



Operational Efficiency Technologies Subjects of the Pedagogical Process Through the Application of the Efficiency Formula

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Abstract

The article is devoted to topical issues on technology to ensure the effectiveness of the activities of subjects of the pedagogical process by applying the formula for effectiveness. The forms and features of pedagogical processes in universities are highlighted and described. The idea is substantiated that the "formula of efficiency" developed by the authors allows to achieve high activity and efficiency of students' activity in pedagogical processes.

Keywords: *Efficiency of The Subjects; Pedagogical Processes; Forms of Pedagogical Processes; Formula of Efficiency; Observation; Coordination of the Activities of Subjects; Objective Assessment; Diagnosis based on Results; Improvement of Tasks and Strategies*

Introduction

The problem of ensuring the effectiveness of the activities of the subjects of the pedagogical process is of particular importance in the training of future specialists. One of the methods for solving this problem is the development of technologies to ensure high competence and professional skills of teacher-managers to improve the quality of training of future qualified specialists.

According to A.V. Serikov's efficiency is one of the properties of efficiency: "... efficiency is a complex indicator of the process, which is characterized by such properties as efficiency, resource intensity and efficiency. At the same time, efficiency should be understood as the ability of the process to give the desired result. "

T. N Kanashevich believes that the identification of the effectiveness of educational activities is directly related to the conduct of pedagogical diagnostic procedures. Diagnostics in training is understood as a process that allows to identify the degree of achievement of the set goals, i.e. compliance of the results of educational activities with the requirements established by regulatory documents (educational standard). This means that the implementation of diagnostics involves the analysis of data obtained in the course of the necessary control measures (Kanashevich: 2019).

From the above, we can conclude that efficiency is the implementation of educational goals through the use of motivating and influencing mechanisms aimed at achieving the set goal within the

pedagogical process. The concept of the effectiveness of the educational activity of students lies in the achievement of the set goals through the degree of solutions to educational tasks and the implementation of educational actions of each pedagogical process.

The Main Findings and Results

To ensure the effectiveness of pedagogical processes and support the active cognitive activity of students in the classroom and outside of educational activities, one should take into account the relationship and interdependence of all forms of pedagogical processes. The effectiveness of the activities of the subjects of the pedagogical process depends on the correct selection of technologies, methods, means that will help to correctly calculate the algorithm of any pedagogical process.

The pedagogical process is an integral educational process in the unity and interconnection of education and training, characterized by joint activities, cooperation and co-creation of its subjects, contributing to the most complete development and self-realization of the student's personality. A process that realizes the goals of education and upbringing in the conditions of the pedagogical system, in which educators and students interact in an organized manner (Pedagogical dictionary: 2005).

According to S. T. Turgunov, the pedagogical process should be understood as the educational environment in interpersonal relations, consisting of a set of factors that directly or indirectly (educational relations) affect the formation and development of knowledge, skills, skills, personal qualities, worldview, behavior and enrichment experience (Turgunov: 2009).

The purpose of the lectures is to transfer the systematized foundations of scientific knowledge in the discipline and to communicate new theoretical information. At lectures, the teacher must stimulate the active cognitive activity of students and contribute to the formation of creative potential. During lectures, the teacher-manager, in order to ensure the effectiveness of the educational activities of students, must constantly observe the interests and inclinations of the students, analyze, coordinate and diagnose their activity in the classroom. The use of the demonstration approach at the beginning makes it possible to motivate students in educational and professional activities. For example, through the demonstration of instructional videos, you can convey to students the importance of studying the discipline and convince students that classes provide new knowledge and expand their erudition. This, in turn, will give students the opportunity to enjoy learning, reveal their abilities and in the future get a promising well-paid job, gain recognition from others, and the confidence that it is he who will become a good specialist in future professional activities. Also, students should be given a methodological guide for organizing their own educational activities and directions for independent work of students (coordination of activities) (Turgunov: 2021).

Practical lessons are aimed at applying in practice the theoretical knowledge gained and the formation of professional skills and abilities. It is in practical lessons that the student must independently discover the possibility of the practical use of his knowledge, and the teacher must observe, analyze, coordinate, apply strategic approaches by improving the learning objectives and objectively assess the quality of mastering lecture and self-educational material according to the degree of mastering knowledge and applying skills and abilities.

Laboratory studies are also one of the main types of training sessions. These classes help to adapt professionally, instill interest in expanding knowledge and horizons, proactive activities, self-education and helps to feel the opportunity to use their skills. Master classes are held in a light, friendly atmosphere with a positive attitude in order to successfully activate students for continuous study and self-study. The need to conduct master classes lies in the fact that in a short period of time students can master knowledge and skills, and the teacher can show how he copes with the work and the set educational and educational tasks, solving them in the most optimal way and applying his own author's methods and techniques. ... At

master classes, there is an exchange of experience, mutual learning, mutual development and mutual improvement, in which the subjects of pedagogical processes form their own style of professional activity.

Excursions are an entertaining and educational process where students feel more free and relaxed. The function of study tours is to identify the relevance of the material being studied, the importance and relationship of theory with everyday life (i.e., scientific and practical significance), as well as real opportunities to use their knowledge and skills, and improve skills. Before conducting the excursion, the teacher should give a briefing for the students, which outlines the main tasks and the application of the required skills. Excursions have a certain significance for the research activities of students.

The most important factor for the development of scientific potential is the creation of favorable conditions for the research activities of students, the promotion and maintenance of interest in it in the research process, the development of scientific and creative abilities and creative new ideas, the realistic and achievable goals and objectives, as well as the correct organization of research activities, allowing to achieve results in research work. Therefore, to ensure effective scientific activity, the supervisor should select the research problem based on the student's thematic interest in order to create a productive working mood.

Educational relationships are a type of relationship between people that arises in educational interaction, aimed at spiritual, moral, etc. development and improvement (Pedagogical dictionary: 2005).

According to V.S. Bezrukova, educational relations are a kind of relations between people, aimed at developing a person through upbringing, education, and training. Educational relationships arise only where the development of the personality in its physical, mental and spiritual unity is ensured.

Educational relationships are always relationships between people aimed at the development of a person as a person, i.e. on the development of his self-education, self-education, self-study. They can include a wide variety of means - technology, art, nature, etc. On the basis of this, such types of educational relations as man-man, man-book-man, man-technology-man, man-art-man, man-nature-man, etc. are distinguished. (Bezrukova: 1996).

We believe that educational relationships are relationships that manifest themselves in various forms between the subjects of the pedagogical process and serve the development of a person's personality, form the skills of self-education, self-learning and self-development. With the help of educational relations, there is an exchange and mastering of experience between the subjects of education. It is in the process of interaction of educational relations that a person's attitude to the world around him, to people and to himself, is formed. A person directly interacting with another person also includes relations with science, technology, art and nature.

In the pedagogical process, the form of relationship "person-person" is characterized as "teacher-student", in which there is direct communication and interaction between the teacher and his students. Today, in pedagogical processes, the most important factor is the equal participation of students in the learning process on an equal basis with the teacher. In contrast to the traditional pedagogical model of teaching subject-object relations, where the dominant place is occupied by the teacher - "subject", in subject-subject relations the student - "subject" takes an active position and affects the effectiveness of the educational process. As a result, the teacher's task is to create a supportive learning environment in order to achieve high results and assist students in finding information and coordinating knowledge, skills and abilities.

In addition to the correct organization of the pedagogical process, the teacher should always be a model for imitation, because a teacher directly influencing students is an example of culture, professional skill. An example is the fact that a teacher constantly participates in international scientific seminars and

conferences, publishes scientific articles, constantly tells students about his scientific activities and thereby arouses students' interest in science.

"Man-book-man" This form of educational relations is formed throughout a person's life. With the accumulation of life experience, a person himself becomes his guide and creates his own concept of "man-book". So, an indicator of the teacher's inner world is his self-realization and self-development. This is mainly knowledge, scientific and creative work, which are reflected in his social status, position in the team and influence on the activities of students. The creative activity of the teacher and the creation of a creative atmosphere in the classroom, as well as the introduction of innovations in the educational process, have a positive effect on the effectiveness of students' activities. The type of educational relationship "person-book-person" arises when a teacher, developing and using modern textbooks and teaching materials, shows his awareness of scientific trends.

Through the relationship "man-nature-man", the role of nature in human life and its relationship to the environment are manifested. Recently, people have developed a consumerist attitude towards nature, which has led to an environmental threat on a global scale. Therefore, a conscious respect for nature and the manifestation of love for it must begin with oneself. Thus, the teacher, entering into a relationship with nature, can influence the consciousness of students, showing his connection with nature, conducting educational conversations, adhere to principles such as personally participating in subbotniks, planting flower beds and trees, throwing out garbage in the proper place, having flowers in your office and take care of them. The teacher must continuously instill a sense of love for nature in students and instill a culture of environmental behavior through a responsible and respectful attitude towards objects of nature.

"Man-Art-Man". Art has always occupied a special place in the formation and development of a person's personality, his spiritual formation and inner world. The manifestation of interest in art fosters and forms the aesthetic taste of teachers and students and influences the educational process. It is creative activity in the pedagogical process that is one of the important components of the all-round development of the individual, forms feelings, ideas, moral and life principles.

"Man-technology-man". At a new stage in the development of society, technical teaching aids play an important role, the purpose of which is to improve the educational process and increase the professional competence of teachers. In this regard, the need for teachers and students to use scientific and technical means has increased, which significantly expands and simplifies the learning process, contributes to a more specific search and conscious perception of information in educational material. The widespread use of scientific and technical means forms independence in learning, promotes information activity and media literacy. Mass use of multimedia educational resources, designed in relation to the requirements of the pedagogical model, greatly facilitates the organization and management of pedagogical processes, contributing to increasing the efficiency of students' activities.

Thus, these types of educational relations lay the foundation of spirituality and culture, carry methodological functions and regulate relations between the subjects of the pedagogical process. Therefore, for the training and development of the individual, it is necessary to apply an integrated approach aimed at the development and formation of the cognitive activity of subjects, in which a scientific picture of the world is formed in the field of art, environmental culture, technical means, etc.

In addition to the aspects of educational relations indicated above, a number of features characteristic of the effective activity of the subjects of the pedagogical process should be named. Among them:

- The teacher must have theoretical knowledge, abilities, skills, professional experience necessary for productive activities;

- The teacher acts as a subject of integration as an organizer, coordinator and participant in the scientific and educational environment;
- Formation of students' motivation for the learning process;
- The conviction of students in the need to acquire knowledge and achieve learning goals;
- Bringing to the attention of students the criteria for the effectiveness of their activities and objective assessment;
- The result of the effectiveness of the pedagogical process is the activity of students in the pedagogical processes;
- The activity of teachers and students is considered as an integrative system;
- The development and implementation of mechanisms for organizing and managing pedagogical processes is important.

Of no small importance in the effective activity of students is the timely communication of the goals and objectives of the pedagogical process, the coordination of the activities of the subjects of education, as well as the systematic coordination of the assimilation and indicator of the degree of student learning.

Taking into account all of the above, in order to achieve actual efficiency and quality in the organization and management of pedagogical processes, we propose to apply the following "formula of effectiveness", which allows you to comprehensively improve the effectiveness and productivity within each pedagogical process:

$$E = O + C_d + A + O_a + D_r + I_{ts}$$

where E is efficiency;

O - observation;

C_d - coordination of the activities of the subjects;

A - analysis;

O_a - objective assessment;

D_r - diagnosis by results;

I_{ts} - improvement of tasks and strategies.

O - observation. The observation method makes it possible to establish the regularity of the effectiveness of the educational and cognitive activity of students. For example, to find out the level of abilities, to understand how to maximize the potential of the student and how to develop it, what works best, what problem the student faces during the pedagogical processes, what kind of help is needed, etc.

For this, the teacher must constantly monitor the behavior of the learning subject in favorable and stressful situations during and outside the classroom, his social activity and communication with others. Observation helps to determine the personal potential of each subject, to reveal his life position, activity, physical and mental health, emotional and volitional qualities, to assess the possibilities of individual resource growth of each student, and also to reveal the peculiarity of the activity of the entire group in pedagogical processes.

It is observation that helps to calculate in advance the potential for self-realization of the subject, choose the most optimal methods of work, understand and draw conclusions about the possibility of moving to the next stage of training, including calculating the algorithm of the pedagogical process.

Observation makes it possible to coordinate the activities of subjects in reality at any stage of the pedagogical process. To do this, it is necessary to record the results of observation in the change in the subject's behavior depending on the situation, which in the future will help to efficiently coordinate the learning activity individually.

C_d - coordination of activities of the subjects. For effective and efficient coordination of the activities of learning subjects, the teacher should analyze the results of observation. The coordination of the activities of the subjects should begin with the motivation to do something, that is, to prepare for the next action.

Coordination of the activities of the subjects allows you to assess the progress of students and helps the teacher to quickly correct the pedagogical process through the use of systemic, coordination, demonstration, reorganization and relaxation approaches, to assess the level of student's knowledge and to organize predominantly productive learning at an early stage through observation and analysis.

A - the analysis of the effectiveness of students' activities requires the use of such approaches as: a personality-oriented approach, a situational approach, a national-regional approach, a reorganization approach, a coordination approach and a relaxation approach. The analysis of the effectiveness of students' activity is made on the basis of the findings of observation and the effectiveness of the coordination of their activities.

The analysis of the activities of the subjects of the pedagogical process makes it possible to characterize the degree of fulfillment of the set goals and objectives, and the achievement of the effectiveness of the pedagogical process. Through analysis, it becomes possible to improve the pedagogical process with the greatest result of achieving the goals of education. For example, a teacher-manager can: identify problems that affect learning activity; monitor and constantly analyze the productivity of the activities of the subjects of pedagogical processes; set priorities in tasks and goals, outline a strategy for their achievement; identify and prevent the causes of stress that affect the performance of subjects; distribute evenly the load at all stages of the pedagogical process; stimulate professional formation and development; use internal resources to improve the efficiency of the subjects.

O_a — objective assessment helps to obtain information about the real degree of assimilation of knowledge and the effectiveness of pedagogical processes. Objective assessment is carried out at each stage of the lesson by comparing the initial level with the achieved level, that is, the ability to creatively apply theoretical knowledge in practice. Objective assessment helps to determine the effectiveness of the effectiveness of classes and adapt the content of education for a specific student, using a mechanism that provides for such indicators as: basic level of knowledge, previous experience, quality of information perception, degree of clarity of educational material.

Objective assessment is an assessment of the effectiveness of the activity of each concrete subject of the pedagogical process at each stage of the lesson by observing, analyzing and coordinating his activities. Objective assessment affects the performance of not only one specific task of the lesson stage, but also the quality of the effectiveness and efficiency of all pedagogical processes in general.

D_r — diagnosis by results. Proceeding from an objective assessment, the diagnosis based on the results helps to determine the satisfaction of the needs in achieving the set goals and the productive activity of the educational and self-educational activities of the subjects.

According to the diagnosis of the results, the teacher-manager should coordinate the activities of the subjects, adapt the content of goals and objectives, their difficulty, novelty, the environment of activity, creative activity, and also, based on external and internal conditions, constantly monitor the dynamics of changes in the effectiveness of the activities of the subjects in pedagogical processes and continuously improve the quality of pedagogical processes by improving tasks and strategies.

I_s — by improving the tasks and strategies of pedagogical processes, the effectiveness of the pedagogical process is greatly increased, feedback and motivation of each student to study new material is provided. The systematic improvement of the tasks and strategies of pedagogical processes stimulate students to regular classes, motivate them to use their own resources, develop and improve their abilities, skills and competencies through gaining new experience. For example, it is worth developing those sides of the potential and deepening its knowledge in the direction in which the student is good, i.e. the more a student learns, the more there is to learn and to bring the new acquired skills to automatism. Therefore, each subject of the pedagogical process should be encouraged with micro-awards for solving the problem and the achieved success (Khutorskoy: 2004).

Conclusion

Thus, the "formula of effectiveness" has an integrative structure, which includes motivational, cognitive, emotional-volitional components that determine the effectiveness of the activities of subjects of pedagogical processes. The prospect of using the formula we proposed is that the teacher in the process of designing the pedagogical process observes the basic requirements of a systematic approach, takes into account individual characteristics, diagnoses the degree of knowledge, skills and abilities, improves the organization and management of pedagogical processes, promotes active creative activity and introspection. We believe that the absence of one of the components of our proposed formula can negatively affect the effectiveness of pedagogical processes and a violation of the systemic approach as a whole. The use of technologies to ensure the effectiveness of the activities of the subjects makes it easier for the teacher to supervise the educational activities of each student, expanding the range of potential activities of the subjects and increasing their responsibility for the effectiveness of the functioning of the pedagogical process.

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