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The article describes the features of using information technologies in the management of education. Two main directions are described: the management of a higher education institution as an organization and the management of knowledge delivery. Two main principles of higher education institution management have been identified: hierarchy and cyclicity. The education system is considered a complex organizational-technical system. The formation of the structure of educational materials is described.

Keywords: education, education management, information, information technologies, management information technologies, education information technologies.

The adoption of information technologies in the administration of educational processes is linked to the development of a new management paradigm — the information space. This evolving space is underpinned by the utilization of network technologies, which include comprehensive global and local networks, as well as the establishment of resource centers within these networks, all operated through advanced network management technologies [4]. Presently, information technologies (IT) and information systems (IS) constitute crucial components of educational management frameworks [1]. The deployment of these technologies is nearly universal across educational systems in operation, which rely extensively on telecommunication systems and resource centers as their foundational infrastructure.

The primary objectives of employing information technologies in the management of education are manifold. They aim to bolster the dependability of the educational processes and the environments in which they occur. By leveraging such technologies, educational institutions aim to enhance the robustness and efficiency of their educational delivery, ensuring that students and educators alike can rely on a stable and dynamic educational infrastructure. This, in turn, supports the broad goal of elevating the quality of education and facilitating a more effective learning experience. Information technologies are instrumental in achieving these goals by providing the necessary tools and platforms to manage educational resources and processes more effectively [1].

Information Management Processes and Models in Education

Information management processes and models play a transformative role in the educational sector. The core of education management now increasingly relies on the sophisticated interplay between information methods and technologies. These are not standalone elements but are built upon the foundational principles of information management. These principles are multifaceted, involving the strategic use of information

space—a virtual environment where data is stored, accessed, and manipulated. Network technologies are the backbone of this space, providing the infrastructure for connectivity and data exchange. Within these networks, we observe meticulously structured information architectures composed of hierarchical information structures, well-defined information models, and discrete information units. Each of these components serves a specific function, from data organization to process modeling and the execution of informational transactions.

The application of IT in education unfolds in two principal trajectories. Firstly, there is the organizational aspect, where IT is leveraged to streamline the management of an educational institution as a corporate entity. This encompasses the holistic management of human resources, overseeing the careful allocation and tracking of budgets, meticulous planning and scheduling, rigorous registration processes, and the implementation of control mechanisms to ensure that all operations align with the institution's objectives.

Secondly, there is the pedagogical aspect, focusing on the management of educational processes—essentially, the facilitation and delivery of knowledge. This involves deploying IT systems that support curriculum development, enable innovative teaching methodologies, and provide platforms for e-learning and digital resource distribution. The goal is to ensure that knowledge transfer is not only efficient but also effective, engaging, and adaptable to the diverse needs of learners.

Within these overarching domains, information management in education is a multidimensional endeavor. It requires a balance between technology and human-centric approaches. On one hand, it demands a seamless integration of data systems to support decision-making and administrative efficiency. On the other hand, it calls for a sensitivity to the human elements of education—recognizing that behind every data point is a student, educator, or staff member whose needs and experiences are paramount.

The management of personnel, for instance, is not just about maintaining staff records or tracking attendance. It is about understanding the career trajectories of educators, identifying training needs, fostering professional development, and creating an environment where talent is recognized and nurtured. Budget management transcends mere accounting; it involves strategic financial planning to ensure that educational programs are well-funded and that resources are allocated in a manner that maximizes educational outcomes.

Similarly, planning in an educational context is an intricate process. It involves not only setting academic calendars and scheduling classes but also preparing for long-term developments in the educational landscape, anticipating future learning trends, and preparing institutions to adapt and thrive in a changing world.

Registration and control processes, while administrative in nature, have a direct impact on the student experience. Efficient registration systems reduce bureaucratic hurdles for students, while control mechanisms ensure that educational standards are upheld, and that the institution's integrity is maintained.

Finally, the delivery of knowledge is perhaps the most critical aspect of IT-based management in education. Here, information technologies are not mere tools but catalysts for educational innovation. They empower educators to curate and disseminate knowledge in ways that were previously unimaginable, support personalized learning experiences, and open doors to global information resources.

In light of these expansive roles, it's clear that IT-based management in education is not just about adopting technology; it's about reshaping the entire educational ecosystem. It requires a nuanced understanding of how information flows, how it can be optimized, and how it serves the ultimate goal of enriching the educational journey for all stakeholders involved [6].

Management of Educational Institutions

The management of educational institutions is based on the developmental model of the management object. The development of the management object is governed by management operations and patterns that are either interrelated with the organization or occur within it. The concept of information management includes cyclicity and hierarchy.

Cyclicity in management refers to the implementation of management in cycles, while hierarchy pertains to the hierarchical relationship of the main components of management. These components include information technology, information design, information model, and information unit.

Information design is the generalized description of a set of related information models that perform an integrated general function, while the information model performs a differentiated function. Information units are components of models or information processes. In managing an educational institution, information sections mainly perform communication functions [8].

The essence of managing higher education institutions lies in the fact that information models, which simulate management operations, influence the management object or its parts to change the situation of the

organization in the direction determined by the development strategy of educational institutions. Essentially, such a management information model is a generalized concept of a business process.

The state of an educational institution as a complex organizational-technical system depends on many factors and numerous operations. This correlates the operations as procedural models of management and the decision-making processes as the implementation of these opportunities. Therefore, the purpose of making control decisions is to determine the rules of operation execution, taking into account its technological features and external factors.

In the management of educational institutions, resources are objects of various compositions, hence their interpretation also varies. These can be information, time, money, materials, equipment, intellectual property, geographical factors, space allocation, operations, knowledge, etc.

Information management can be presented as a series of methods to achieve the organization's goals. Certain rules are used to formalize such management.

The staff of educational institutions is the most important source of providing high-quality education. The level of expertise of the staff ensures the quality of knowledge and skills of future specialists. The quality of staff management in educational institutions reflects the effectiveness of institutional management. It comprises the optimal coordination of the interests of employees and employers, provision of working conditions for employees, and achieving high results in the activities of the educational institution.

The quality of staff management in higher education institutions can be understood as the efficiency of performing staff management functions that ensure the optimal coordination of the interests of employees and employers. It creates comfortable living conditions for employees and achieves a high level of education. This determines the life situation of the collective as one of the characteristics of staff management in an educational institution.

Management of Teaching Processes

In the context of education, information technologies in education must efficiently complete the teaching process of any form of education. The management of education can be accepted as the management of educational technologies. There are three main groups of information management technologies: information support or support for the educational process; teaching, methodological, and organizational support; information-educational interaction. In this type of management, the perception factor, which is related to the cognitive abilities of students and teachers, plays an important role [2].

Information provision includes obtaining information that allows teachers and students to acquire general knowledge about the goals and tasks of education. This block includes: creating electronic versions of schedules and workloads; compiling electronic catalogs of the library funds of higher education institutions; compiling electronic catalogs of existing electronic libraries; describing academic discipline in terms of educational standards; links to similar sites on the

topic; a list of information resources to support the course.

Teaching, methodological, and organizational support contains instructions and materials for using this educational technology. It forms the basis of the system and is not openly available to users. The components of this block are: electronic educational materials and their archived versions; electronic training modules; education plans; instructions for mastering the subject; user help files.

As a part of information support for teaching, the teacher ensures the compilation of assignments and guides the student in learning the necessary material. Mainly, this function consists of establishing a sequence of actions while studying the material, monitoring the learning dynamics, and communicating with the student when necessary. The instructor also facilitates the exchange of information among students and supports the development of interactive student groups around the course. This arises from the tasks of information management and is implemented with information management methods [5, 3]. The primary role

of the teacher is not only to be a highly skilled specialist in a certain knowledge area but also to be the information integrator of the teaching process and teaching support. The idea of information teaching systems [8] is the teacher's study and use of electronic information resources. This problem is resolved as part of the student's independent work based on interactive information technologies and electronic materials. In this case, the teacher (as part of the information support) answers students' questions or offers additional information related to the given topic.

In special cases, if problems with understanding the material arise, the student personally approaches the teacher for clarification. However, this occurs rarely, and the teacher provides more detailed answers to the student's individual questions rather than giving information based on a general abstract scheme. Certification is carried out for each teaching block, and an exam is given at the end of the full course. Generalizing various forms of training, we can note that the educational process in preschool education consists of the following blocks (fig.):

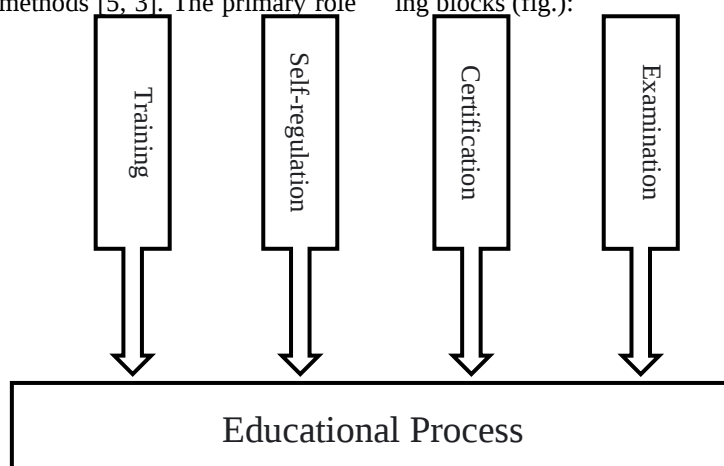


Figure. Components of the teaching process organization.

- Education - The study of structured theoretical material with the possibility to repeat the source on a local computer for in-depth learning or to print it;

- Self-regulation - Independent study of material on individual issues with feedback to electronic sources of theoretical material;

- Certification is an intermediate control implemented as an interactive block of various types of questions, which allows both the students and teachers to assess the breadth and depth of the knowledge they have acquired on a section of the academic subject;

- Examination is the final control stage that takes into account the results of the intermediate certification and current grades for the overall subject course. The examination is organically integrated into the learning process and is not a separate act of learning.

Conclusion

The management of information technologies represents the direction of intensively developing technologies in the education system. Information management in education covers the needs associated with the traditional model of education and provides specific opportunities not implemented in it. Information education technology combines methods and tools that use

the latest ICT developments to ensure the continuous assimilation of knowledge and skills for future professional activities. In general, summarizing the existing experience, the following conclusions can be drawn. The development of information technologies for the management of education is based on the use of specialized information resources. The organization and management of modern educational institutions are impossible without the use of information and communication technologies.

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