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THE INFLUENCE AND EFFICIENCY OF MODEL-DRIVEN MANAGEMENT IN THE HIGHER EDUCATION SYSTEM ON EDUCATIONAL QUALITY

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A B S T R A C T

At present, the use of convenient and effective methods in the management processes of all sectors has become a pressing issue. From this perspective, optimal management in the pedagogical governance of the higher education system and the improvement of educational quality have become the focus of significant efforts. This article examines the concept of modeling within the interdisciplinary scope of psychology and pedagogy in the context of model-based management of the higher education system and the enhancement of educational quality. Various definitions of models are analyzed, and the main types of models used in current pedagogical research are proposed.

K E Y W O R D S

System, pedagogical process, higher education, quality and education, management, standard, structure, management of the educational process.

INTRODUCTION

In the modern world, an educational institution represents a complexly structured social system whose primary mission is to cultivate the individual's capacity for lifelong, high-quality self-development. The effective functioning of the pedagogical system is intrinsically linked to the distinctive characteristics of educational activity and the coordinated interaction between educators and learners.

Literature Review

Many scholars in the field of pedagogy propose various models related to the learner's personality and the ideal of personal development, considering their formation as a core responsibility of the educational system. These include models addressing the identity of a university graduate, the personality of a student in higher education, and other related constructs. For instance, G.A. Atanov and I.N. Pustinnikova suggest a student model that emphasizes developmental dimensions of the learner [17, p. 254]. Another example is the model of a pedagogical university graduate proposed by Yu.V. Frolova and D.A. Makhotina, which is based on three levels of core competencies: -general; -cultural; -methodological and subject-oriented [1. 195].

Models of the educational process itself, such as those developed by V.M. Ananishnev, include structural, dynamic, causal, typological, and socio-technological dimensions [19, p. 339].

From the perspective of didactic models that reflect the technological aspects of the learning process, the works of S.I. Arkhangelsky, B.V. Bersenadze, K.Ya. Vazina, V.N. Mizintseva, Yu.O. Hovakimyan, L.G. Turbovich, and A.V. Tomiltseva are particularly noteworthy. These and other scholars define educational models as pedagogical technologies—representations of instruction and education as a sequence of pedagogical operations. In this sense, we argue that a model may effectively be considered a form of educational technology.

The integration of modern information technologies into the pedagogical process has also led to the emergence of new model types. For example, E.D. Telmanova substantiates the use of a multimedia didactic model of instruction, in which computer-based tutorials, simulation software, and comprehensive teaching aids play a key role [20, pp. 10–15]. Similarly, E.A. Rumbesta proposes an experimental activity model for teaching physics and other natural sciences, whereby learning is organized through experimental engagement supported by innovative technologies.

Today, in the era of information-driven societal development, there is a growing emphasis among educators on exploring diverse forms and tools for representing, preserving, and transmitting knowledge.

These evolving educational conditions provide a foundation for articulating the fundamental requirements for pedagogical modeling.

Discussion and results

Alongside state mandates, society and the professional community are increasingly shaping demands for the quality preparation of highly qualified personnel. In this context, modern higher education institutions are highly invested in developing effective systems for managing the quality of the educational process—systems that ensure the delivery of education meeting the needs of the individual, society, professional communities, and the state alike. These systems also guarantee systematic governance through modeling in higher education institutions.

In this process, identifying key influencing factors and barriers becomes essential, and such analysis can be carried out in the following areas: Identification of critical factors and barriers: A thorough analysis of the system model allows for the recognition of the factors that exert the greatest influence on the effectiveness of the education system, as well as the challenges that hinder the achievement of established objectives. This facilitates the concentration of managerial efforts on resolving the most significant problems.

Forecasting the consequences of managerial decisions: A systemic model enables the simulation of different development scenarios within the education system based on adopted managerial decisions. This allows for the assessment of potential outcomes and the selection of the most optimal course of action.

Establishing mechanisms for pedagogical management based on system modeling may include the following elements:

1.Defining the goals and objectives of system modeling: The initial stage involves clearly formulating the purpose and objectives of system modeling. For instance, the goal may be to improve educational quality assurance or optimize administrative procedures.

2.Determining the system's boundaries and its components: It is necessary to define the limits of the system to be modeled. Depending on the modeling’s objectives, the system may encompass multiple subsystems—such as the learning process, research activities, resource management, and international

cooperation. Moreover, individual elements and their interconnections within each subsystem must be specified. For example, the "educational process" subsystem may consist of disciplines, students, instructors, curricula, academic programs, and more. Relationships among these elements reflect connections between subjects, teacher influence on student activity, and so on.

3.Developing the system model: Based on the defined purposes, functions, and boundaries, the system model is developed. It may be conceptual, mathematical, or simulation-based. The form of the model depends on the modeling goals and available resources.

4.Model testing and validation: After model development, it is crucial to carry out validation procedures to ensure that the model meets technical specifications and functions as intended.

5.Analyzing modeling outcomes and developing managerial decisions: Based on the analysis of simulation results, management decisions are formulated to achieve the set objectives. For example, simulation may indicate the need to revise academic programs, optimize resource distribution, or implement new educational technologies.

6.Implementation and monitoring of managerial decisions: Once decisions are made, they must be implemented and their effectiveness monitored. Monitoring helps assess whether the decisions are being executed efficiently and whether the intended outcomes are being achieved. If necessary, managerial actions may be revised based on monitoring results.

7.An iterative process of model and decision improvement: The process of system modeling and management is iterative. Analysis of effectiveness and monitoring results inform the continuous refinement of the model and the development of new decisions.

Let us now consider the impact of system modeling and model-based management on educational quality and efficiency.

In Western countries, the issue of education quality became a topic of public discourse in the second half of the 20th century. Two examples are illustrative: On December 14, 1960, the UNESCO Conference adopted the Convention Against Discrimination in Education, which called for educational standards to ensure quality learning in state institutions by aligning outcomes, curricula, and conditions. These standards guaranteed equivalency in educational offerings across institutions of the same level.

Also in 1960, a study titled "The Quality Measurement Project: A Research Activity Conducted by the New York State Education Department" (ED002978) was undertaken in the United States. The aim was to develop technologies for the independent assessment of educational quality provided by school systems.

The concept of "quality in education" gained significant prominence during the 1998 World Conference on Higher Education in Paris. One of the long-term strategic goals of higher education, as emphasized during the conference, was the continuous improvement of educational quality.

Despite the widespread use of the term, there remains no universally accepted definition of "education quality." This reflects the multifaceted nature of the concept. "Educational quality" is essentially the integration of two complex notions: "quality" and "education."

The term "quality" itself encompasses both philosophical and practical meanings: s an attribute, essential characteristic, or unique trait; as a measure of usefulness, value, or compliance with specified requirements.

Similarly, the notion of "education" is multidimensional and encompasses both theoretical and applied perspectives. In its foundational sense, education is viewed as the imprinting of a worldview and the

development of one's personal dignity. However, the term has evolved to emphasize its functional aspects. Today, education is not only a personal value or expression of autonomy but also a structured system of curricula, institutions, and educational services. Much like the term "quality," the concept of education is now often interpreted through its practical application.

The convergence of these two terms allows for two distinct approaches to defining education quality: From a fundamental perspective, education quality can be seen as the embodiment of a learner's individuality and a representation of their highest personal development. This view, however, is highly subjective and defies standardized assessment. In this approach, "standards" are personal and one's entire life becomes a measure of success.

In contrast, the functional-practical approach defines educational quality as the degree to which educational programs, services, implementation conditions, and outcomes align with established norms, state requirements, social expectations, and individual aspirations. Given the complexity of the first definition, pedagogical science has largely focused on conceptual models, while pedagogical practice concentrates on ensuring, maintaining, and improving quality in more practical and measurable terms.

This practical orientation proposes two main approaches to assessing educational quality: By examining the scope and quality of educational services (i.e., curriculum, accessibility, delivery); By evaluating the characteristics of the educational output (i.e., learner outcomes and competencies).

Learner-oriented qualimetry in education includes: qualimetric analysis of learners as core elements,qualimetry of learners' knowledge,qualimetry of learners' activity,qualimetry of learners' cultural and personal development,qualimetry of general education preparedness,qualimetry of professional readiness.

Because educational quality is heavily dependent on the quality of academic programs, institutions must establish formal mechanisms for their validation, periodic review, and monitoring. Program quality is maintained through:articulation and publication of expected learning outcomes,continuous attention to curriculum structure and content,availability of adequate learning resources,formal procedures for program approval by governing bodies,assessment of student progress and achievement,regular review and external evaluations,engagement with employers, labor market representatives, and other stakeholders, inclusion of students in quality assurance processes.

The implementation of Total Quality Management (TQM) principles in higher education institutions—just as in industrial or service enterprises—typically includes the following steps:

Institutional leadership adopts a resolution to implement TQM principles in organizational management;

A quality strategy is developed, defining the institution's policies, goals, tasks, and performance indicators;

A Quality Council is established under the leadership of senior management, and responsible officers are designated in each unit;

All personnel are informed about TQM principles and the expected benefits from full-scale implementation;

A legal and administrative framework for control, accountability, and transparency is developed;

A Quality Manual, process guidelines, and individual job instructions are written;

Key improvement areas are selected, working groups are formed, and their recommendations are implemented.

Conclusion

From the above analysis, it can be concluded that contemporary pedagogical research demonstrates a growing interest in educational modeling. This trend is closely linked to the potential of modeling to address pedagogical challenges and enhance the quality of education. Our study has examined the core problems currently faced by educators and provided a classification of relevant models.

Within the interdisciplinary domain bridging psychology and pedagogy, the concept of modeling is increasingly recognized and explored. Various definitions of the term "model" have been analyzed, and the principal types of models utilized in current pedagogical research have been identified. Consequently, it is posited that model-based governance in higher education contributes to improved educational quality.

In the context of model-based systemic management in higher education, the interdisciplinary nature of educational modeling is emphasized. The study has explored the distinctive characteristics of modeling in pedagogy and critically examined the key requirements for the development of pedagogical models.

The novelty of the proposed material lies in the theoretical justification of the interdisciplinary nature of system modeling in the governance of higher education, as well as in the formulation of core criteria for pedagogical models within the framework of systemic governance processes.

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