Digitalization of Educational Activities at the Municipal Level

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**Abstract:** The article examines the activity of the municipality from the point of view of the education management system in modern realities, namely in the conditions of digital transformation of society and its life, in particular, digitalization of educational activities. The main advantages and disadvantages of the digitalization of education are analyzed and presented. In the context of the research, the theoretical, normative and legal aspects of the current educational activity are presented, as a key link in solving problems of any nature for the benefit of the local population, in particular at the municipal level. In conclusion, the priority directions of the development of education management in the conditions of digitalization are given, which should effectively influence the optimization of organizational and management processes in the field of digital transformation, as well as the active penetration of digital technologies into the educational process of various educational organizations.

The article reveals the effectiveness of information and communication technologies in municipal educational institutions training future specialists. In the context of the implementation of the research goal, the role of digitization as a factor in the implementation of educational activities in the process of training specialists in the economic field is studied. In the modern conditions of the development of the information society, there is a need for fast and high-quality calculation of economic indicators. This is the need that prompts the widespread use of software accounting methods. Digitalization has absorbed various fields of human activity.

**Keywords:** municipal management of education, digitalization, professional training, quality of education, information and communication technologies.

Introduction

In modern conditions, the municipal level of management deserves special attention, the key aspect of which is the timely and purposeful solution of current financial, personnel, organizational, socio-economic, socio-cultural problems, which will promptly affect the favorable development of self-government in cities.

The study of modern computer technologies, digitization of educational activities at the municipal level is the foundation of education, is the main theoretical base and tools of scientific knowledge for economic specialties. Therefore, the methods and approaches of teaching information technologies are very important in teaching pupils and students in the direction of the development of municipal education.

The use of mathematical methods involves the use of mathematics and modern information technologies as a special way of studying patterns and obtaining theoretical and practical conclusions. Information and communication technologies are tools that effectively process data when working online. Such work is implemented in the conditions of effective development of the information space, accompanied by appropriate software (Bekh, 2015). Thus, computer technologies also influence the further development of the information society.

Information technologies in the world are a complex of educational tools that effectively form the competence of specialists in various areas. Also, information technology is a factor in determining the role of computer technology, which is used directly in the work of teachers. The use of information and communication technologies contributes to the improvement of the professionalism of specialists, in particular, economic and mathematical disciplines. The use of such technologies contributes to the achievement of pedagogical goals (Vykhor, 2006). Therefore, digitalization at the municipal level helps to achieve goals and tasks thanks to individual work while learning new knowledge. The relevance of digitization is determined by the possibility of analysis and evaluation of the use of knowledge in professional activities. Practice involves the application of acquired knowledge, which improves awareness and understanding of professional needs.

Educational disciplines that are related to the practical application of technologies contribute to a more effective understanding and assimilation of educational achievements. Thus, information and communication technologies contribute to better assimilation of abstract concepts.
Stimulating and coordinating the development of education is a priority task of the state, and the formation of a high-quality system of providing educational services is one of the priority areas of state administration. There was a need for integration with the global information open educational space, which requires the digital transformation of educational institutions, the study of achievements and prospects. The article presents an analysis of the problems of ensuring digitization of education at the municipal level. It is summarized that the modern trends in the development of education are lifelong learning, mobility and the development of internationalization, flexibility of educational programs, digitalization, an increase in the share of distance learning, creative learning, electronic science, etc. The article also showed that business digitalization is key to a company’s competitiveness.

Digitization of education consists in the introduction of effective use of information and communication technologies in the educational process (Vasylieva & Khrebtova, 2012). This makes it possible to transfer information into digital form, that is, to create a cyber-physical educational space. Now, the teaching methodology has changed significantly with the change in technologies, which today shape the professional competences of the future specialists of the new generation. Modern education is faced with the challenges of digitalization and globalization, which complicates the methods of teaching, presentation, and assimilation of educational material. The complex challenges facing the education system are related to the ability of educational institutions at all levels to ensure quality, consistency and continuity of education and professional development.

In accordance with the needs of modern times, the rapid increase in the amount of knowledge requires the introduction of new approaches to the organization of training and the search for innovative forms of transfer and assimilation of knowledge and competences. The accelerated development of digital technologies stimulates the creation and implementation of innovative forms of learning that can keep up with changes. The adaptability of a person to the changing labor market is gaining relevance, which brings to the fore the model of continuous education through the distribution of various courses of specific specialties using new methods and technologies (Vdovych, 2013). Digitalization contributes to the transformation of society and opens up new opportunities for modern education.

When conducting educational activities of students at the municipal level, educational achievements should be formed with the help of various methods:
• definition of concepts,
• formation of tasks when solving tasks,
• creating modules,
• use of methods and approaches in solving problems.

The purpose of the study is the main aspects of digitization educational activities at the municipal level.

Theoretical and methodological aspects of digitization of educational activities

As one of the priority areas of activity of municipal entities, it is possible to highlight the consideration of the development of the management system of the municipal education system, which, in turn, is the integration of the following elements:

1) educational programs;
2) different state educational standards;
3) cooperation of the educational institutions involved here, located within each municipality, which interact with each other and with the municipal education authorities in order to arouse and increase the interest of the population of this territory, which, as a result, can contribute to its comprehensive development

Today's realities are a kind of incentive for constant changes and improvements of the municipal educational system, which allows it to be as adaptive as possible. Given this circumstance, the external and internal components of the municipal educational system are dynamically changing and being implemented: management, pedagogical innovations, innovative solutions are appearing, which affects not only positive quantitative assessments and results, but also creates opportunities for qualitative growth and promotion (Lazurenko, 2015). Ultimately, such a union can become an incentive for the development of a new strategic policy.

The municipal level can better be a pilot site for the approval of planned innovations, here it is possible to comprehensively trace the effect of the implementation of one or another initiative, thanks to the maximum concentration of various municipal resources, their interaction with adjacent territories, strengthening the effect of financial, economic and investment activities from participation in co-financing programs, public-private partnership, other monetary subsidies received from the budget (Mashovets, 2017). It is revealed not only the need to modernize the education management system at the municipal level, but also the need to create a single innovative educational space, which, in turn, will become one of the factors in the development of state administration through the development
of the municipal education system in terms of the implementation of innovative development models (Nichkalo, 2008).

As a subject of education management at the municipal level, first of all, departments of education - departments, departments, departments of education of municipal entities act. The institutional and legal basis regulating the activity of municipal education systems is the Constitution, the laws "On Education", "On General Principles of Local Self-Government Organization".

The main functionality of municipal bodies in the field of education is not only the solution of organizational tasks regarding the provision of accessible and free preschool, general (secondary) and additional education, but also compliance with the interests and needs of the population and the state (Moiseyuk, 2007). In this regard, the infrastructure of the education management system should be integral, comprehensive, which will contribute to the development of not only municipal-level educational institutions, but also the national education system as a whole.

In accordance with the priority directions of the state's development, it is especially possible to single out projects of digitalization of the private sector. Here, as a basis for the development of municipal administration, a project was launched to form a system of digital municipalities in the country as a new system of municipal administration corresponding to the digital economy. Digital municipality is a methodology that will contribute to the implementation of the state program "Digital Economy" at the micro level, i.e. at the municipal level (Padalka, 2008). The digitalization of municipalities has a high potential to improve the quality of life on the ground, and is also a necessary feedback mechanism and a means of involving the population in solving the problems at the local level under consideration. In addition, in the process of improving legal regulation and introducing other digital technologies, local self-government bodies, under the condition of active interaction with the population, will be able to move from the pre-project phase - informing the population - to direct implementation (Virna, 2017). Regional management teams will have to play the main role in solving specific practical tasks in areas such as education, health care, increasing housing affordability, and improving the environmental situation, housing inspection, multifunctional document processing centers, settlement centers, etc. (Gygli et al., 2019).
Digitalization of Educational Activities at the Municipal Level

Nadiia KULCHYTSKA et al.

Digital technologies in the educational process

The Ministry of Education is no exception in this matter and has long been talking about the transition of the educational program to an electronic format, about the need to "digitize" the educational process at various levels, which is fixed and detailed in the state program (Gardner, 1983). Digitization of education in connection with the pandemic of the new coronavirus infection SVID-19 has become not only a priority, but also a particularly urgent task, in particular at the municipal level, and its rapid implementation and development should be aimed at solving the following fundamental tasks (Giddens, 1991):

1) compliance with the regulatory framework of the education system;
2) provision of quality education;
3) ensuring the balance: the student's request - mastery, experience of the teacher;
4) interaction of all participants in the educational process: student-parent-teacher-social institution-municipality;
5) obtaining the result of the implementation of educational activities.

The implementation of the national priority project of digitization of education is facilitated by a detailed analysis of the main disadvantages and advantages of the introduction and implementation of this process (Hutmacher, 1996).

Of particular importance when using computer technologies in the educational process at the municipal level is the consideration and development of non-formalized, creative components of thinking: implementation of a problem situation or setting a problem; independent formation of criteria for selecting the necessary operations leading to the solution of the problem; generation of guesses and hypotheses in the process of searching for the main idea of the solution (Imel, 1998).

Some software tools should be used for digitization at the municipal level (Katz, 2013).

MACSYMA is a computer algebra program that has various methods for solving algebraic problems, including finding derivatives, limits, integrals, determining matrices, etc. (Loreman et al., 2016). This tool can calculate tasks both numerically and graphically.

EUREKA is a software method for solving a system of linear and nonlinear equations, which is used to find solutions of linear equations and plot graphs (Peter Gray, 2008).
GRAPHER is a method of programmatic construction of graphs in graphical and numerical format, a tool for scaling and printing graphs in various formats (Shneyder, 2007).

Thus, the following aspects can be attributed to the advantages of digitalization of education from the point of view of the development of the municipality (Vuckovic, 2019):

1) incentive for development, economic interest of economic entities;
2) refusal or leveling of administrative and command management methods;
3) integration of educational institutions at the municipal level;
4) creation and support of the infrastructure of the educational environment based on computerization and informatization at the municipal level;
5) control of the obtained results, post-monitoring (Potash, Chan, 2015).

Practice shows that already now, they turn to post-monitoring - the results of testing and digitization of three different schools are analyzed, where the provision of computer equipment was recorded at a sufficiently high level, and not only computers, working machines, but also 3-D printers, 3D labs, 3D glasses, 3D cinemas, media libraries and even virtual museums (Roberts, 2009).

Digitization of education as an aspect of innovative economy

The government's goal is more relevant than ever in today's conditions - building an innovative economy that reflects the priorities of the region's development, characterized by the transition to intensive development, large-scale digitalization of municipalities, active penetration of digital technologies into all their levels of the educational system. The educational system is an active participant in national projects, in particular the "Education" project, which is implemented as part of the "Digital Economy" national project (Schwartz, 2017). However, along with the identified advantages, it is impossible to bypass the problems of implementing such a transformation - the digitalization of the educational environment at the municipal level, which just explains the reason that at the moment only about 10% of municipalities comply with the requirements defined by law in the regulatory framework for the organization and provision of activities on digitization (Tartakovsky, 2015). In the field of municipal education management software, a number of the following problems can be identified:
– almost complete absence of unified data storage databases (cloud technologies)
- lack of necessary professionalism and competencies of personnel, management personnel, related specialists in IT technologies and education;
- absence or insufficient automation of the interaction of all participants in the process.

The need to optimize the system, including municipal management, comes to the fore, which will reflect the trend of changing the combination of the functionality of the teaching staff and the informatization of the process itself (Maksymchuk et al., 2022). Here, the following main directions of formation of education management at the local level can be distinguished (Melnyk et al., 2021):

1) active computerization and informatization;
2) creation of information infrastructure;
3) implementation and development of information and communication technologies;
4) creation of information culture;
5) limiting the negative content of a wide information field - ensuring and guaranteeing safety, age restrictions;
6) updating the regulatory environment within the framework of the issue under consideration;
7) availability of resources: material, financial, personnel;
8) detailing the programs and methods of implementation of digitalization program pilot announcements with simultaneous provision of the above-mentioned resource base, including the regulatory and legal base in the field of education and culture at the local level;
9) development of reliable databases, repositories, which may be accompanied by state support
10) professional development, obtaining additional necessary competence of the personnel involved in this process - a project to create regulations - training of regional managers in the methodology of digitalization of the main management processes in the field of education and culture;

11) organization of complex vertical interaction (student – subject of the educational system – municipality) (Dykan et al., 2021).

Digitization requires the introduction of not only technological innovations, but also the training of employees to solve emerging social problems, such as information privacy, ethical issues, psychological and physical health (Saienko & Teplyi, 2010). As everywhere in the world, the rapid and sometimes unexpected development of the coronavirus pandemic
(COVID-19) has had a profound impact on education, affecting all students, teachers, education and training workers. The main consequence of the pandemic is the closure (partial or full) of schools and higher education institutions in an attempt to contain the spread of the coronavirus. For many, it was a completely new experience, and in most cases it will continue as the pandemic continues to change the world. Also, the war in Ukraine appeared as another challenge in educational activities. In the conditions of war there is a need for online education.

Digital technologies are being used on an unprecedented scale to ensure continuing education at a sufficient level. As a result, digitalization of existing education systems has significantly accelerated. There is a growing need not only to assess the scope of digitalization and the challenges that arise, but also to take into account the real impact of such accelerated changes on the quality of education. In addition, the crisis due to the coronavirus pandemic (COVID-19) is leading to an unprecedented shift to online learning and the use of digital technologies. There is a possibility that the current crisis marks a point of no return for the widespread adoption and use of digital technologies in education.

The government promotes the development of a highly effective digital education ecosystem through the following measures:

• investment in infrastructure and modern digital equipment;
• development of digital competences of teachers and lecturers
• development of effective planning and digital capacity building, development of appropriate digital tools and creation of quality educational content (Saienko & Gurmazhenko, 2010).

A measure like Enhancing Digital Skills and Competencies for Digital Transformation aims to develop basic skills from an early age, including digital literacy, computer education and data technologies. Digitization, in turn, involves rethinking existing educational processes with the help of digital technologies. The key goal of digitization in education is not only to "go digital", but also to increase value and efficiency with modern technologies.

Digitalization is more inclusive vivacious than automation, since the latter may not even need to participate in the larger educational transformation brought about by digitalization. The term "digitization" implies a broader vision, a long-term perspective and, most importantly, serves the purpose of aligning education systems with the needs of the population of the 21st century.
Conclusion

The implementation of all the above-mentioned measures, obtaining the maximum effect from the implementation of a large-scale digitalization program is possible only under the condition of complex systemic contact and interaction of representatives of municipalities, employees of the education system and the response of students and their parents, that is, a comprehensive assessment of the digitalization process, as well as the exchange of experience that is already in a number of regions and even abroad, and its replication, which will lead to the improvement not only of the education system at the local municipal level, but also to the improvement of the national education system as a whole.

Modernization of educational and management activities in the digital environment and the use of digitization and digitalization tools will lead to an increase in the effectiveness of the organizational and management processes of digital transformation of the municipality, ensuring the active penetration of digital technologies into the educational process of various educational institutions of the organization.

Digitization in education is not only the transfer of all educational materials (textbooks, methodical recommendations, textbooks) to electronic form, but also the possibility for pupils and students (students) to perform tasks remotely on computers and tablets. Pupils have the opportunity to remotely study the material of general education programs on their own, and teachers or lecturers also remotely check the extent to which the acquired knowledge has been mastered. Digitization facilitates the educational process as a whole: it makes it more comfortable and accessible for all participants of the educational process (students and teachers, students and teachers).

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