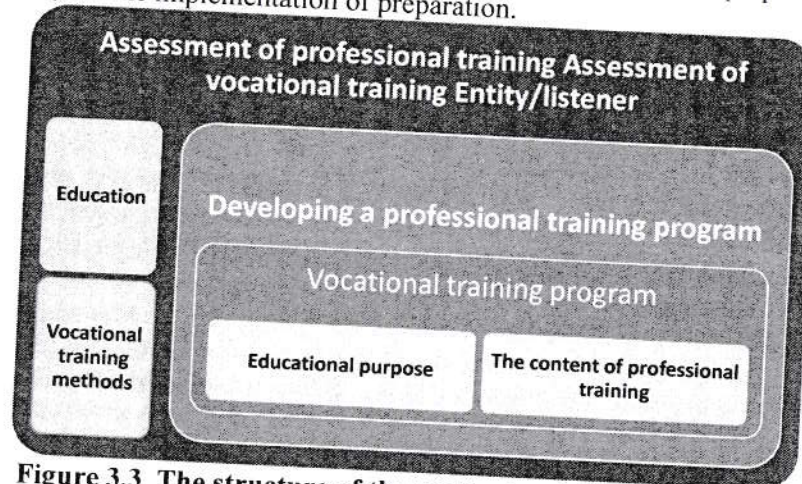


Figure 3.3. The structure of the professional training process

There are several approaches (theoretical models) to how people learn today. The most effective is a model developed by Dr. David Kolb called Kolb's cyclical learning. Its advantage is its simplicity.

There are two factors that Kolb defines our educational experience. The first of them is perception, the second is processing. Both continuities are clearly connected on each axis (Fig. 3.4).

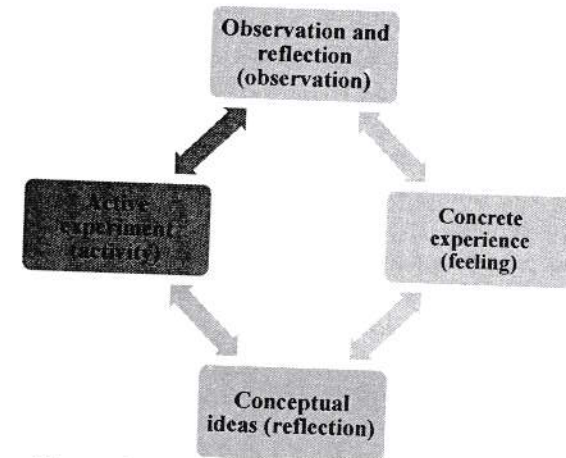


Figure 3.4. Two continuums of education

Kolb's continuum (vertical) determines how a person receives and assimilates information presented to him. It changes from "concrete experience" to "conceptual ideas". The processing continuum (horizontal) determines how we try to understand the information we receive and learn. It varies from 'observation and reflection' to 'active experimentation'.

If we add the learning process to the two continuities developed by Kolb, we get the learning cycle. According to Kolb, any learning cycle can be divided into four interrelated stages.

Phase I: concrete experience

In education, concrete experience is initially received and observations, feelings and reactions occur in and on the learner.

Phase II: Observation and reflection

Following a new situation in Phase I, the student adds new or existing ideas based on previous learning. This process encourages students to refer to past experiences and evaluate new experiences.

General purpose. This objective should clearly and concisely describe the purpose of the entire training course. The effectiveness of the vocational training program can be checked by comparing it with the actual results after the vocational training is completed.

Learning objectives should include a description of what the trainees will be able to achieve at the end of the course.

The description of educational objectives should include three elements:

- the student's knowledge and understanding of the activity can be completed at the end of the course;
- pedagogical conditions, under any conditions that ensure the effectiveness of education, students can implement what is announced (external factors and conditions). It should be noted that the conditions must be valid and suitable for a specific type of activity;
- a standard criterion should be used to measure the performance of the work to be done. Standards are inextricably linked to quality production.

Course planning and student needs assessment will begin after completion. The teacher prepares a program that contains a brief description of all the main information, and he should interpret the training course as a whole.

The program description includes four elements:

- syllabus;
- module plans;
- educational plans;
- general program of the course.

The planning process begins with the preparation of the syllabus, which provides a brief description of the main aspects of the course. The information contained in the syllabus is systematically presented in the table (Table 3.5).

The introduction is the most important in terms of motivating the audience. There are five main rules:

1. Subject. The title of the topic should be clear and concise.
2. Interest. It is necessary to attract the attention of the audience. This can be achieved in various ways (for example: items related to the topic, news or interesting information).
3. Need. The need to study the topic can be shown using the form of communication. At the same time, the topic and form of information presentation should be suitable for the group level.

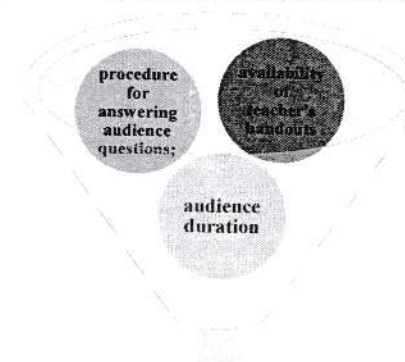
4. Scope of thematic coverage. The scope of the lesson should be clearly defined (what questions, problems and areas).

5. Purpose. A positive aspect of learning the subject should be shown. This aspect helps to increase motivation and attract attention.

Table 3.5

Structural structure of the module plan	
Structure of the module plan	Structural structure
Purpose of the module	Professional skills of trainees based on training results
<div> <div>Duration</div> <div>Module topic</div> </div>	
<div> <div>A sequential list of topics based on assessment as required by the course</div> <div>A sequential list of topics based on assessment as required by the course</div> </div>	
Continue Modul (Daily)	
Recommended	According to the syllabus

The following issues may also be discussed in the introduction:



Establishing a logical connection with subsequent material for a broader thematic presentation

The basic information section must meet three basic rules:
- logical sequence;

- information blocks;
- availability of visual equipment.

The importance of the topic consolidation phase is as follows:

1. a brief recapitulation of the most important rules helps the listeners to better remember the information and fully understand the material;
2. assessment of the quality of lesson preparation, identification of possible options for improving the content of materials allows to evaluate the effectiveness of current methods of information presentation.

The most effective way to strengthen the learned material is to use the acquired knowledge in practice.

Conducting a lecture session may include this step:

1. Compilation of the indicated material, which can be done at the request of the teacher himself and the audience (and when there is time).
2. Questions on the topic can also be asked by the teacher and the audience themselves. In the first case, the teacher strives to understand the presented material, and in the second case, the listeners have the opportunity to clarify specific issues or get additional information on the issues of interest.

The ability to explain the material in a way that interests the audience depends on the basic professional skill (quality) of the teacher.

When developing a training course, the teacher must take into account such a factor as "information loss". Figure 3.6 shows this relationship scheme.

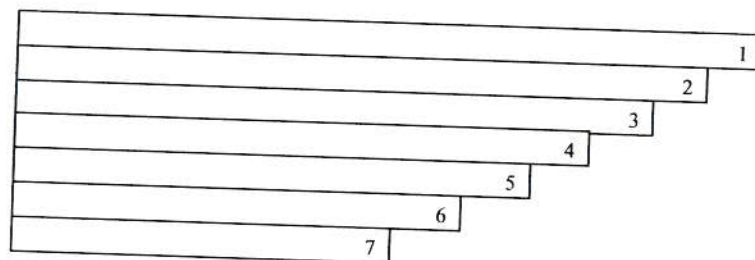


Figure 3.6. Information loss scheme

1. Information that the teacher conveys to the audience
2. Information is mainly taken from the topic (the idea is not fully expressed in words)
3. Information heard by listeners
4. Information understood by listeners

5. Information remembered by listeners
6. Information used in practice by listeners
7. Information that listeners can share with other people

In the presented scheme, the qualitative presentation of the topic by the teacher and the memorization of the topic by the listeners are mentioned.

There are three technical groups that can be used for quality presentation of the topic during the lecture:

1. Presentation of lecture materials:

- tempo - the material should be expressed a little slower than normal speech speed;
- when pronouncing words, words must be pronounced clearly;
- actual and special terms should be used only if the audience is familiar with them (that is, they should be explained first);
- emphasizing important points- emphasizing important points and rules can be done by reducing the speed of presentation.

2. Activate the audience:

In order to activate the audience during lecture sessions, it is necessary to attract attention (stimulate interest), organize feedback (provide an opportunity to share ideas, information and relax).

3. The main factor that should be taken into account in the implementation is that the teacher uses different methods to activate the audience:

2.3. Improvement of methodical provision of preparation of vocational education specialists for professional activity based on dual system

One of the features of the dual system is that it increases the importance of educational methods focused on the formation of professional competencies. Methodological communication used by professors and students in the Dual system education used in the educational process remains an important didactic condition and requires special attention.

When a teacher meets students for the first time in the educational process, they usually do not know how to work together as a team, so they are not able to work together effectively. Accordingly, the first task of the teacher is to prepare students for constructive work in the learning process with the help of methods and methods. Limited training times require the final optimization of this process, taking into account the group's life cycle process, which involves development in the following four stages:

- formation;
- attack;
- normalization;
- work.

Theorists fit observations but complicate logically thin theories. Their conceptual ideas are similar to principles, theories, models, and systems thinking. Their philosophy is based on rationality and logic. "If it makes sense, it's good." Their traditional questions are: "Does it make sense?", "How does it fit together?" and others.

Pragmatists focus on practical testing of new ideas, theories, and methods. They are busy finding new ideas and use the slightest opportunity to experiment with their practical applications. Their philosophy is based on the following: "there is always an opportunity for better solutions".

At the moment, one of the popular methods of teaching methodology is the student working group. The working group ensures working together with small groups - ideally 4 to 6 backgrounds are assigned a specific task. Students are required to do certain actions (exercise, discuss, prepare or find answers to a series of questions, try something) and the results of the working group are analyzed with other students.

It is important that each member of the group clearly understands this educational method. Therefore, the procedure of the working group should be explained in detail. In addition, it is important that group members work together and that no one acts as a "leader", giving instructions or trying to express themselves at the expense of others. Everyone in the group should be given an equal opportunity.

The reason for using questions as a teaching method is to maximize audience activity. Considering the diverse experiences of students, it is very interesting for students and teachers in the learning process.

Table 3.6 describes the different questions.

Typology of questions	
Closed questions	Requires simple answers such as "yes" or "no" or a statement confirming the comment. These types of questions beg other questions.
Presumptive questions	Usually this includes part of the answer to closed questions. For example, "What kind of car do you have?" In this, the applicant also indicates that he owns a car
Leading questions	Usually these are negative presumptive questions.

	where the questioner expects a definite answer. Such a question is asked depending on the relationship with the questioner.
Regular questions	These are closely related questions. Such questions can cause problems for the answerer, in which only one part, usually the end, is answered without remembering all the parts of the question.
Random questions	In random questions, the listener forgets what is being said
Organic questions	It can cause a different reaction, cause a person to have a negative or emotional reaction. If there is no emotional reaction, it can be emotional but depressing.
Hypothetical questions	It is usually asked to test the respondent's ability to solve a problem. These types of questions allow you to test your ability and knowledge, but because they are hypothetical, they can generate the same hypothetical answers.
Open questions	It usually begins with the words what, how, who, where and when. They are usually used to tie up a discussion.
Test questions	Open-ended questions can be elaborated or explained in the development of answers that information has already been given
Checking mutual understanding	The question option is the content of another person's answer to a question asked by one person to make sure the opinion is correct.
Reflection	The main purpose is to encourage the respondent to provide more information without asking a direct question.

Discussions are often triggered by issues or problems discovered during the workgroup learning process. The discussion can be based on the results of the group, different experiences of the group members or reports.

• enhancing students' analytical skills for educational purposes may or may not be relevant to the description of case data. In addition, it is necessary to choose the right one from the available information when creating a real situation.

Role playing is a type of example as a tool or teaching method. The peculiarity of the role-playing game is that, in the example, the material described on paper is often replaced by a "game", in which each role is performed by an audience or a small group of students. So a real life

situation or problem is played by several students and based on their opinion the problem can be solved.

The developed game should be as close as possible to real life, but at the same time it should not be too difficult for students. If you're making a role-playing game based on a specific situation that's easily recognizable, then you should consider whether it's more of a problem than a benefit.

At the end of the role play, feedback should be organized. You can use the following tips to get the information you need:

1. Allow the "actors" to discuss feelings and thoughts during the play.
2. Ask the observers to ask questions about the "actors" positions, assumptions, etc.
3. Ask the observers to share their comments about the 'action of the scene'.
4. Ask the observers to discuss with the actors the most important aspects of the play elements.

5. Focus on aspects important to student learning.

Demonstration (telling - showing - performing - analyzing) is a simple educational method that allows you to form new skills. As the name suggests, the teacher should first give an explanation, then be supported by a demonstration. The learner is given the opportunity to complete the task under supervision, if necessary with the help of the teacher. At the end of the exercise, the students and the teacher together analyze its performance. We describe the various stages of implementation of this method.

"Telling." The best opportunities should be provided for students to understand and learn relevant skills. The following considerations are taken into account (Table 3.7):

Table 3.7

Makes sense	You must follow exactly the order in which you perform the actions on the explanation. Any other order may cause confusion.
sequence	Break the process into individual blocks that are easy for learners to learn. Otherwise, the student will be "loaded".
Divide into blocks	Give the reader only the information that is relevant to him.
	The proposed process should also be justified. Adult listeners should understand each.
Accuracy and completeness	Contains information about students.
	Find a place for the learner.

Appropriateness to the situation	Show the student that you think the assignment is necessary. This usually has a motivational effect
Finding the right place	It should not be assumed that the student has basic knowledge and skills related to professional skills.
"Display". You need it for a good show.	
Availability	Everyone in the audience should be able to follow
Authenticity	Use real materials and equipment. It is reliable enough.
Block	The show is divided into separate blocks. If possible, you should only use identical blocks.
Temp	Find the right tempo. They will give everyone a chance for your demonstration.
Discussion	Demonstrate what you are doing with verbal explanations

"Performance". The teacher should help and monitor the completion of the task by the students. The following should be taken into account:

- do not interfere unless necessary;
- be ready to help if the listener needs help.

"Analysis". Until then, the exercise is not considered complete, until the teacher analyzes the work and comments are not given. For this:

- provide feedback at each stage, each student has completed their task. Particular attention should be paid to minute or important things;
- don't claim if there is only one solution, this situation can be taken as a claim that "you are completely wrong". The student himself can understand everything and draw the necessary conclusions;
- discuss the applicability of the results if necessary.

"Visit the facility". A planned and organized visit to a business, organization or other external facility. The visit must be official only, not a casual excursion, and must be planned with clearly defined and recorded educational objectives in relation to the facility outside the academic classroom. Based on the results of the visits, a report should be prepared and discussed. Carefully planned and organized site visits and hands-on demonstrations take a lot of time. All organizational issues should be agreed in advance with the selected enterprises as possible objects of the

visit. In addition, it is necessary to plan and organize the visit, other matters related to transportation for the audience, such as gathering information, as well as preparing documents for the visit reports.

All technological tools used in the educational process correspond to educational goals developed on the basis of the most promising innovative trends within the framework of the dual system of training vocational education specialists.

A technological map for teaching students to create a software product in an educational institution

Stages time	Activity content	
	Teacher	Future engineer-student
Stage 1	1.1. The topic, its purpose, the expected results of the training session will be announced	1.1. Listens and records
Enter	2.1. Students who complete the assignments for homework are evaluated. 2.2. The teacher explains using visual materials. - Briefly explains the topic; - Starts the programming language; - Teaches how to create a software product; 2.3. Students are emphasized to focus on the basic concepts of the subject and to focus on the introduction of program codes.	2.1. Listens and records 2.2. An algorithm for the development of the training manual electronic program will be created 2.3. Based on the developed algorithm, the program codes are entered and the design is formed
(10 min.)	3.1. Completes the topic and draws students' attention to the main issue. 3.2. Stimulates actively participating students. The task of using the created software product, identifying existing defects and testing it is given. Active students are evaluated. Homework is given.	3.1. He listens, clarifies his thoughts. 3.2. Writes down the assignment.

Technological map on the use of the possibility of programming language in the development of professional preparation of the employees of the production enterprise

Stages time	Activity content	
	Teacher	Engineer-employee
Stage 1 Introduction (10 min.)	1.1. The topic, its purpose, the expected results of the training session will be announced	1.1. Listens and records
Stage 2. Main (60 min.)	2.1. The visual capabilities of the programming language are explained 2.2. The algorithmic sequence of creating a software product is explained - Briefly explains the topic; - Launches the software product; - The possibilities of automation of technical processes with the help of software products are explained; 2.3. Employees are tasked with determining the capabilities and shortcomings of the automated system. 2.4. The software product that automates the system is compared with the non-automated system. 2.5. Asks employees for their opinions on the created software product.	2.1. Listens and records 2.2. Visualizes technical processes using programming language 2.3. Performs automated system testing and benchmarking 2.4. Expresses his opinion on the created software product
Stage 3 Final (10 min.)	3.1. Completes the topic. 3.2. Actively involved employees encourage. Employees are given the task of expanding the capabilities of the created software product. Active employees are evaluated. Additional tasks are given.	3.1. Listens and gives his opinion on the created software product 3.2. Writes down the assignment

The developed program is used to teach students and listeners about the subject of "World Education System" in higher education institutions, network centers for the retraining of managerial and pedagogic personnel and their qualification improvement, pre-school education training courses, vocational colleges or technical schools in the field of pedagogy, and non-state higher education institutions. can be used.

Teaching students how to develop an educational electronic program in the Visual C++ programming language served to form their

communicative competence, and training production workers to automate and visualize technological processes served to develop their professional competences such as design, construction and research. Only if the following interrelated: objective, substantive-process and analytical-resultative components work correctly, the goal set in the model of improving the professional preparation of students in the dual education system proposed by us can be achieved (Fig. 3.10).

Social need: TTS and qualification requirements for professional training of vocational education specialists are provided.

Purpose: To improve professional training of vocational education specialists and production workers based on the dual system.

The content of the preparation of vocational education specialists for professional activity is carried out in the following sequence: a) Determination of skills and qualifications to be formed in professional activity; b) Development of content of studied materials, modeling of technological processes.

In the dual education system, preparation for professional activity is mainly carried out in the following 2 stages:

1. Preparation of students for professional activity in a higher educational institution.

Training future vocational education specialists in higher education institutions for professional activity - Modular teaching technologies; "Self-development", "Natural-reflexive", "Vitagen" educational technologies; It is done through programming technology in Visual C++.

2. Improvement of professional training of production employees in professional activities after vocational training - this mainly involves automation, visualization, modeling of technological processes and regular improvement of professional skills.

Evaluation criteria of professional training. Motivational - understanding of engineering activities, interest in professional activities; acquisition and practical application of cognitive-technical knowledge; reflexive - overcoming professional obstacles, being ready for changes.

Vocational training levels. High- can independently assess and develop his professional activity. Medium - able to conduct professional activities independently. Low - cannot independently carry out professional activities.

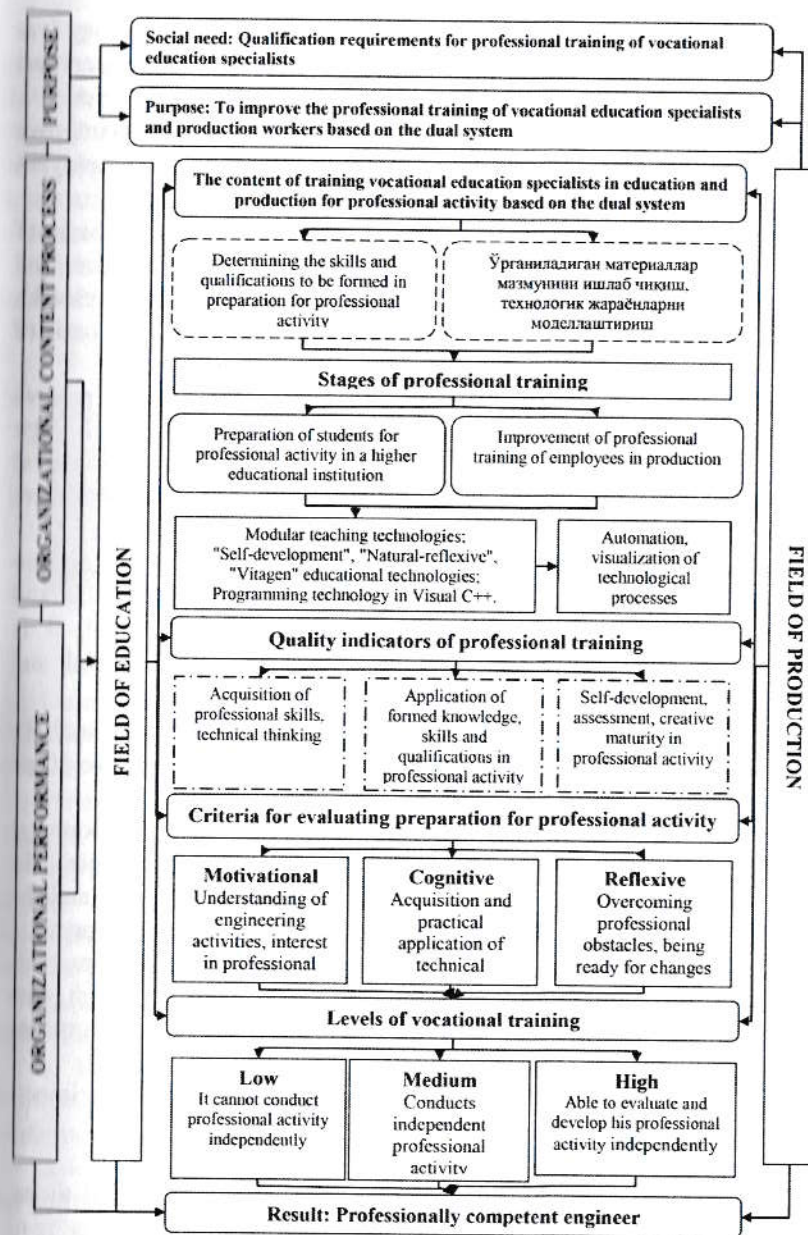


Figure 3.10. Model of improvement of vocational training in dual system.

In order to implement the recommended model, a methodology was developed to improve the professional preparation of future engineers and production workers in higher education institutions in the dual system.

The proposed model and the developed methodology serve to improve the preparation of students in higher education institutions and employees in production for professional activities based on the dual system.

Experiments in pedagogical research are organized on the basis of theoretical, practical, scientific, scientific and practical orientation and experimental descriptions. The most basic of pedagogical research methods is the scientific-pedagogical experiment, which forms the basis of the experimental-testing process in scientific-pedagogical research.

In the practical part of the experiment-test, it is not limited to passive observation and description of the features of the events, but through conscious intervention, the influence on the learner from a psychological point of view is carried out. At the same time, the results of the experiment are clearly recorded and controlled in the experiments.

In the practical part of the pedagogical experiment, the connection with the theory, the idea of the experiment, the implementation plan and the interpretation of the results are the first tasks. In general, it is determined that theory and practice are theoretically meaningful and systematically related.

Scientific and practical orientation of students to professional activity by making use of self-study and group training will have a positive effect on the result of the test.

The experimental part of the test is aimed at testing theoretical knowledge and is conducted under conditions with maximum control. In the course of the experiment, the main task is to isolate the learner and the stands used for the experiment and protect them from external influences.

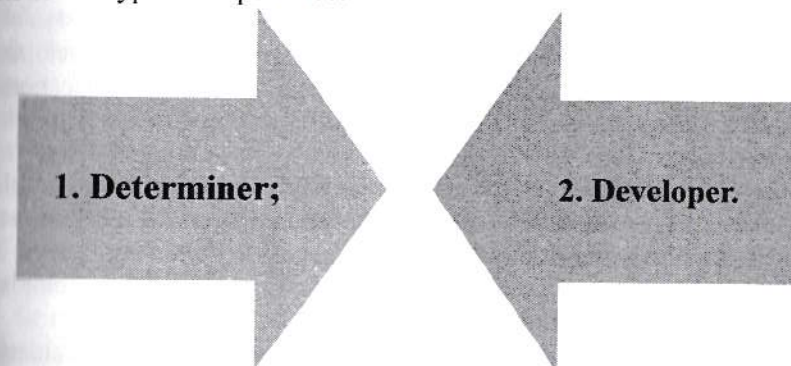
When evaluating the validity of the obtained results, experimental-creative approach, mathematical-statistical processing through the parameters of the results obtained during the experimental test process increases its validity and reliability.

Basically, three principles must be ensured during the experiment-testing process:

1. Controlling;
2. Evaluation of the result by repeating the experiment several times, eliminating random changes in individual test results due to non-systematic, random effects, etc.

The main characteristics and conditions of the pedagogical experiment-test have been studied in many works on the methodology of research pedagogy. In recent years, S. Anisimov, A. Naina [7], in their research on the theory of pedagogical experiment, have shown that the pedagogical experiment-test should be carried out in specific conditions in accordance with the scientifically determined experience of education or education [236, p.489].

It is desirable to implement the pedagogical experience-test on the basis of two types of experience:



Determining what types of professional activities the future vocational education specialists will be engaged in in the future, determining the main research materials used as initial data, determining the initial state of the phenomenon being studied in the recording of quantitative and qualitative changes.

In the development experience, the search and design of the specific aspects of the future specialist's professional activity, the level of development of his professional activity, or the methods and methods necessary for preparing him for professional activity.

Experimental work in pedagogical research usually includes the following stages:

1. In the process of experiment-testing, students will be guided through the most important subjects that will be necessary in their future professional activities;
2. Increasing the level of preparation for professional activity due to the joint action of students and teachers;
3. Finding and applying tools necessary for preparing students for professional activities;

4. Mathematical-statistical processing of experiment-test results and determination of effectiveness of education by mathematical-statistical method.

The stages of this process are carried out separately during the pilot test, but it is desirable to implement it in the initial conditions of the pilot test. The sequence of these steps is actually only presented in a logical sense. Some methodological approaches are required when choosing the methods used in teaching, and it is necessary to carry out mathematical and statistical calculations to determine the level of development of professional activity.

Developmental experience is multidisciplinary, aimed at developing the professional readiness of future specialists during the educational process. Its content is based on Yu.K. According to Babansky, scientificity differs as follows:

- the object produced in the experimental process is based on a self-existing idea. Development - preparation of learners for professional activity, after which it becomes the subject of study;
- the development of preparation for professional activity is complex and multidisciplinary, and several ideas are used at the same time;
- the test results are based on evaluation criteria and are evaluated from the point of view of analyzing the effectiveness of the training provider in improving the training of the learner for professional activity;
- finally, the pilot-test includes only engineering undergraduate education in technical higher education institutions and ensures the development of readiness for professional activity.

Development is a process of scientific research, as well as collaboration and communication with teachers, students, and industry. Today, by accepting the description of the objective trend of development of preparation for professional activity, the problems of technologyization of experimental work remain relevant. In turn, there are positive or negative opinions about the level of technological and creative approaches, including research, in pedagogical activities.

It is known that the creative process is deeply individual and unique. It does not conform to any laws and regulations, in the sense that it is not technological. In a sense, creativity is based on an algorithm. However, some researchers say that these approaches are considered creative and technological solutions.

The technological approach serves as a basis for solving standard problems in order to provide the most acceptable parameters and procedures of the pedagogue-researcher in certain situations.

A creative approach is used to solve problems in complex, new and typical problem situations. However, F. Klyuev, L. M. As stated by Kustov and others, approaches interact with each other in the overall process of scientific knowledge [144, p. 19-20].

From this point of view, identifying and interpreting the results of experimental work is considered a creative approach to implement the development of students' readiness for professional activity through algorithmic and logically proven steps and to clarify the assessment criteria. Taking this into account, we can talk about the technological description of the creative solution, that is, about the algorithmic methods of its implementation and verification.

It should also be noted that the technology of the most creative action is not only conventionally algorithmizing, but also ensuring the reliability and interdependence of research actions that open up the possibility of creative decision-making.

In order to implement a technological approach to experimentation, covering the entire process cycle is taken as four different stages.

The first stage is the organizing part of the experiment and includes a number of important practices: scientific justification of the results obtained by the researcher, development of hypotheses about the experiment, development of the theory of the experiment, substantiation of the validity of the experiment concept from a scientific point of view.

The second stage is the implementation of the experimental test, which involves the implementation of scientific ideas: preparation of experimental materials based on the initially accepted hypothesis, ensuring the authenticity of the pedagogical experiment, ensuring the reliability of the obtained results. This stage, in turn, can be divided into pre-experimental and post-experimental parts.

The third stage is the statement, in which to determine the quantitative and qualitative characteristics of all the obtained results, to perform mathematical-statistical calculations on the distribution of existing parameters and quantitative indicators, or to prove the hypothesis of the experiment is correct.

The fourth stage is interpretation, which involves objectively and critically analyzing the results obtained in the experimental test, essentially understanding the methods used in the experimental results.

From a scientific factological point of view, we present the content of the technological description of the organization of experimental and test works according to its stages and content in the following table (Table 4.1):

Table 4.1

№	Stages of experimental work	scientific and factual interpretation of the content of each stage of experimental work
1	Organizing	scientific justification of experimental results, development of hypotheses, development of theory, justification of authenticity
2	Implementation	preparation of experimental materials, ensuring authenticity and reliability
3	To make a statement	Determining the quantitative and qualitative characteristics of the results obtained in the experiment, performing mathematical and statistical calculations and proving that the hypothesis of the experiment is correct
4	Interpretation	objectively critical analysis of the results obtained in the experimental test, understanding the essence of the experimental results

The technological characteristics of experimental works include a logical description of the stages of research as an independent component. In any case, the variability of research efforts at these stages is not significant.

The research conducted in the pedagogical experimental work was carried out in three stages during the years 2017-2020. At each stage, different methods of research were used depending on the tasks to be solved.

The first stage of the experimental work was carried out in 2017-2018 and was dedicated to the study of local and foreign literature on the field, to the study of the methodology, theory and methodology of professional education, and at the same time to the analysis. At this stage, local and foreign experiences of training engineers and engineer-pedagogues were studied and summarized, theoretical and methodological bases of the research were determined; research hypothesis was formulated.

The main methods of research: general theoretical methods; surveillance; interviewing; study different programs and approaches; problems of training engineers-pedagogues for professional activity; generalization of research problems; development of tests, questionnaires,

various tickets and other similar research materials; conducting a pedagogical experiment.

At this stage, the main rules of the experiment were checked; Pedagogical conditions, informational and didactic tools ensuring the effectiveness of the implementation of theoretical and methodological rules in the practice of continuous vocational education were studied.

This stage was carried out in the following ways: analysis of the effectiveness of the process of training engineer-pedagogical personnel for professional activity; conducting surveys; test; holding laboratories and seminars; organization and holding of clubs, effective use of distance learning opportunities in independent education.

Data analysis, scientific-theoretical generalization and interpretation of experience and experimental work, as well as conceptual correction, preparation for professional activities based on models of the Dual system of professional education in higher education at the university.

Analysis of the results of pedagogical research made it possible to identify some models of personal and professional development of students. Conducted experimental work is important in improving students' readiness for professional activities, ensuring continuity of education and interdisciplinary integration, and in their future professional activities.

- In the cognitive type of relationship to professional activity, it is to arouse students' interest in professional activity, to teach new methods of activity that will enable them to solve professional problems. At the same time, to ensure active participation of students in discussing professional culture, professional problems, current issues of professional activity. In the cognitive type of interaction, students' communicative-management skills and positive changes in professional activities and personal relationships were more than -50%.

- In the pragmatic type of attitude towards engineering activities, students are characterized by the development of their professional culture using new technologies, in particular, modern information technologies. In students, pragmatics seem to be weak in their reflexive ability and almost do not grow during the educational process. They will be able to implement only professional projects and programs. Such students have insufficiently developed professional activity and personal responsibility. In the pragmatic type of interaction, the level of development of the engineering-pedagogical professional activity of students was 40%.

- Cognitive and pragmatic types of interaction lead to significant changes in students' professional activities, professional culture, and at the

same time self-conscious development. The main goal is to develop personal responsibility and creativity in students by using new methods of management, mastering new technologies, developing projects on professional problems. Dual education conducted during the experiment led to the development of professional competence of students.

The optimal condition for the development of professional competence, as shown in our research, is a combination of different attitudes, firstly, to professional activity, and secondly, to the level of professional activity and self-development of students.

In the process of experimental work, the following was found: the development of professional competence in students is associated with a decrease in the middle and low level and an increase in the high level. It was observed that the development of vocational training in students went from low to medium and from medium to high (with rare exceptions, a transition from the lowest to the highest level was observed). In the development of professional competence, this situation usually occurred in an evolutionary way.

In general, the pedagogical research confirmed all the assumptions, the hypotheses we put forward proved the effectiveness of the conceptual and didactic models of the development of the Dual system of engineering-pedagogical education in higher education institutions.

CONCLUSIONS

1. A comprehensive analysis of the scientific and pedagogical works dedicated to the study of the problems of professional education in the engineering fields of higher technical educational institutions shows that today there are still conflicts and trends determining its development. From this point of view, one of the most important problems is that today, in the traditional paradigm of professional education, professional training of engineers at all educational levels of its development (primary, secondary, higher) does not quantitatively correspond to the needs. One of the ways out of this conflict is to create a dual education system that provides a single methodological basis for professional training of vocational education specialists capable of ensuring a new quality of engineering-pedagogical professional education.

2. The theoretical-methodological foundations of the development of the dual system of professional education are as follows: parity of axiological-humanistic and technological values; ontological-basic system of personal and professional competencies; system of technological-social and professional relations. These principles make it possible to achieve the unity of the dual system of training production workers and students for professional activity, to form a responsible, competent and creative attitude to professional activity.

3. The conceptual model reflecting the functional goals and principles of training of production workers and students for professional activities based on the dual system, includes strategic and tactical goals and ideas, and brings professional education to a new level. Conceptual model allows to identify system descriptions and connections within the system, as well as conflicts, the solution of which ensures optimal development of the system as a whole.

4. The structure of training of production workers and students in the dual system of engineering-pedagogical professional education, in accordance with the main conceptual and theoretical foundations that ensure its unity, includes three main levels of functional interdependence: axiological (parity of humanistic and technological values), ontological (basic personal and system of professional qualifications), technological (system of social and professional relations).

5. During the research, the necessary conditions for the development of the dual system of professional education were determined. The main ones are: a new approach to the training of specialists; building a modular

content of training; technological organization of building social and professional relations in the educational process; using employees and students in a methodical aspect, allows to increase their readiness for professional activity. The main importance of these didactic conditions is that they allow the transition of the educational process from the knowledge paradigm of education to systematic activity.

6. A comprehensive analysis of scientific pedagogical studies dedicated to the study of professional education shows that this special field of professional education, in its traditional development paradigm, does not satisfy the needs of the field of professional training of technical personnel in the country, either in terms of quantity or quality. From this point of view, the following problems stand out: the need to create a single continuous professional education system that combines various forms of professional training of an engineer on a single methodological basis; from the training process consisting of technical-technological guidance, which is a priority in the training of engineering personnel today, to modern humanistic production and personal development of learners according to the requirements of society, etc.

7. Another important direction of the development of professional education from a structural and organizational point of view is the problem of training professional education personnel for higher engineering and technical educational institutions. The need for this is not only that the lack of such preparation is an obstacle to bringing the country's higher education to a qualitatively new level related to the introduction of new educational technologies, new forms and methods of organizing the educational process, but also that in the conditions of continuous technical and technological complexity, the quality of higher education is affected by socio-working is explained by the increase in output requirements.

8. Among the socio-pedagogical factors that directly and decisively influence the development of professional education today, the following can be included:

- increasing attention to education in modern life, which objectively requires replacing the paradigm of "lifelong education" with a new paradigm called "lifelong education";
- it is the need to overcome the modern crisis situations in human society and nature on our planet, caused by man-made civilization.
- the change of social requirements for a modern specialist, that is, the need for him to have certain social and professional qualities as a person, on the one hand, it provides him with success, speed, flexibility, on the

other hand, social protection in the labor market and professional sphere, on the other hand - both the individual and allows clarifying educational strategies in the direction of harmonious interrelationship of society's interests.

9. The analysis of the works of domestic and foreign researchers shows that today in the arsenal of pedagogy, a large stock of various didactic tools has been collected, which provides the possibility of appropriate integration depending on their selection and specificity from specific educational goals. This allowed us to distinguish didactic conditions on the basis of an integrative-complex approach, on the one hand, the development of educational theory corresponds to innovative trends, and on the other hand, it ensured the effectiveness of the practical application of the developed conceptual model of the dual system of professional education in higher education institutions.

10. The objective condition of the modern organization of the educational process is its technologicalization, the selection of pedagogical technologies based on its didactic conditions has become an important task. On the basis of the formation of principles and ideas of humanitarian pedagogy, as well as the organization of technological education, the main attention was paid to technology, which covers the maximum number of systematic components of the educational process. Self-development technology, natural-reflexive technology, vitagen technology were used in this.

11. Based on the analysis and understanding of the problems, today's professional education theoretically and methodologically supports the content of personnel training in the dual system of professional education using the development of local and foreign scientists and the systematic approach developed by us.

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MIRZARAKHMONOVA SHAKHNOZA MIRZAAHMADOVNA

**PEDAGOGIKAL ANALYTICAL BASIS OF
VOCATIONAL ORIENTATION OF
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EDUCATION**

MONOGRAPH

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