Urgent directions in scientific research of informatization of preschool education in Ukraine

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Abstract. The authors examine the expediency and importance of informatization of preschool education; outline the main normative basis of Ukrainian in this area. The goals and directions of informatization of preschool education are defined, including the introduction of ICT in educational process and management, the formation and development of digital competence of preschool education participants. A number of problems and contradictions of informatization of preschool education is defined. The urgent directions in the research of problems of informatization of preschool education are appointed.

Keywords: *scientific research, preschool education, informatization of preschool education, cloud services, digital competence.*

The modern society is characterized by rapid development of information and communication technologies (ICT), which are integrated into all life spheres – economy, industry, science, culture, education and others. The introduction of new technologies, wide distribution of personal computers and their "successors" (laptops, netbooks, tablet PCs, smart phones, etc.), development of communication networks, web and cloud services ensure the dissemination of data flow, promotes the formation of global information space, establishment of information and knowledge society.

Various aspects of the information society were considered by researchers: D. Bell, V. Bykov, V. Havlovskyy, A. Halchynskyi, N. Hendina, V. Zhukov, V. Inozemtsev, M. Castells, D. Lyon, A. Rakitov, A. Toffler, V. Tsimbalyuk and others.

Problems of informatization of the educational sector, as an integral part of becoming knowledge society is reflected in the researches of V. Bykov, A. Gurzhiy, V. Dyvak, M. Zhaldak, L. Kartashova, T. Smith, V. Lapinskiy, A. Lyashenko, N. Morze, Y. Mashbyts, S. Rakov, A. Spivakovskiy, O. Spirin, J. Parkinson, S. Papert, K. Richards, D. Reynold, R. Hamilton.

Among the researchers who have studied the possibility of using ICT in preschool education worth to mention L. Bosova, Yu. Horvits, A. Horyachev, A. Datsenko, A. Zvoryhina, S. Ivanova, N. Kirichenko, O. Korehanova, G. Lavrentyeva, T. Markova, V. Motorin, S. Novosyolova, Yu. Pervin, T. Ponimanska, and others.

The use of ICT in preschool educational institution is a new and complex issue, and requires fundamental scientific study.

The *purpose* of the article is to define the main urgent directions in scientific research of informatization of preschool education in Ukraine.

The introduction of ICT in preschool education is one of the newest current scientific and pedagogical issues. As noted by T. Datsenko [3], informatization of preschool education is completely objective and inevitable process. The appearance of the variety of high-tech learning tools (computers, tablets, digital projectors, multimedia boards, etc.) promotes the development of new educational environment. The production of multimedia educational products for preschoolers, such as computer games, electronic encyclopedias, cartoons, training videos and programs, websites, etc., is expanding. To some extent, the interest of preschool educators and specialists in opportunities of ICT use in professional activities is growing.

Normative background (case of Ukraine). Preschool education is compulsory part of the system of life-long learning in Ukraine and covers children aged 2 months –7 years (depends on the type of preschool institution). The feasibility and importance of informatization of preschool education is highlighted in a number of state regulatory Ukrainian documents.

As it is stated in the "National Doctrine of Education Development", the priority of education development is the introduction of modern information and communication technology for further improvement of the learning process, accessibility and effectiveness of education and training of young generation for life in conditions of the information society.

Within the implementation of the National Programme for the development of preschool education till 2017 (approved by the Cabinet of Ministers of Ukraine, resolution № 629, 13 April 2011) the provision of preschool institutions by universal educational-computer systems and Internet-connection is envisaged.

The document "Reform of the education system in the year of education and information society" [10] states the priorities of education system reforming: creating the general educational space, improvement of education management, etc.; defines the priorities for further development of preschool education in Ukraine: content update, introduction of new technologies, facilitation of innovating work in pre-schools.

The national standard “Basic component of preschool education (revised)”, approved in 2012, was expanded by introducing a new education line “Computer literacy”, which involves the formation of basic digital knowledge and abilities of preschool children.

Preschool sectors for ICT implementation. The main objectives of informatization of preschool education include the following ones: improving the quality and accessibility of education; improving management efficiency; development of digital competence and information culture of the participants of preschool education. Informatization of preschool institution involves the use of ICT in the administrative, financial, economic, educational and methodical activities and covers all main stakeholders: pupils, parents, teaching and administrative staff.

One of the most important reasons, why it is promising to use ICT in preschools, according to researchers [6], is their educational function. Using ICT allows creating conditions in which a child can learn not just the single concept or a specific learning situation, but generalized overview of all similar objects or situations. Therefore, such important operations of thinking as generalization and classification of objects according to certain criteria, is formed.

T. Markovs'ka [7] underlines the opportunities of mastering computer technology in preschool age, sobeit it doesn't cause harm to the child. Thus, in building dialogue "child – computer" the leading role belongs to teacher.

The development of digital competency of preschool teachers, their mastering information and communication technologies will allow fully use of the potential of ICT in learning process, development of children's creative abilities, shaping their personality, enriching the intellectual sphere. The children's interest in multimedia technologies creates additional motivation factor, which stimulate their attention and cognitive interest.

ICT helps to improve the approaches to the organization of educational institution's activity and management. The use of ICT is particularly necessary in the system of education management, because the management decisions are the ones which can influence and change the whole education system and its efficiency, which mainly depends on the accuracy and timeliness of these decisions. The way to improve the system of education management is the implementation of new information systems that allow optimizing the information exchange, workflow, making effective management decisions.

The demand of using ICT makes educational institutions to increase constantly the financial cost for purchase and maintenance of hardware and software, which causes a range of obstacles due to low financial support of educational institutions (especially preschools) in Ukraine. We can partly rectify this problem through implementing cloud technologies, which under certain conditions allow saving cost, directing them only to pay for cloud services used, and in case of free services – mainly for educational, administrative or other processes. Free solutions that can be used, in particular, in preschools, are cloud services of Google, Microsoft Office 365, Ukrainian portal "Klasna otsinka".

The main advantages of cloud services include: availability, low cost (or free of charge – for education institutions), time efficiency, flexibility, reliability, safety, large computing power. Given the benefits of cloud services, they can be successfully used in preschool organizational activities including implemening of workflow (correspondence, conducting electronic notes, diaries and journals, collaborative work with documents, etc.), interaction between the staff, managers and other stakeholders (creation personal virtual offices, interactive receptions, virtual classrooms, discussion forums, etc.) and others.

Using cloud services in management reveals a range of significant advantages for chief staff: efficient management of processes and resources; providing affordable communication; improving the efficiency of core activities; more effective decision-making; increasing objectivity in the assessment of staff; saving time, material and human resources; reduction of routine work [1; 2], and others.

Currently, special importance is the awareness of the modern preschool manager in fundamentally new requirements for the organization of management processes, his/her willingness to use ICT in professional activities. The formation of professional competences of modern preschool managers in terms of education informatization is an important scientific and pedagogical issue. Its solving requires changes in the content of the existing system of managers' training, creation of favorable organizational and pedagogical conditions for introduction of modern ICT in preschool institutions.

Problems and contradictions. In addition to determining the need and feasibility of informatization of preschool education, benefits and opportunities of using ICT in preschools, analysis of sources revealed a number of problems and contradictions:

– between the need for development of information society and insufficient computerization and informatization of preschool education;

– between a wide range of possibilities of using modern ICT to organize and support the learning process of preschool children and insufficient development of appropriate methodological support;

– between the recognized potential of using ICT in enhancing the quality of education and insufficient preparedness and competence of preschool teachers to use these technologies in professional activity;

– between the wide opportunities of using ICT in management and insufficient digital competence of managers of preschool education;

– between high requirements to professional competence of educators and administrative staff of preschool education sector and the real level of their training, etc.

Urgent directions in scientific research. The need to solve these and other contradictions causes relevance of fundamental scientific and pedagogical research of issues of preschool education informatization. In particular, we see the prospects and feasibility of studies in the following areas:

– study of didactic possibilities of using ICT in educating work with preschool children;

– development of psychological and pedagogical, methodological support for using ICT in the educational process of preschool institution;

– formation and development of digital competence of preschool educators;

– projecting information management systems of preschool education;

– formation and development of digital competence of preschool management staff.

Among other things, it is worth noting the relevance of research on the development and justification of scientific-methodological and theoretical-methodological foundations of ICT in the development of a new concept – inclusive education for all-round development and full integration of children with disabilities in social relations [4 ; 8; 9]. Today this problem is insufficiently investigated in Ukraine.

An important issue is also the development of psycho-pedagogical and teaching ergonomics requirements for electronic educational resources developed for preschool children, normalization of these requirements through appropriate standards. It should be noted that the current standardization and unification slightest approaches to determining the quality of educational software, tools, systems, especially in the area of preschool education remains quite low in Ukraine [5].

The open question is also developing the sanitary requirements to using ICT in work with children of preschool age. The current Ukrainian state standard 5.5.6.009-98 – State sanitary rules and norms "Arrangement and equipment of computer techniques cabinets in educational institution and regime of students work on personal computers" does not reflect the requirements for this age group.

Therefore, the implementation of information and communication technologies in preschool education can contribute to improving the organization of educational process; improving the quality of preschool education; improving the professional skills of educators, development of creativity, adaptability and innovation; forming digital competence of preschool education participants; improving management, increasing the degree of transparency and quality; ensuring interaction with parents and the public, etc.

ICT has to become an integral part of the modern educational institution, optimize and significantly improve internal processes. We consider the level of technical equipping integrated with digitally high-competent staff to be the crucial indicator of the capacity of the modern preschool institution.

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Актуальные направления научных исследований информатизации дошкольного образования в Украине
Ю. Г. Носенко, В. А. Богдан, Ж. В. Матюх
Аннотация. Авторами рассмотрен вопрос целесообразности и важности информатизации дошкольного образования, обозначены основные государственные документы в этой сфере. Определены цели и направления информатизации дошкольного образования, среди которых – внедрение ИКТ в учебно-воспитательный процесс и управление ДОУ, формирование и развитие цифровой компетентности субъектов дошкольного образования. Определен ряд проблем и противоречий информатизации дошкольного образования. Выделены перспективные направления научно-педагогических исследований проблем информатизации дошкольного образования.
Ключевые слова: *научное исследование, дошкольное образование, информатизация дошкольного образования, облачные сервисы, цифровая компетентность.*