

IMPLEMENTATION OF A QUALIMETRIC APPROACH IN MANAGING THE QUALITY OF EDUCATION OF STUDENTS OF A MODERN UNIVERSITY

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ABSTRACT

Pedagogical qualimetry is a scientific field, within the framework of which the methodology and problems of a comprehensive quantitative assessment of the quality of any educational objects are studied. The use of qualimetry in the higher education system as an integral element of the quality management of student learning is associated with its adaptability and scientific character. The main directions of its use are solving problems of designing both the entire educational program and a separate training course, planning new approaches to implementing point-rating control and assessing student performance, etc. The ultimate goal of qualimetry is the development and improvement of methods by which the quality of a particular object being evaluated can be expressed in a single number characterizing the degree to which the object meets public or personal needs. In this work, the degree of development of the problem of using the qualimetric approach to education is studied, the concept of “pedagogical qualimetry” is concretized on the basis of the analysis of the research problem in domestic and foreign literature; a model for the implementation of pedagogical qualimetry was developed.

Keywords: Educational technology, quality of education, qualimetry, pedagogical qualimetry, qualimetric technology.

INTRODUCTION, LITERATURE REVIEW, METHODOLOGY

The process of integration of the domestic higher education system into the international educational space has led to the need for continuous improvement of the quality and effectiveness of higher education, updating its content and methodology, implementing innovative approaches and technologies, introducing international standards for the material and technical support of the educational process, developing a unified external and internal control system and student knowledge assessments. When assessing the quality of training of future specialists, attention should be paid to two components of this process: educational and professional. The main system-forming element of any university is the educational component, the professional orientation of which is reflected in the content of the educational program in the form of a certain set of disciplines. The quality of education acts as a comprehensive indicator that synthesizes the stages of personality formation, the conditions and results of the educational process, the criteria for the effectiveness of the educational institution, the compliance of real results with regulatory requirements, social and personal expectations. Based on modern ideas about the quality of education as a unity of the internal and external structure of an object, it should be noted that when monitoring and evaluating students' knowledge, it is necessary to take into account not only individual properties in their totality, but also signs, as well as characteristics of internal certainty, for example, the level of internal structuredness, stability of the structure and its elements, or their adaptability to changing

operating conditions, etc. Modern pedagogical science seeks to comprehend the holistic educational process from the position of managerial activity aimed at developing solutions, organizing, controlling, regulating the control object in accordance with a given goal, analyzing and summarizing based on reliable information. Management is a phenomenon objectively determined, brought to life by the laws and interconnections of the functioning of systems. The following definition is given in the pedagogical encyclopedic dictionary: "Management is a function of organized systems of various nature, ensuring the preservation of their specific structure, maintaining the mode of activity, implementing their program and goals" [4]. Management of educational systems, notes V.P. Sergeeva is a deliberate conscious interaction of participants in a holistic pedagogical process based on the knowledge of its objective laws, aimed at achieving the optimal result [7]. At present, the educational system has a unique situation: the need for teaching staff who have knowledge in the field of education quality management has increased due to the objectively continuing world scientific and technological progress, the volume of knowledge constantly increasing over time; the system of official views on the role of the quality of educational services and the realization of national interests has changed. This, in turn, led to the need to design pedagogical qualimetry, the formation of a system for monitoring and evaluating students' knowledge that meets international standards, which allows effective management of the educational policy. To reveal the essence of the qualimetric approach in pedagogy, first of all, it is necessary to determine what should be understood by the quality of knowledge and the effectiveness of training.

In the concept of "quality of knowledge" V.P. Simonov includes such components as: the strength of knowledge - is determined by the learner's ability to operate in his practical and educational activities with theoretical knowledge obtained earlier; depth of knowledge - characterized by the number of well-established rules, concepts, definitions, laws, formulations, etc. ; awareness of knowledge - is determined by the student's understanding of the cause-effect relationships of theoretical material and the ability to apply them in practice; systematic knowledge - allows you to resolve the contradiction between the need for the formation of academic knowledge and the formation of a holistic conceptual vision of the world [8].

Qualimetry - (from lat. Quolis - what is the quality and gr. Metro - measure) - 'a scientific theory that explores the methodology and problems of a comprehensive quantitative assessment of the quality of objects of any nature (animate or inanimate; objects or processes; products of labor or products nature) having a material or spiritual nature, artificial or natural origin [9].

At first, qualimetry was defined as the science of measuring and evaluating product quality. And this was quite natural, because the problem of the quality of national economic products is one of the most important problems. In the second half of the XX century. The main scientific categories, related not only to the technical, but also to the natural and even humanities, increasingly begin to undergo formalization and then quantitative expression.

Comprehensive quantitative assessments of quality have recently been more and more being introduced into various spheres of human activity. Domestic and foreign scientific, technical, popular science, and socio-political literature are increasingly addressing the problems of a comprehensive assessment of the quality of various kinds of objects that are not products of labor, or assessment of the quality of various processes. Existing quality assessment methodologies are characterized by internal unity. It consists in the fact that these techniques are based on the general principles of qualimetry. Therefore, from the point of view of

theoretical qualimetry, these techniques are homogeneous and can be described by one algorithm.

Since qualimetry is an area of scientific knowledge that studies the methodology and problems of developing complex, and in some cases systematic quantitative assessments of the quality of any objects, it is necessary to clearly understand the relationship between the qualitative and quantitative description of the educational process [2]. Quantity and quality appear as something separate only as abstractions, in reality they exist in an indissoluble unity, within which this quality is modified, varies due to changes in quantity and individual non-essential properties, while maintaining their essential characteristics.

Qualimetry in education - according to A.I. Subetto is an ego science about the quality of education in all its diversity: the quality of the functioning and development of educational systems; the educational process, students, teaching staff, etc. It is formed at the junction of a single science of education (etiology) and science of the quality of objects and processes - qualitology [10].

The qualimetric component of the educational process should include education quality management; educational quality assurance system; assessment of the level of the educational process [5].

Thus, based on an analysis of these terms and concepts, we came to the conclusion that qualimetric education is a combination of the teacher's knowledge and skills in designing, evaluating, providing, monitoring, and managing the quality of the educational process in his professional activity, the important areas of which are : human qualimetry in education; assessment of the quality of educational programs; assessment of the quality of specialist models and social quality standards; assessment of the quality of scientific and pedagogical potential; assessment of the quality of the scientific and material and technical base.

RESULTS, DISCUSSION

Pedagogical qualimetry denotes a relatively new scientific direction of pedagogical research, the main content of which is the methodology of the development of comprehensive quantitative assessments of the quality of any objects of the educational process [11].

Despite the fact that pedagogical diagnostics and pedagogical qualimetry are closely related practical areas of research within the framework of pedagogical science, each of them has a number of significant features. If pedagogical diagnostics, as a rule, acts as an auxiliary element of pedagogical research, which is most evident when monitoring the learning process, pedagogical qualimetry, which should also be an integral element of any monitoring, is able to conduct an independent analysis of the studied patterns on the basis of mathematical modeling. In order for the control to give an objective assessment of the students' knowledge level and stimulate pedagogical activity, the following requirements must be observed: systematic - control should be carried out regularly using a variety of methods and forms; objectivity - verification should be carried out in accordance with the requirements of state standards; effectiveness - the results of control should lead to positive changes, eliminate shortcomings; the competence of the examiner. Information obtained during control, in turn, becomes the subject of pedagogical analysis. Diagnostic methods can be very diverse, starting with a comparative assessment of purely external features and ending with a quantitative assessment of the object of study using pedagogical meters. However, all the procedures of pedagogical

diagnostics are focused on obtaining high-quality conclusions about the state of the educational process. Unlike pedagogical diagnostics, pedagogical qualimetry involves comparing test results with existing standards, for example, the state standard of higher education. The very name "pedagogical qualimetry" shows that the whole apparatus is: pedagogical actions; principles for the implementation of the qualimetric approach; main directions and areas of application of integrated qualimetric assessments; the end result is a well-balanced system for assessing control and assessing student knowledge (Fig. 1).

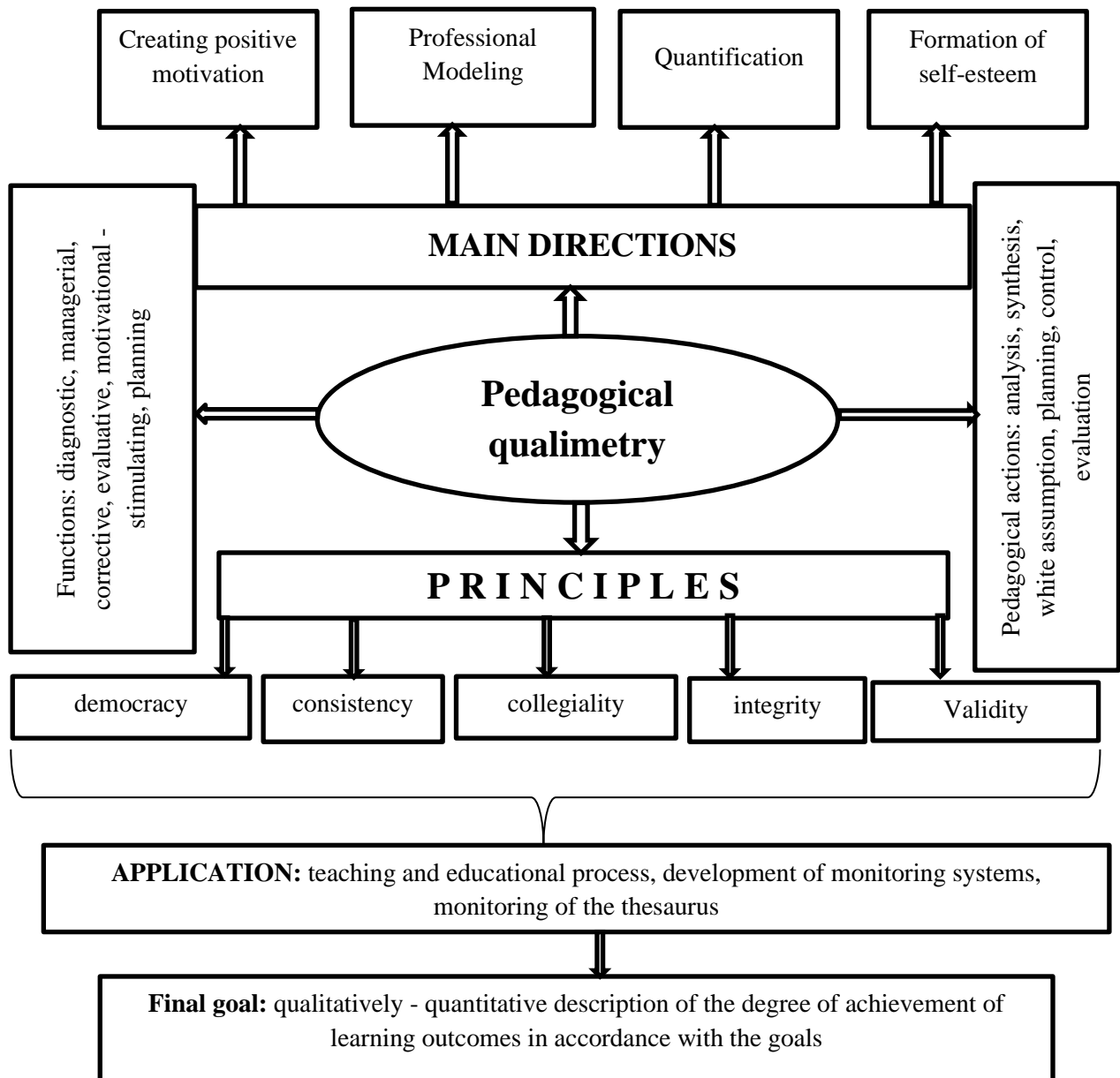


Fig. 1. The conceptual model for the implementation of pedagogical qualimetry

Qualimetry as a relatively new and fundamental science is, firstly, relevant and basic for other related sciences aimed at solving quality management problems. Secondly, qualimetry still needs to be developed and used in making managerial decisions regarding the quality of something. Like any managerial activity, considers Yu.A. Konarzhevsky, pedagogical qualimetry consists of a sequence of interrelated actions: analysis, goal setting, planning, organization, monitoring and evaluation of performance [3].

Analysis, which involves the allocation in the studied object of the parts, the assessment of the role, and the place of each part, the combination of the parts, the establishment of relations between the parts. From the analysis begins the management cycle and it ends with it. Depending on the content, the following types of analysis are distinguished: parametric; which consists in studying daily information about the course and results of the pedagogical process, identifying the reasons that violate it; thematic, aimed at the study of more stable, recurring dependencies, trends during the pedagogical process; final, which covers a significant time, spatial and substantial framework and is aimed at gauging the main results of pedagogical activity at the end of the academic quarter, year.

The goal-setting and planning are structure-forming components of any system; therefore, they are a necessary condition for the development and movement of pedagogical systems; integral functions of management activities. The peculiarity of goal-setting in the management of pedagogical systems is that when building a hierarchy of goals, the common goal is related to the age and individual psychological characteristics of students. Planning - decision making based on the correlation of the results of pedagogical analysis with the goal. Decisions made can be designed both for the future and for solving current operational problems.

Organizational activity is aimed at implementing the decisions made. This function includes: a preliminary set of performers and co-performers, selection of forms and methods of upcoming activities and their correlation with the actual conditions and capabilities of performers. Organization of activity is the process of uniting participants in the educational space, means and technologies to achieve their goals [6].

With all the functions of the management cycle in the qualimetric approach, control and evaluation are closely related. In its most general form, control means the process of measuring actually achieved, planned results. Assessment in pedagogical qualimetry means the degree of conformity of the qualities being evaluated to those rules or patterns by which they should theoretically be formed in the ideal case. Educational technologies in the modern sociocultural environment are called upon to solve the problem of a completely new type of personality, so that the level and nature of education corresponds to the scale of the tasks that he is solving. In our opinion, the use of qualimetric design of educational technologies contributes to pedagogical activities to achieve a guaranteed result. But this requires the management of the effectiveness and quality of education.

The concept of qualimetric technology for the diagnosis of learning was introduced by us in connection with the need to specify a new aspect in the technology for diagnosing the quality of student learning in a multi-level higher education system, since qualimetry is a field of scientific knowledge that studies the methodology and problems of developing complex, and in some cases systemic quantitative quality assessments any objects that clearly express the relationship between the qualitative and quantitative description of the educational process. At the same time, quantity and quality exist in an indissoluble unity, within which this quality is modified, varies due to changes in the quantity and individual non-essential properties, while maintaining its essential characteristics.

It is likely that the significance of complex assessments and the attention that researchers give them led to the widespread belief that qualimetry operates “only with complex dimensionless estimates obtained as a result of calculations in one way or another. This, of course, narrows the boundaries of qualimetry, since it excludes from the scope qualimetry differential methods for assessing quality, that is, assessing individual, individual, indicators of quality properties. Therefore, there is reason to argue that at present qualimetry in education to combine not only the methods of assessing the quality of various pedagogical objects, but also the methods of assessing the quality of its subjects, as well as various educational processes, which necessitates the creation and implementation of the concept of a qualimetric approach in the educational system.

Thus, in our opinion, the following can be attributed to the fields of application of qualimetric technologies in the field of education:

1. The educational process - in justifying the taxonomy of educational goals, objectives, achievements. Assessment of the quality of certain types of training sessions.
2. Development of monitoring systems for the quality of general education, point-rating systems, taxonomies of managerial functions, monitoring research methods, the creation of axiomatics for assessing the quality of education.
3. Examination of didactic tools, technologies, forms of organization of the educational process used in educational and cognitive activities.
4. Development of test meters for students' knowledge level.

Since the future specialist should have modern approaches to solving the problem of ensuring the competitiveness of modern production through a systematic approach to quality, the skills of solving problems by quantitative methods for assessing and monitoring the quality of training, the pedagogical qualification component is of particular importance in professional activity. The qualimetric approach in the educational space involves the use of a systematic approach in assessing the quality and effectiveness of student learning. A practical solution to the problem of the ratio of quality and quantity in education involves the training of teachers for the effective and efficient use of relevant modern approaches, methods and teaching aids in daily educational activities. It should be noted that a comprehensive assessment of the knowledge, skills and abilities of each student provides for a combination of an assessment of the conditions of the educational process, its content and results.

The main goal of the system of continuous quality education is orientation in the space of quality culture, the development of a new ideology of quality as fundamental knowledge. The role and relevance of quality education will always remain significant in the training of specialists, since the formation of a new mentality is not one generation's business. Its content is determined by the introduction of new ideas corresponding to the level of the beginning of the XXI century. The system of continuing professional education provides for five levels of education: the first stage - school education, the second - secondary vocational education, the third - higher education, the fourth - training, retraining and advanced training, the fifth - postgraduate education [1]. The ultimate goal of qualimetry is the development and improvement of methods by which the quality of a particular object being evaluated can be expressed in a single number characterizing the degree to which the object meets public or personal needs.

At present, pedagogical qualimetry has reached such a stage of development when two branches clearly begin to stand out inside it: theoretical and applied. The theoretical component of pedagogical qualimetry abstracts from specific objects and studies only general patterns and mathematical models related to quality assessment. The object of theoretical qualimetry in pedagogy is the philosophical and methodological problems of quantitative assessment of the quality of education. It is known that control stimulates learning and affects student behavior. As practice has shown, attempts to exclude control partially or completely from the educational process lead to a decrease in the quality of education. Intensive teaching methods currently being introduced are inevitably leading to new searches in the field of improving the quality and effectiveness of pedagogical control and the appearance of its new forms, for example, such as a point-rating form. In this regard, the task of applied pedagogical qualimetry is the development of specific methods and mathematical models for assessing the quality of specific objects of the educational space. It is best to approach the solution of this problem from the most general positions, creating a model of qualimetric optimization of the learning process using meaningful methods.

Considering the possibilities of formalizing pedagogical knowledge using mathematical modeling, the following two main directions should be taken into account: building a model of an empirical object by highlighting its properties and describing them taking into account mental processes and personality properties; development of methods, means and procedures for measuring the properties of an empirical object and their applications in the practice of solving various pedagogical problems of training. Both of these areas are directly related to the experiment and are fully consistent with the general scientific methodology. But since we set ourselves the task of constructing a model for implementing a point-rating system for assessing and monitoring students' knowledge based on the qualimetric approach, the second direction of mathematical modeling seems to be more preferable.

CONCLUSIONS

Prospects for the use of pedagogical qualimetry. as a structural element of education quality management, they are based on a scientifically based methodology for the quantitative assessment of quality and are associated with its interdisciplinary nature. The main directions of its use are ensuring competitiveness in the domestic and foreign education markets; the study of the status and development trends of the educational process in the context of modernization of education; solving problems of developing new pedagogical systems and technologies that contribute to the formation and development of professionally oriented competence of a future specialist, etc.

In conclusion, it should be noted that although a harmonious theory of pedagogical qualimetry has not yet developed, however, it is legitimate and necessary to speak about the orientation of this scientific direction, the principles and approaches to assessing quality, and the main, key problems that should be addressed by efforts specialists.

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