

“METHODODOLOGY OF USING INNOVATIVE TECHNOLOGIES IN TECHNICAL INSTITUTIONS”

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ABSTRACT:

This article presents opportunities for teaching subject-based disciplines based on innovative technologies, specifics, definitions of the concept of "innovation" in the education process, which enriches the professional competence of teachers. In turn, the effect of youth on learning activities is reflected. Enrichment, in turn, influences young people's learning activities. In technical higher education, students are becoming researchers and implementers of new scientific ideas when they are given the opportunity to use the subject of innovative technologies. Innovative approaches to life, work, and professions are formed and sources, tasks and problems, analysis of learning conditions, setting learning objectives, selection of innovative educational technologies and active methods, preparation of teaching and didactic materials and materials, theoretical and practical training, organization of theoretical and practical training skills assessment, organization and conduct of independent work.

Keywords:

specialty disciplines, innovative technologies, learning opportunities, features, form of teaching, purpose, didactic means, model, evaluation.

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INTRODUCTION

Social and economic reforms in the country are focused on training highly qualified, creative and independent decision-makers, who are well versed in technology and innovation.

The main objectives of the Ministry of Innovation Development are to promote innovation in the education system, as defined in the Development Strategy of the Republic of Uzbekistan, "Promotion of research and innovation, creating effective mechanisms for implementing scientific and innovation achievements". demonstrates the need to organize innovative activities.

It is important to ensure that the educational process is fully compliant with international standards and the development of new pedagogical technologies in the training of qualified personnel on a social order and the

introduction of innovations into practice. In particular, one of the most important tasks in preparing students for the profession is to use modern teaching methods and scientific achievements, to integrate them into the learning process and to apply the best practices of developed countries into the educational process. The wide introduction of innovative educational technologies in the educational process plays an important role in the teaching of professional subjects.

The development of an individual's learning skills is firstly accomplished through a form of learning, methods and tools; Therefore, the activation of students' learning and learning in the teaching and learning process is a result of their teacher activity.

In today's education, we introduce definitions, origins and applications of concepts such as "Innovation", "Innovation" and

"Innovation process", as well as the analysis of research and sources in this area.

From the point of view of a systematic and functional approach to the problems of pedagogical innovations at the theoretical and methodological level in the republic and CIS countries are reflected in research by scientists such as N.N.Azizkhodjaeva, L.Ya.Kosals, N.I. Lapin, M.V.Clarin, M.S. Burgin, N.R.Yusufbekova.

In foreign countries, studies by Yu. Vuglide and others on the theory of innovation in education are more popular.

The general concept of "innovation" is defined as a purposeful change in the functioning of the system, but in the broadest sense there can be qualitative or quantitative changes in the various sectors and elements of the system. In particular, N.I. Lapin describes innovation or innovation as a complex process of creating, disseminating and using a new practical tool (innovation) for new or already known social needs; at the same time, it is the process of incorporating this innovation into the social and material spheres in which its life cycle is carried out.

According to pedagogical scientist N.Jumaniyazova, innovation is a definite end of a result of technology, forms and methods in a given area of production, a new approach to problem solving, or the use of new technological processes can lead to greater success.

The dictionary Psychology describes the following: "Innovation" is the introduction of innovations, that is, the creation and implementation of various innovations that bring about significant changes in social practice.

From the foregoing, innovation is seen as the content and implementation of innovation, and the innovation introduced is just the development of news. From this we conclude that innovation or education innovation is the core of innovation.

Many scholars believe that innovation is the result of creative activity, and the process of introducing innovation into a particular social space is, in essence, creative because it aims to

change that. "Innovation is not just about introducing it, it involves implementing certain content in situations that are not content and creating new content" [10].

From the point of view of creation or application of innovations in relation to one or another part of the pedagogical process:

- educational support (curriculum changes, curricula, introduction of new courses, creation of integrated courses, etc.);
- educational technologies (technological innovations);
- organization of educational process;
- management system of educational institution;
- creative orientation of the pedagogical community, in particular teachers
- in the structure of interaction of participants of the pedagogical process;
- to organize extracurricular activities of young people with disabilities;
- the relationship of the educational institution with the microsocium;
- wide development of secondary special and professional education institutions;
- research activities of young people with disabilities, etc.

It promotes the updating and refinement of the learning content on the basis of innovative new scientific ideas and concepts. This enriches the professional competence of teachers, which in turn affects the learning activities of young people with. Innovative approaches to education are continuously and independently implemented.

In technical universities, students are increasingly becoming researchers and implementers of new scientific ideas, using innovative technologies to form innovative approaches to life, work, and professions. Consequently, innovative activities play an important role in the process of introducing innovative technologies in the learning process.

Demonstrates student innovation based on the above components. Innovation enriches the student's inner world, encourages creative opportunities and critical analysis of their

activities, making optimal decisions and seeking new ideas and technologies.

It is important to intensify the teaching of special disciplines in technical higher education institutions, and at the first stage of the analysis it is necessary to analyze the students' initial knowledge, ability to work independently, and the ability to apply theoretical knowledge in practice. Using active learning methods and innovative technologies in the teaching of special disciplines will allow the student to move from the "object of education" to the "subject of education", creating a creative atmosphere in the classes. This will increase student participation in the learning process. The teacher becomes the educational process consultant, not the supplier of knowledge, but the facilitation of the students to master the knowledge independently. Thus, it is important to properly organize the process of teaching specialized disciplines on the basis of active methods and innovative technologies to develop students' professional knowledge, skills and abilities.

We have developed a methodology for teaching special disciplines using active methods and innovative technologies based on scientific research and practical experience of teaching specialized disciplines in technical higher education institutions. According to this methodology, the process of training based on active methods and innovative technologies is carried out in the following steps.

RESEARCH OF NORMATIVE DOCUMENTS AND SOURCES IN SCIENCE

The analysis of the following normative documents is important for the proper organization of the process of teaching the subject, as well as the selection of innovative technologies, active methods, forms and tools:

The teacher must first examine the content, requirements and rules of a particular subject set out in the State Educational Standards.

The state educational standard defines the necessary and sufficient content and ultimate goals of junior specialist training, and

determines the quality of student workloads and standard quality control.

The main document for planning the educational process is the curriculum.

Curriculum is a normative document that defines the forms, curricula and volumes of study subjects, their distribution by the weeks and half of the curriculum, and ensures the interrelation of future professionals with the subject, vocational and general education.

In analyzing the curriculum, it is important to note that the level of skills that are being developed by future professionals will be clearly aligned with the subject matter and the study period. It should also take into account the depth, convenience and importance of the gradual study of each specialty.

The other disciplines in the curriculum should study the sequence and duration of teaching with a particular subject. The subject should then study the content and content of the syllabus.

If a teacher is preparing for the first time in a specific subject area, a subject must have an understanding of the subject area. Content of the industry can be obtained from various sources, industry and foreign literature, scientific and technical literature (scientific and technical journals, specialty articles, patents, etc.), instructions on the use of equipment and equipment.

By analyzing existing literature on science, a list of additional literature will be selected, with the help of new sources. Therefore, the latest news and science advances in the field of instruction in the curriculum topics should be included in the content of the study material.

TASKS AND PROBLEMS OF SCIENCE

At this stage, the teacher should thoroughly study and analyze the tasks and problems of the subject. It is important to clarify the role of specialty science in society and the future professional and the importance of using innovative technologies. The development and future development of the science-related

manufacturing sector should be studied. It should also be aware of the relevance and interdependence of science with other disciplines. Because at this time, special attention is paid to the continuity of subjects.

ANALYSIS OF LEARNING CONDITIONS

Conditions have an impact on the learning objectives and outcomes of the learning process. Preparation for theoretical and practical classes in the specialty disciplines should start with student analysis.

In student analysis, the teacher should be aware of the psychological capabilities of each student, the level of knowledge acquisition and learning, and the ability to work independently.

Requirements for organizational conditions include choosing a place of training, time and duration of training, and preparing for demonstration.

Analyzes the suitability of equipment and equipment, audiovisual means, training and learning in the field of science. It is necessary to create conditions for practical use at any time.

The teacher must have new academic and foreign literature and resources.

It is recommended to pay attention to:

- copying of important pages of educational literature, publications, magazines related to the subject;
- to study advanced pedagogical experience in teaching science;
- study the possibilities of providing e-learning resources;
- Preparation of additional training and didactic materials related to a specific topic;
- gathering latest science-related news from the Internet.

DEFINING LEARNING CONTENT AND OBJECTIVES

In determining the content of teaching in educational institutions, it is necessary to take into account State educational standards, the interrelationship between disciplines, the level of understanding of the student and the student's familiarity with this subject.

The content of the discipline is determined by:

- knowledge, skills and abilities that students must have in their specialty;
 - psychology of students and their ability to master
 - taking into account the interrelationship between other disciplines in the curriculum;
 - Simple and complex description of the content of specialty disciplines;
- depending on the logical sequence and duration of science education.

Learning objectives can be expressed in a single topic or lesson, with specific activities and innovative technologies. The pedagogical literature is divided into three types, namely, directive, general and specific learning objectives, depending on the scope of the learning objectives.

When teaching a subject, the learning objectives determine the knowledge, skills, and personal qualities that a student must achieve. The educational objectives of the discipline should be developed based on the types of activities, qualifications, skills and knowledge presented in the qualification requirements for the field of education.

The method of setting learning objectives in teaching specialized disciplines using innovative technologies is that the learning objectives are defined through visible and measurable results in student behavior. Criteria for achieving each learning goal should be developed to be able to measure, identify and evaluate learning objectives.

This means that once the content of the subject has been determined, it is necessary to achieve common goals. The general knowledge, skills and abilities that students will form should be clearly defined.

SELECTION OF INNOVATIVE EDUCATIONAL TECHNOLOGIES AND ACTIVE METHODS

There are more than 400 types of teaching methods in modern pedagogical practice. There are various approaches and methodologies to apply these teaching methods to the learning

process. But in today's modern educational environment, it requires the use of active methods to enhance students' active participation in the learning process. It is important to remember that the choice of an active method depends not only on the purpose of education but also on the content of the learning material.

In technical universities, it is important to choose teaching methods in the specialized disciplines, which help to activate student learning and practical activities. Targeted selection of active learning methods ensures that the learning objectives are met.

The purpose of any education is to develop students' knowledge, skills and abilities. Different teaching methods should be used in the learning process, when all aspects of the learning objectives are met. Therefore, the didactic task of a specific training exercise is the most important factor in choosing the method of education.

When choosing an active method, it is also important to consider its effectiveness. The analysis shows that students memorize 5-10% of the information when verbalizing the teaching material. Independent reading of educational literature allows to obtain 10-15% of information and 20-25% of information.

The selection of teaching methods was made according to the specific conditions and conditions of the training.

- Depending on their ability to master student age psychology.
- Depending on educational, educational and developmental goals.
- Depending on the nature of the subject and the requirements of the teaching methodology.
- Depending on the purpose and content of the training task.
- Depending on the time allocated for the training.
- Depending on the training materials provided by visual aids and techniques.
- Depending on the teacher's personality and training level.
- Depending on their ability to work independently and creatively.

- Depending on students' ability to work with e-learning resources, the Internet and other materials.

The following guidelines should also be taken into account when selecting educational methods based on the above criteria.

- Make a clear decision on whether the material will be mastered or independently mastered by the teacher;
- The choice of the method, considering the theoretical and practical training combined;
- Care should be taken to ensure the availability of training facilities;
- Determine student interest and active participation;
- The timing and range of control, evaluation and self-assessment of knowledge and skills should be clearly defined;
- Consideration should be given to the use of extra-curricular situations in view of the possibility that deviations from the learning process organized by a planned method can be followed by success.

Given the complexities and circumstances of the case, it is important to choose the right and purposeful teacher education discipline.

It is important to remember that the choice of an active method depends not only on the purpose of education but also on the content of the learning material.

We have used "Self-management", "Analog technology" and innovative technologies in the training of students in vocational training based on innovative approaches to the specialties.

In contrast to traditional technologies, "self-management technology" establishes a very high level of self-expression in the study of professional practices and represents the transition from knowledge transfer theory to self-management education. The organization of self-management education in technical disciplines in technical higher education institutions mainly relies on independent learning processes and educational activities, as well as its signs - activity orientation, self-management, active independent

movement, development of knowledge, skills and competence, effective didactic means. use.

The organization of the classroom process in self-management education requires a theoretical approach. It can be seen that this is one of the main defining functions of didactics as follows: "Reading, learning, teaching and training are the function of a continuous function of didactics".

In the technology of self-regulation, activity is achieved through action. This is why we need to envision student activity as a model of action when teaching specialty science. From a teacher's point of view, it is a learning activity

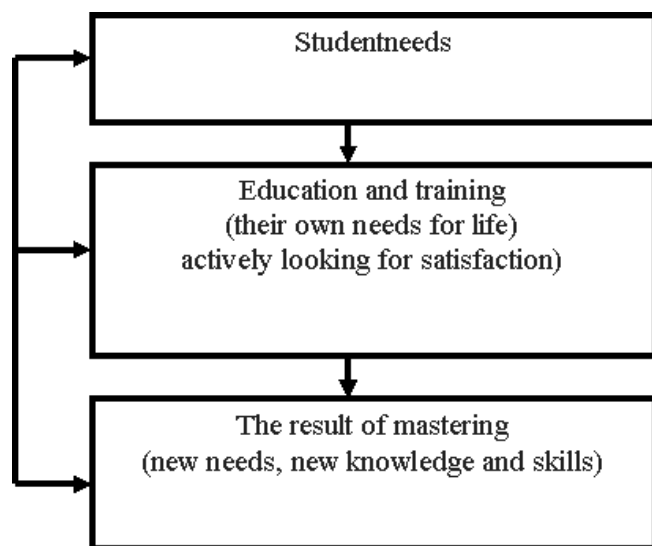


Figure 1. Feedback process in the learning process

Students in technical higher education institutions can be described as active developmental level of independent movement of all actions. If the teacher is working at a student's developmental level, this is a developmental stagnation, that is, the development of an individual may depend on the formulation of an operation or movement.

Activities and actions should therefore be taken into account, with a focus on the next development point. Adoption of didactic requirements by the specialty teacher is relevant to the learning objective. Increased levels of demand will lead to new levels of development and new developments in their development. A specialist science teacher has the task of directing,

correcting, and controlling movements. As the performance of the learning activities increases, the levels of action also increase. These are:

1. Technical higher education institutions have all the features that describe the formation of independent actions in the process of vocational training of students, which is the process of activity shown in Figure 1.

2. Students' independence in technical higher education institutions is formed through feedback and it is impossible to predict and predict them.

3. The task of a specialty subject teacher is to create the conditions for student self-organization. The process is self-directed.

The development of training methods based on the theory of "self-management" is important for the effective maintenance of professional activities and activities in the field of specialization.

The multi-faceted experience of a specialty science teacher suggests that there may be situations in which student development is not envisioned in the pedagogical process. In turn, we see them in more elaborate and thought-provoking actions towards student development and more importantly. In this context, it was found that the innovative technology of "Self-management" has the following effects applied in the teaching of specialty subjects:

1. In the vocational training of students in technical higher education, all the features of the formation of independent actions, active attitude towards life's needs, and the acquisition of new knowledge and skills.

2. Student independence is formed through feedback and it is impossible to predict and predict it.

3. The task of a specialty subject teacher is to create the conditions for student self-organization. The process is self-directed.

Technology of Analogies: Analogy [Greek: analogia] denotes uniformity or similarity, with certain differences in symbols at a time. The method of analogies is logical technology of

conclusion, which concludes on the uniformity or similarity of objects and phenomena.

The didactic goal of analog technology is to improve students' ability to work independently and creatively by solving various problems.

The methodological purpose of analogies technology is to move knowledge and skills from reliable, proven methods of action to new ones, that is, to apply analogous conclusions to solve problems.

The main sign and element of the technology of analogies is the conclusion on analogy. The conclusion is based on the analogy of the sample on two objects: A is similar to B. B has a feature b, which means that A is also b. Objects may be creatures, objects or phenomena, and similarities can be in features, structures, or functions. Conclusions on Analogies fall into reductive conclusions. They are always probable conclusions, are hypothetical, and require confirmation in practice.

Scope of application. Analogies are often used to illustrate technology. For example, this technology is used in mathematical exercises where students can find solutions for many other exercises. Often, analogy technology is used to initiate a new project that has not yet been explored. The comparison is made with a project that is familiar and completed under similar conditions.

The prerequisite for using this technology is the conscious perception of the problem.

Stages of implementation.

The method of analogies is divided into the following methodical steps:

The task or problem situation is represented by the subject or condition of the work that is difficult to open; you have to look for similar items or situations to find a solution.

2. Analyze the signs of unknown subjects or cases to find out whether they are identical to a particular subject or condition.

Synthesis of identical and differentiated characters between unknown subjects (case states) and particular subject or (state of affairs).

4. To draw conclusions about the similarity, the similarity and the consistency of one or more of the other essential features.

5. Issue specific points in the content of the character and confirm its validity in practice.

Preparation of teaching aids and materials

The use of visual aids in theoretical lessons such as textbooks, charts, drawings, illustrations, handouts, instructional materials and tasks, instruction manuals, equipment or equipment usage or laboratory rules for teaching disciplines using active methods. it is recommended to use the instructions.

Training materials and materials are divided into 6 groups.

1. Textual Visual Materials - textbooks, manuals, handouts, test and checklists.

2. Visual illustrations include photographs, sketches, drawings and schemes, symbols, drawings, symbols, diagrams and graphs, paintings, posters, slides.

3. Audio and sound equipment - video films, movies, dia-sound products, audio cassettes, CDs (CD - Rom).

4. Original items and tools used in the field of labor. These include equipment, devices, equipment, measuring instruments, raw materials and finished products.

5. Model tools include models, models, simulators.

6. Resources and tools of e-learning include electronic textbooks, e-books, electronic dictionaries, virtual stands, computers, videocassettes.

Didactic means should be selected in accordance with the learning objectives, specialty and learning methods. The teacher must be able to use and effectively use the didactic tools. It also needs to be able to address the disadvantages of using equipment, equipment and tools.

When designing and selecting teaching and didactic materials for a particular subject, the teacher should take into account the technical specifications that exist or develop them.

- sketches for materials, slides, whiteboards

- tasks, tests
- evaluation criteria, checklist
- calendar plans and other documents

If educational, didactic materials and tools are available, it is important to analyze their relevance to the learning objectives and content of the subject.

At this stage, a list of teaching materials and tools used in the specialty should be developed, guidelines and guidelines for their use. When

designing and preparing teaching materials, special attention should be paid to e-learning.

Organization of theoretical and practical training

In the following scheme, the model of technology of special science education is developed.

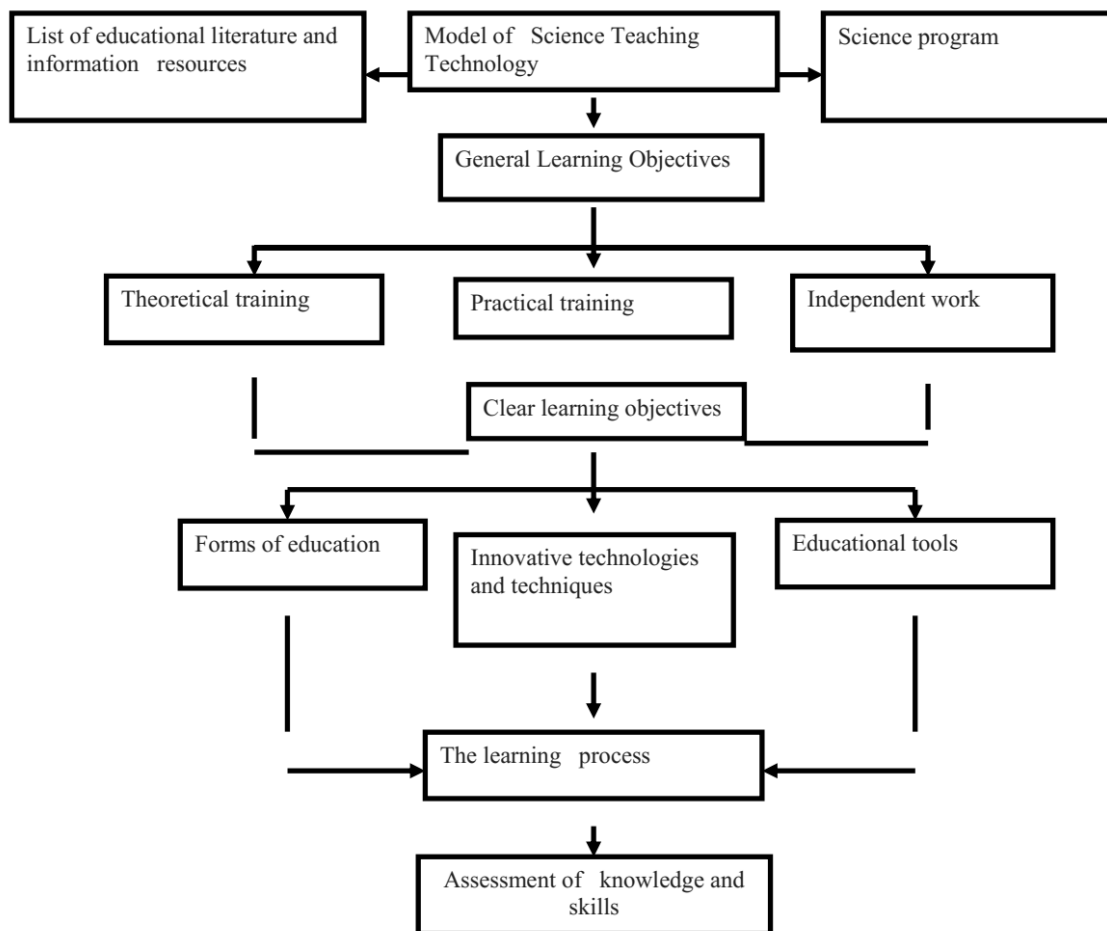


Figure 2. Model of teaching technology

In the development of science teaching technology, each theoretical, practical (laboratory) and independent work, experience and content defined in the curriculum are clarified. For each lesson, specific educational, educational and developmental learning objectives were developed.

As part of our research, we experimented with active methods of developing independent and free-thinking skills, the basis of which is independent work, and then educational tools and materials.

It is recommended to create a movement algorithm with the help of a manual for students to develop their knowledge of the specialty independently.

Criteria and methods for assessing knowledge and skills will be developed for each session

Practical classes in special disciplines in technical higher education institutions are mainly conducted in practice rooms and workshops. In the workshops students are taught the stages of practical activities in the specialty.

There are both direct and indirect forms of practical training. Presentations and demonstrations are used in direct-controlled workshops. These include slides, posters, video footage and layout models and real examples. Indirect practical exercises are performed in real processes and stages of work on objects. Practical training is expected to produce real results.

Evaluation of theoretical knowledge and practical skills

Assessment of knowledge and skills is important in teaching specialized disciplines using active methods.

Assessment means comparing the achievement of academic learning objectives with the scale of results.

Assessment of students' knowledge and skills should be regularly conducted in the course of teaching specialized disciplines using active

methods. Then we had the opportunity to conclude about how active methods work.

It is important to consider the following when assessing knowledge and skills:

- regular and current controls should be regularly conducted to guide learning objectives;
- be based on the pedagogical and psychological principles and the evaluation standard.
- familiarize the student with the evaluation criteria and evaluation criteria before the evaluation.
- the results of knowledge and skills assessment should be reported to students as soon as possible.
- the reasons for the low student achievement should be discussed.
- students with low results should be provided with additional education opportunities.

Regular assessment of practical skills of students is one of the main features of special subject teaching. At the end of practical exercises, tests should always be conducted. Testing is a type of practical activity, which is a qualitative assessment of its results. The test is evaluated and evaluated when a student completes a task in a timely manner. At the same time, the student's skills are determined.

Testing should be based on the activities related to the specialty and should be evaluated based on the criteria established at the end of the course.

Organization and conduct of independent work

At the end of a course on theoretical and practical lessons in the teaching of special disciplines using active methods, independent work assignments should be given.

The following organizational forms of independent work of students can be used in teaching of special disciplines in technical higher educational institutions on the basis of active methods:

- to ask questions aimed at further development of the theoretical knowledge in the field of

independent development of topics from educational literature or other sources;

- self-study assignments using e-learning resources;
- performing tasks requiring calculations based on specific learning objectives;
- initial preparation for laboratory or practical training;
- assignments for the production of models, samples, products independently;
- preparation of abstracts on the given topic;
- tasks aimed at solving problematic situations;
- Participation in research work in the field of science.

It is advisable to pay attention to a number of aspects, such as the ability of the student to work independently in the field of specialties, such as the psychological capabilities and mental abilities of the student, the ability to think independently and to work is done.

Evaluation Of Learning Outcomes

At the end of the learning process, learning outcomes are assessed. Assessment of learning outcomes is carried out in two stages:

1. Research and analysis of the results achieved in interviews, data collection, monitoring, and learning objectives.
2. To analyze and analyze the final assessments of the learning process for each student, group of students, to summarize the results and to make decisions on the existing shortcomings and problems.

Diagnostic assessment of educational process results is good. Diagnostic testing is carried out by training stages It also informs the student of the disadvantages he may have made in mastering. Deficiencies identified on the basis of diagnostic tests will be eliminated and active teaching methods improved. Evaluation results will be used to update curriculum and programs.

CONCLUSION

In conclusion, the effective use of pedagogical innovative technologies in the teaching of specialties in higher education

institutions depends on the validity of traditional approaches, principles, methods and forms of pedagogical activity. In our opinion, pedagogical innovation in technical universities is not about rejecting the old, but rather its development and transformation that allows students to become prospective professionals. In order to build the innovative potential of higher education institutions, it is necessary to gradually introduce them to innovative activities, to search for innovative ideas on their own, to provide innovative contests and projects with practical developments, and to find non-standard solutions.

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