



FORMATION OF INFORMATION AND COMMUNICATION COMPETENCE IN SPECIALISTS OF PRESCHOOL EDUCATION AS THE DEMAND OF MODERN TIMES

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Abstract: *The article deals with the necessity of mastering modern information and communication technologies (ICT) by specialists of preschool education and the effective use of such technologies during the educational process in preschool educational institutions. It determined the task of forming teachers' information and communication competence as one of the dominant at the present stage of development of the digital society, as it is vital for both personal growth and professional duties. The aim was to highlight the results of the study in the context of clarifying the organizational and pedagogical conditions for the content of formation of information and communication competence in preschool education institutions. The pedagogical research was carried out in 4 stages: ascertaining, preparatory, formative and control. It involved pedagogical workers of 6 preschool education institutions in Cherkasy, Uman, Smila in Cherkasy region and Pereiaslav, Kyiv region of Ukraine (46 people in total). According to the results of research-experimental work the effectiveness of the use of certain organizational and pedagogical conditions for the formation of information-communication competence in preschool teachers was proved. A holistic and systematic process of awareness of the use of ICT will contribute to the formation of information and communication competence in preschool education specialists.*

Keywords: digitalization of modern preschool education; information and communication technologies; information and communication competence; organizational-pedagogical conditions; preschool education specialists; children of senior preschool age; preschool educational institution.

INTRODUCTION

The realities of contemporary Ukrainian society have determined the need for teachers to master modern information and communication technologies (ICT) and their effective use in the educational process at all levels. Teachers are forced to quickly master the information and communication competences of ICT application to stimulate children's attention via online communication and classes, implementing the main regulatory documents in the field of education (Law of Ukraine "On Education", 2017). This has put new demands on preschool education specialists, which did not have to respond to before and obliged, first of all, to strengthen the process of forming important competences and master certain information and communication technologies (Council Recommendation on Key Competences for LifeLong Learning, 2018). On the one hand, the issue of digitalization in preschool education in Ukraine is already quite relevant, since teachers often use a variety of information and communication technologies in the organization of educational process (during classes, entertainment, holidays, etc.). On the other hand, the challenge of the time is the formation of information and communication competence for effective educational work of teachers with preschoolers.

The regulatory documents governing preschool education in Ukrainian society emphasise the need for widespread use of modern digital technologies in educational process and management of educational institutions (The Basic Component of Preschool Education, 2021). This may become a tool to ensure the success of the Ukrainian education system. In order to improve the quality of education, the use of information and communication technologies should move from individual projects to a systematic process which covers all aspects of education.

To date, a number of studies have been carried out in national and foreign science based on the introduction of information and communication technologies in the educational process, in particular as a tool for improving the quality of education (it improves the educational process and increases its effectiveness – Boiko, Morze, & Varchenko-Trotsenko, 2020; Bylieva & Nordmann, 2022; Lopushinsky, 2018; Re-decker, 2017; Tatnall, 2020), the development of the child's personality (activates the process of human cognition of environment and itself – Al-Hassan, 2020; Masoumi, 2021; Mörk, 2021; Otterborn, Schönborn, & Hultén, 2019; Pulak, 2018; Rahiem, 2021; Veličković & Stošić, 2016), information and methodological implementation and management of the educational process, communication of its subjects, automation of control and correction of learning outcomes.

Nowadays information and communication technologies have become a very powerful tool for teaching, upbringing and development of children, their implementation enables teachers to solve pedagogical problems at a higher level. This concept fully applies to preschool education, which aims to ensure the holistic development of the

child, his/her physical, intellectual and creative abilities through education, upbringing, socialization and the formation of necessary life skills as noted by Chen et al. (2018), Lokhvytska & Martovytska (2021), Nazarenko & Andriushchenko (2019), S. Semchuk, Skripnik, & B. Semchuk (2018) and others. This actualizes the problem of effective use of the potential of information and communication technologies as a tool for improving the quality of modern preschool education.

Object of research – educational process of preschool education institution.

Subject of research – the formation of information and communication competence in preschool education specialists as subjects of the educational process.

The aim of the article is to highlight the results of the study of organizational and pedagogical conditions in the semantic context of the formation of information and communication competence in preschool education specialists.

The research questions of the problem covered:

1. study of organizational and pedagogical conditions of the formation of information and communication competence of preschool education specialists;
2. diagnostics of teachers' readiness to use information and communication competence in professional activities;
3. providing a resource base for the organization of the digital environment of preschool education institutions;
4. introduction of information and communication technologies to the educational process, aimed at forming relevant competences in children of senior preschool age (in accordance with the requirements of the State Standard of Preschool Education of Ukraine – Basic Component of Preschool Education, 2021);
5. substantiation of the feasibility of using information and communication technologies to establish partnerships between preschool educational institutions and preschoolers' parents.

General research hypothesis. The formation of information and communication competence of preschool education specialists as a subject of educational process will be effective if it is carried out within the framework of their thorough preparation, which includes the stages: ascertaining, preparatory, formative and control.

The general hypothesis is specified in **partial hypotheses**: the formation of information and communication competence in preschool education specialists will be effective if the following organizational and pedagogical conditions are implemented:

- providing management of the process of using information and communication technologies in preschool education institutions;
- systematic training of teachers to use information and communication technologies in professional activities and development of information and communication competence;
- using information and communication technologies in organization of education, upbringing and development of children of senior preschool age;
- establishing partnership with parents of pupils by means of information and communication technologies.

1. THEORETICAL FOUNDATIONS OF THE RESEARCH

There have been studies on different aspects of improving the digitalization of education through the creation of information and educational space (Bykov, 2019; Bylieva & Nordmann, 2022; Eurén, 2018; Lopushinsky, 2018); the use of information and communication technologies in the organization of personality-oriented distance education, which integrates pedagogical and telecommunication technologies (Chen et al., 2018; Masoumi, 2021; Nazarenko & Andriushchenko, 2019; Tatnall, 2020; Veličković & Stošić, 2016); introduction of multimedia technologies in the educational process with students (Boiko, Morze, & Varchenko-Trotsenko, 2020; Lokhvytska & Martovytska, 2021; Moiseienko et al., 2019); formation of personal information and communication competence (Roszak & Kołodziejczak, 2017; S. Semchuk, Skripnik, & B. Semchuk, 2018; Vuorikari et al., 2016); combination of social partnership and education network (Pulak, 2018) and others .

Researchers Al-Hassan (2020), Chen et al. (2018), Masoumi (2021), Mörk (2021), Nazarenko & Andriushchenko (2019), Otterborn, Schönborn, & and Hultén (2019), Rahiem (2021), Veličković & Stošić (2016) define preschool education as a process and result of the comprehensive development of the child's personality, creating comfortable conditions for the formation of a physically, psychologically and socially mature personality, giving preschoolers the opportunity to realize their natural potential and creative abilities. We support the positions of scientists that in order to achieve the effectiveness of preschool education it is necessary to update all its components, in particular – the content, methods, forms and means of upbringing and education based on information-and communication technologies, which requires the formation of information and communication competence in preschool education specialists.

The study of the results of scientific research of the above scientists gives grounds to consider information and communication and digital technologies as an interactive multichannel tool for educational activities, and also indicates a significant educational potential of digital education, which should be possessed by preschool education specialists . Information and communication technologies allow: to use telecommunication space (Freeman et al., 2020); to carry out a qualified informative overview of partnership subjects; to combine individual and group forms of work, build individual educational trajectories (Lokhvytska & Martovytska, 2021; Tatnall, 2020); to create joint network content (Lopushinsky, 2018);toorganize remote forms of communication between the subjects of educational partnership (Roszak & Kołodziejczak, 2017); form basic competences for lifelong learning (Redecker, 2017; The Digital Competence Framework, 2020).

Therefore, we will on the content of the process of forming information and communication competence in preschool education specialists.

2. METHODS AND TECHNIQUES OF THE RESEARCH

The pedagogical experiment was carried out in 4 stages: *ascertaining, preparatory, formative and control*. The main directions of the use of information and communication technologies were identified on the basis of the ascertaining stage of the

experimental work. These directions may be simultaneously considered as *organizational and pedagogical conditions* for the formation of information and communication competence in preschool education specialists, in particular:

- f. management of the process of using information and communication technologies in the work of preschool educational institutions;
- g. formation of information and communication competence in specialists in preschool educational institutions and their preparation for the use information and communication technologies in professional activities;
- h. use of information and communication technologies in the organization of education, upbringing and development of preschool children;
- i. establishing partnership with parents of preschoolers by means of information and communication technologies.

Considering the results of the examination, the content and strategic planning of the *management of the process of using ICT in the work of preschool educational institutions* at the next formative stage of the pedagogical experiment was determined.

In accordance with the purpose of the next formative stage of the pedagogical experiment, the implementation of the bank of electronic resources for the education of senior preschoolers was carried out.

The tasks of the control stage of pedagogical experiment were: diagnostic testing of information and communication competence of preschool education teachers and the degree of their readiness to use information and communication technologies in professional activities; comparison of the results of ascertaining and control diagnostics.

Participants. The experimental work, which took place during 2020–2021, involved teachers of 6 preschool educational institutions of the cities of Cherkasy, Uman, Smila of Cherkasy region and Pereiaslav, Kyiv region of Ukraine (a total of 46 people), who provided training, education and development of children of senior preschool age. The experimental work was aimed at studying the potential of information and communication technologies to improve the quality of education, upbringing and development of children of senior preschool age. This work was aimed at studying the organizational and pedagogical conditions for the formation of information and communication competence in preschool education specialists.

3. RESULTS OF THE RESEARCH

3.1. Ascertaining stage of research.

At the same stage of the experiment, a diagnostics of the state of readiness of specialists of preschool educational institutions to use ICT in the work was carried out. In our opinion, the state of teachers' readiness to use ICT in their professional activities depends on the level of their information and communication competence. Diagnostics of teachers' information and communication competence of teachers is carried out according to the following criteria and relevant indicators: *epistemological* (comprehensive knowledge about modern information and communication technologies, ICT tools used in preschool education and personal professional development); *motivational* (awareness of the importance of ICT for improving the

quality of preschool education, positive motivation to use ICT in work, desire for professional self-development through ICT); *activity* (level of proficiency of modern information and communication technologies, ICT skills, knowledge of ICT in the work of teachers); and professional development (level of knowledge of ICT in the work of teachers).

According to the results of the diagnostics, all respondents showed that they are able to write and edit text information, create and send email messages via the Internet, download some materials and resources from the Internet to a CD and vice versa, print information using a printer, etc. At the same time, 48.5% of the respondents indicated that they have some difficulties in creating multimedia presentations, 59.7% – in using electronic databases in the pedagogical sphere, 81.3% – in creating a personal professional electronic portfolio, 58.9% – in participating in electronic conferences and virtual professional communities. Unfortunately, 53.4% of teachers indicated that for different reasons they use traditional means of preschool education and their professional self-development in their work. In addition, 60.2% of respondents demonstrated very limited understanding of the use of modern ICT in their professional activities.

In general, the diagnostic data showed that 5.4% of preschool education teachers have a high level of information and communication awareness, 34.4% have a sufficient level and 60.2% of teachers have an insufficient level of information and communication competence.

3.2. Preparatory stage of research.

In all experimental institutions, it was planned to create material and technical conditions for the effective use of ICT in different spheres of preschool education; to search for pedagogical software tools necessary for quality preschool education and other digital educational resources; to prepare teachers to use ICT in the organization of preschool education and personal professional development; to create and/or maintain methodological support for the process of introducing ICT in preschool education.

The centre of the information and communication educational space of each experimental preschool institution was the website, the main sections of which were the following pages: main page; history of the institution; administration; teaching staff; work plan of the institution; news; achievements; photos; methodological work; video presentations; information for parents; feedback (contacts, virtual consulting room).

In order to develop the information and communication competence of teachers *and their preparation for the use of information and communication and digital technologies in professional activities* in experimental preschool educational institutions, practical seminars were organised in full-time and distance form. Topics of the seminars: “Modern informative technologies”, “Methods of using computer games in preschool education”, “Methods of creating multimedia presentations for preschool education”, “Methods of creating digital didactic and developmental materials using Microsoft Office”, “ICT for learning mathematics by preschoolers”, “ICT for learning the alphabet and speech development of preschoolers”, “Web 2.0 services in preschool education”, “Google forms in working with parents of preschool children”,

“Creating a web portfolio using Word and PowerPoint”, “Cloud technologies for professional self-development of preschool teachers”.

Remote practical seminars of the declared topics were held in the form of webinars. During the experiment, such platforms as OpenMeetings, BigBlueButton, Microsoft Lync, Webex Cisco, Google Meet, Zoom, Adobe Connect were used to organise webinars. The most comfortable for the participants of the experimental work was the Adobe Connect platform, because its software allows teachers to take part in the webinar from anywhere using their mobile devices. In addition, the Adobe Connect platform provides high-quality video and voice communication, text messaging in chat, makes it possible to use a “white board”, demonstrate the “Desktop” and active software applications from the “speaker’s” computer, exchange Microsoft Office (PDF) documents, use tools for polling and voting among the webinar participants. The participants of the experiment used Skype, Zoom to provide individual consultations on request on different aspects of ICT implementation in the field of preschool education.

For the purpose of personal professional development, teachers of experimental preschool educational institutions were recommended to use the electronic resources of the Cherkasy Regional Institute of Pedagogy and Psychology, in particular the section “Modern Methods of Preschool Education” and to join the work of Pedagogical Internet-club “Wonderland of Preschool Education”, created on the Cherkasy Educational Portal – the website of the Cherkasy Regional Institute of Pedagogy and Psychology RIPET. Teachers also actively used the materials of the electronic publication “Pedrada: portal of educators of Ukraine” (<https://www.pedrada.com.ua/>), the Distance Academy (<http://www.d-academy.com.ua/>), took part in Internet seminars and web conferences on topical issues of preschool education.

In addition, preschool educational institutions formed creative groups of teachers in the main areas of ICT use to improve the quality of preschool education. For the effective work of each of the creative groups, in accordance with the objectives of the experiment, the goals were specified; instructions on the procedure for organising and conducting experimental work were developed, which were approved by issuing a corresponding order in preschool educational institutions. The efforts of the teachers of each creative group were aimed at processing scientific and methodological literature, studying and analyzing pedagogical experience on the use of ICT in the implementation of the tasks of the main educational lines, defined by the Basic Component of Preschool Education: “Child’s Personality”, “Child in Society”, “Child in the natural environment”, “Child in the World of Art”, “Child’s Play”, “Child in Sensory and Cognitive Space” and “Child’s Speech” (The Basic Component of Preschool Education, 2021).

In order to create personal digital resources for the education, upbringing and development of children of preschool age, participants of creative groups were recommended to use materials from the website “Funny Alphabet”, “Thematic collection of drawings” (in English), “Collection of educational materials for children”, “Children of Ukraine”, “Library of the Ukrainian literature”, “Governmental site for young citizens”, “Children’s site”, “Children’s fairy tales”, “Children’s portal Pustunchyk”, “Children’s site Levko”, “Storyteller”.

According to the results of the work of creative groups of specialists in preschool educational institutions, a bank of electronic resources of fairy tales, cartoons, documentaries of cognitive character for children, educational game programs, crosswords, songs and melodies, presentations for the implementation of all the above mentioned educational lines has been collected. Teachers also created collections of various sounds to be used in games and classes with children, reproduction of paintings by famous artists, video and music physical activities. A selection has been made of virtual tours of outstanding places in Ukraine and virtual excursions to museums of Ukraine. (On-line excursion to Kolomyia Museum of Easter Egg painting, virtual tours to Ukrainian open-air museums, virtual excursions to zoos and aquariums of the world, etc.). Authors' digital resources prepared by creative groups were posted on the Cherkasy educational portal in the section "Collection of digital resources" (<http://oipopp.ed-sp.net/taxonomy/term/207>) and are actively used by teachers of experimental educational institutions in further experimental work.

3.3. Formative stage of research.

The article presents some examples of the use of ICT in the implementation of the task of the educational lines of the Basic Component of Preschool Education for the formation of relevant competences in children.

For the formation of *personal-assessing competence* in the work with senior preschoolers, teachers used the digital resource-presentation "Formation of the emotional experience of a preschooler by means of fairy tale" – for the formation of emotional activity as a component of the child's personal culture; "Ways to implement the tasks of emotional and value development in working with senior preschoolers" – to form children's ability to understand their own and other people's feelings; video game "Emotions with fish. Learning words" – to support and develop the emotional sphere of the child. Digital resources "Formation of health-saving competence of preschoolers" became very useful for the introduction of different kinds of sport and games, introduction of the idea that only healthy lifestyle will make them strong, healthy and cheerful. In order to improve the health of children, teachers of the experimental institutions used the digital resource "Colour Therapy". In addition, video activities "Glove" and "I have ten fingers" contributed to the strengthening of children's health and consolidation of knowledge about its preservation.

Formation of *social and communicative competence* by teaching children in the virtual school "Etiquette for kids" on the children's portal "Pustunchyk". Besides, during the lessons children analyzed the video files "ABC of politeness", "Evaluate the actions in fairy tales", "Good deeds", "Bad deeds". Digital resources were also useful with the help of which children got acquainted with their rights and duties. Riddles, illustrations, interesting tasks given in the presentation "Road signs – our helpers", motivated preschoolers to actively study traffic rules.

The content of the educational field "*Child in the environment*" provides for children to have knowledge about living organisms and their habitat, the diversity of natural phenomena, cause and effect relationships in the environment and the relationship of natural conditions, flora and fauna, the positive and negative impact of human activity on nature. The formation of *natural and ecological competence* was facilitated

by the use of multimedia projects “Formation of ecological awareness and competence in preschool children” which are represented by a number of presentations and video films “What do circles on hemp mean?”, “Miraculous changes of a seed”, “A droplet-traveler”. Illustrative presentations “Ecological kaleidoscope” stimulated the development of logical thinking and children’s knowledge expansion about the well-known winter natural phenomena. The digital resource “Fruit and Vegetables – Health Products”, didactic computer game for preschoolers “Where is whose house?”, online games “Hungry Bears” and “Feed the Dog”, visits to virtual zoos not only enrich preschoolers’ knowledge about the relationship between human health and nature, but also provide moral education of children.

The educational field “*Children in the World of Culture*” involves the formation of a sense of beauty in its various manifestations, aesthetic attitude to life, development of artistic abilities, formation of elementary labour, technological and artistic skills, independence, culture and safety of work. Visiting virtual museums of Ukraine, listening to Ukrainian music and getting acquainted with “famous voices of Ukraine” on the children’s portal “Pustunchyk” contributed to the formation of *artistic and productive competence*; the use of multimedia games for the development of musical skills of preschoolers: “How Kolobok was travelling – the nature of music studied”, “Cheerful notes”, “Guess the melody”. Musical and didactic online games “Hares”, “Try and guess” contributed to the formation of the ability to classify sounds and recognize musical instruments by sound. The use of the presentation “What are the books?” allowed teachers to expand children’s knowledge about the variety of books and their importance.

The development of imagination, the formation of artistic skills, the ability to use a computer mouse contributed to the involvement of preschoolers to work in the graphic editor Paint. Children learnt to draw houses for magical characters, rainbow, sun, clouds and rain as well as to realise their own imagination. During the video lesson “Mixing primary colours” children actively used the knowledge gained in practice. Thanks to the digital resource “Ukrainian writers for children”, which contains presentations and audio files, children got acquainted with literature as an art of words. The video “How to behave in the theatre” helped children to learn and remember the rules of behaviour in cultural institutions.

The formation of *mathematical competence* is provided by the introduction of ICT in the educational process of experimental preschool educational institutions. Children learnt to work on the computer. While working the “Calculator” program, senior preschoolers learnt to type numbers, arithmetic signs, independently compose and solve tasks. Children were offered games “Number composition”, “Which digit is missing?”, “Which sign do you like?”. In addition, in the graphic editor Paint children drew geometric shapes and fantasies with geometric shapes, colouring them in different colours: “Fir tree”, “Mushroom”, “Pyramid”, “Mosaic”, “Match the houses”. The use of the cartoon “Learning colours and numbers” and video “Learning numbers” allowed to activate different analyzers in the process of teaching children mathematics. The use of online games also contributed to the acquisition of mathematical competence by senior preschoolers: “Lines for children”, “Mickey Mouse: Counting together”, “Make a decision”, “Find the differences”, “Learning numbers” and others.

The formation of *communicative competence* was facilitated by the use of the author's electronic manual "Fairy tale miracle" in the experimental work. During the presentation of letters to children, the program "Visiting Mother Goose" was used. Listening to musical and audio fairy tales "Ivan-Pobyvan", "Ivasyk-Telesyk" and others, posted on the website "Storyteller", as well as games for the development of coherent speech of preschoolers, contributed to the enrichment of children's vocabulary and the development of auditory memory. Working on the computer in a text editor, children improved their knowledge of grammar, learnt to type letters, syllables, words from familiar letters with one and two hands ("Create a word", "I say – you write!", "Familiar words").

The work, carried out in this way, convinced us that the use of ICT as a didactic tool helps to increase the motivation to learn in preschoolers, the development of creativity, children's attention, imagination, memory, logical thinking, is one of the conditions for creating a psychologically comfortable environment in preschool educational institutions and an important resource in improving the quality of education. The pedagogical experiment explored the potential of ICT for *establishing partnerships between educational institutions and parents of preschoolers*. Thus, due to the created website, parents of preschoolers had the opportunity to learn about all the events which took place in each experimental institution, to quickly receive information about life in their child's group, as well as information of educational, methodological and developmental nature which they can use in their families. The website of the institution introduced the possibility of constant feedback from the families of pupils, facilitated the exchange of experience in raising children in families; quick response reaction of the teaching staff to the problems which most concern parents. The experiment proved the effectiveness of using *e-mail*, *Viber* and *Telegram* as a quick, convenient and effective means of communication with parents of preschoolers was proved. During the preparation for different educational and developmental activities parents received invitations and necessary information as well as questionnaires and tests, which made it possible to study the point of view of the parental community on different issues, as well as to involve families of children in active participation in the educational process.

An effective form of partnership between teachers and parents of preschoolers was the *remote counselling centre*, which functioned through social networks Facebook and Skype. Family members had the opportunity to receive confidential and targeted information about their child's development, as well as competent answers from teachers, administration, practical psychologist, speech therapist, physical education instructor, music teacher, social teacher and nurse to topical issues related to the upbringing and education of their child.

Thus, we can state the significant potential of ICT for raising the level of parents' awareness about the quality of educational services in preschool educational institutions, providing the opportunity to receive information about the development of their child, improving the quality of pedagogical professional education and psychological support for parents and family members of preschoolers, creating conditions for partnership between teachers and parents on all issues of preschool education.

3.4. Control stage of research.

The results of the test diagnostics of information and communication competence of pedagogical workers of the experimental preschool educational institution showed an increase in the *high level* of its formation: from 5.4% at the ascertaining stage of the experiment – to 28.7% at the summative stage (dynamics +23.3%). There was also a significant increase in the number of teachers who demonstrated a *sufficient level* of information and communication competence: from 34.4% of people at the formative stage of the experiment to 62.8% at the summative stage (dynamics +28.4%). Positive is the fact that the number of teachers with *insufficient level* of information and communication competence decreased by 51.7%: from 60.2% at the ascertaining stage – to 8.5% at the control and generalizing stage of the experimental work. Comparative quantitative data on the levels of information and communication competence of teachers of experimental preschool educational institutions is shown in Table 1.

Table 1. Levels of the formation of information and communication competence of teachers of experimental educational institutions (%)

Levels	Ascertaining stage	Control stage	Dynamics
High	5.4	28.7	+23.3
Sufficient	34.4	62.8	+28.4
Insufficient	60.2	8.5	-51.7

Source: Own work T. Andriushchenko, L. Lokhvytska, O. Semenov, & N. Semenova.

DISCUSSIONS

The results of the conducted research conclusively prove the need to form information and communication competence in preschool education specialists as one of the essential ones. (Council Recommendation on Key Competences for LifeLong Learning, 2018; The Digital Competence Framework, 2020). The following definition was taken as a working one: information and communication competence involves the development of a person's ability to navigate in the information space, transform the information received and operate it in accordance with professional duties, personal needs and requirements of the modern high-tech information society. Thanks to the data of primary intelligence service on the scientific problem (Andriushchenko & Lokhvytska, 2021), an urgent need for the formation of information and communication competence among practitioners of preschool education institutions has been identified. It ensures the improvement of the quality of educational services and is relevant in accordance with the needs of the preschool education system and the realities of modern society. An important task, according to the authors, is also the preparation of future specialists in preschool education for the introduction of ICT and the formation of information and communication competence, which is reflected in a number of studies – Moiseienko et al., 2019; Mörk, 2021; S. Semchuk, Skripnik, & B. Semchuk, 2018 and others. However, the issue of the formation of information and communication competence of preschool education education institutions in in

the logical triad “teacher – preschooler – parents” has been ignored. Some results regarding the application of ICT and the formation of information and communication competence in teachers as subjects of the educational process are presented in scientific works (Chen et al., 2018; Masoumi, 2021; Otterborn, Schönborn, & Hultén, 2019; Roszak & Kołodziejczak, 2017), which is in the context of this study.

We believe that in the course of the scientific problem it was important to clarify the organizational and pedagogical conditions for the formation of information and communication competence in preschool education specialists, as well as the content that was reproduced in this study. Since the process of forming information and communication competence in preschool education specialists is based on optimising the interconnection of all components of the educational process, an important task was to master ICT, which are simultaneously considered as organizational and pedagogical conditions and their active use. In particular, at the first stage (ascertaining), basic knowledge, skills and abilities were determined, which resembled preschool specialists’ awareness of ICT and scientific and methodological principles of their use in preschool education institutions. At the second (preparatory) stage of the experiment, the material and technical conditions of using ICT in professional activities were provided. Special training of teachers was also conducted, the pedagogical expediency of using ICT in preschool educational institutions was revealed. At the third (formative) stage, the gained experience was tested by specialists of preschool education. Its purpose was realized in three directions. The first was the formation of relevant competences in children of senior preschool age through the introduction of ICT in the educational process of preschool educational institutions. The second one was partnership with parents of preschoolers by means of ICT. The third stage ensured the identification of teachers’ ICT competences in professional activities. At the fourth (control) stage, the levels of information and communication competence of preschool teachers were compared. The level of their readiness to use ICT in personal professional activities was analysed. Such a complex systematic process will contribute to the formation of information and communication competence in preschool education specialists.

CONCLUSION

In the course of the study the aim was achieved, the research questions were solved, the general and partial hypotheses were confirmed.

(1). The results of the completed research of the organizational and pedagogical conditions of digitalization of modern preschool education give grounds to state the significant potential of ICT for the development of information and communication competence of teachers of preschool educational institutions, organization of the educational process, provision of education to preschool children preschool age, establishment of partnership with parents of preschoolers.

(2). It has been found that the management of the process of using ICT in the work of preschool educational institutions is one of the priorities of creating a psychologically comfortable educational environment in preschool educational institutions and an important resource for improving the quality of modern preschool education.

(3). It has been proved that the development of information and communication competence of preschool teachers and the formation of motivation to use ICT in professional activities is facilitated by purposeful systematic training of teachers with the involvement of various digital services.

(4). It has been determined that using ICT in the organization of teaching, upbringing and development of children of senior preschool age as a didactic tool helps to increase the motivation to learn in preschoolers, the development of creative skills, their attention, imagination, memory, logical thinking, etc.

(5). It is confirmed that the use of ICT contributes to the establishment of partnership with parents of preschoolers, in particular: raising awareness of parents about the quality of education in preschool educational institutions, providing parents with the opportunity to receive information about their child's development, improving the quality of pedagogical professional education and psychological support for parents and family members of preschoolers, creating conditions for partnerships between the teaching staff and parents on all issues of preschool education.

FURTHER RESEARCH

We consider it expedient to direct further research to the development of technology for training future specialists in preschool education for the digitalization of modern preschool education in order to improve the efficiency of educational services.

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