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Liubov V. Lokhvytska
PhD of Pedagogical Sciences, Associate Professor,
Professor of the Department of Psychology and Pedagogy of Pre-school Education,
Deputy Dean for Scientific Work Faculty of Historical and Socio-Psychological Education
Hryhorii Skovoroda University in Pereiaslav, Pereiaslav, Ukraine
ORCID ID 0000-0001-6852-5477
lokhvytska@gmail.com

Tetiana K. Andriushchenko
Doctor of Pedagogical Science, Professor,
Head of the Department of Preschool Education and Professional Development of Teachers
MEI «Cherkasy Regional Institute of Postgraduate education
of Pedagogical Employees of the Cherkasy Regional Council», Cherkasy, Ukraine
ORCID ID 0000-0002-9881-5018
antatko97@gmail.com

Nataliia V. Martovytska
PhD of Pedagogical Sciences, Senior teacher of the Foreign Language Department
Bohdan Khmelnytsky Cherkasy National University, Cherkasy, Ukraine
ORCID ID 0000-0002-7258-3458
nv.martovytska@gmail.com

Marija Joniliene
PhD in Educology, Associate Professor of the Department of Childhood Studies
VDU Education Academy, Vilnius, Republic of Lithuania
ORCID ID 0000-0002-7902-5694
marija.joniliene@gmail.com

THE IMPORTANCE OF ICT IN SENIOR PRESCHOOLERS' MORAL EDUCATION

Abstract. The research features the results of the effective introduction of information and communication technologies (ICT) into the process of senior preschoolers' moral education in preschool educational institutions (PEI). The benefits of ICT implementation in preschool education in different countries are discussed, and the balance between ICT and moral education is clarified. The necessity to find new approaches to increase the level of senior preschoolers' moral education was emphasized, which determined the topicality of the raised scientific problem. An experimental study of ICT implementation in the senior preschoolers' (n = 432) moral education was conducted, which included constitutive, formative and control stages. Criteria (cognitive, emotional and value-oriented, behavioral), their indexes and levels of senior preschoolers' moral education were specified. Based on the diagnostic method "Me and My Friends", the initial levels (high, sufficient, medium and low) were determined. An experimental method of ICT implementation in senior preschoolers' moral education is presented. This method was developed considering the requirements of the Basic Component of Preschool Education of Ukraine (2021) and partial program (additional thematic program on the organization of moral education in preschool education) "Treasury of Morality" (2020). The method is aimed at building children's positive attitude to ICT as a source of information that promotes the consolidation of knowledge about moral norms and development of skills of moral behaviour in society. The educational potential of ICT is analyzed, which should be implemented to increase the level of senior preschoolers' moral education, namely: videos, multimedia presentations, cartoons, video tales, online games, smart cards etc. The sequence of the method implementation at the information-introductory, reconstructive-formative and affirmative-consolidating stages is revealed. The effectiveness of ICT implementation in the senior preschoolers' moral education was assessed at the control stage. Positive dynamics of high and sufficient levels in senior preschoolers' moral education in the experimental group (EG) is proved to have risen. Importance of the ICT introduction into the modern system of senior preschoolers' moral education of PEI is confirmed. The following prospective directions of the initiated study are outlined: interaction with parents in the context of children's moral education involving ICT, ensuring consistency of PEI and primary school in children's moral education, as well as the development of moral competence of university students majoring in "Preschool education".

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1. INTRODUCTION

Statement of the problem. The priority feature of the 21st century is the intensive development of the information space, which is becoming a strategic resource for society reformation. The use of information and communication technologies (*hereinafter referred to as* ICT) contributes to the modernization of all spheres of life, including educational one. Ukraine is currently developing a new education system focused on integration into the global information and educational space. ICTs are becoming an integral part of the holistic educational process, greatly increasing its efficiency. This process begins with the first component of the education system – preschool education and is accompanied by appropriate changes in the content, methods and means of teaching and educating children. ICT use is increasing at every stage of educational process. A careful analysis of the content of the analytical report on "Recognizing the potential of ICT in early childhood education" of the UNESCO Institute for Information Technology in Education (2010) suggests that these technologies create conditions for improving the developmental learning and play environment of preschool educational institutions (*hereinafter referred to as* PEI), raising the quality of educational services in the field of preschool education, ensuring the effectiveness of partnership between the participants of the educational process (teachers, parents and children), which contributes to the harmonious integration of children into the information society [1].

The need to implement ICT in preschool education is regulated by the State Standard of Preschool Education in Ukraine – the Basic component of preschool education (2021) [2]. In a variable component of Basic component of preschool education, the educational direction "Child in the Sensory-Cognitive Space. Computer Literacy" is introduced, which provides for the preschooler's digital competence formation – the ability to use information and communication and digital technologies to meet children's individual needs and solve educational and game tasks which are based on acquired basic knowledge, skills, positive attitude to computer and digital technology [2, p. 26].

It is worth noting that the rapid development of the information space highlights the necessity to adhere to moral principles in global interaction. However, one of the characteristics of modern society is, unfortunately, the devaluation of moral values. In this context, the State Standard of Preschool Education focuses on the formation of children's motivation for the values of virtuous interaction in the Internet space [2, p. 26]. Therefore, the problem of finding new tools for moral education of an individual, who in his/her activities is guided by the principles of humanism, good, mercy, etc. from preschool age, becomes topical. In the age of the information society, we have to take into account the educational potential of information and communications technologies. This reveals the topicality and high demand for research on ICT use as a powerful tool for moral education in early childhood. Taking into consideration rapid development of information and communication technologies and their significant impact on the growing generation, we see that the use of ICT in the senior preschoolers' moral education will contribute to the accumulation of information, resources, methodological and communication support of the educational process and increase the level of moral education of each individual.

The analysis of recent studies and publications. An important aspect of improving education worldwide, in the context of the information space development, is the ICT implementation in the educational process of educational institutions of different levels. These issues have been the subject of research by scientists in many countries. Their conclusions on the possibility and weak points of ICT implementation in the educational process formed the

basis of the scientific research [3], [4]. Studying the development of digital literacy in Western Asia's educational environment, F. Ihmeideh, F. Al-Maadadi concluded that it is focused on the use of digital tools to support the achievement of goals in human life situations [3]. This meets the requirements of the competence approach priority in modern Ukrainian education. Analysing the importance of teaching and learning technology in the national curriculum of Malaysian schools, S. Ghavifekr, W. Rosdy found out that the ICT application in the educational process increases teachers' and students' efficiency [4]. Scientists have found out that if teachers are well-equipped with ICT tools and facilities, the replacement of traditional teaching methods with technologies based on ICT teaching tools becomes one of the main factors in successful learning [4].

Studies which reveal the effectiveness of ICT in various aspects of preschool education are of great importance for understanding the scientific problem. Consistent with the conclusions of S. Ghavifekr and W. Rosdy [4] are the views of scientists in Ukraine [5], New Zealand [6] and Taiwan [7] on the dependence of educational quality on the ICT use in preschool education. Researchers have proved that ICT is an effective tool for teaching, educating and developing preschool children, as it takes into consideration their learning experience, interests and ideas. The implementation of ICT in preschool education helps to assess the quality of education and children's activities, improves the process of documentation maintenance, etc., which generally determines the progress of preschool education [5] – [7]. However, in this context, the conclusion of S. Papadakis and M. Kalogiannakis [8], which they made by analysing the educational value of freely available mobile educational programs for preschoolers, is considered to be noteworthy. The researchers have determined that teachers and modern preschoolers' parents have a limited number of tools to assess the quality of these programs.

The level of PEI teachers' readiness for the educational process has a significant impact on the effectiveness of ICT implementation in the educational process. L. Botturi's research [9] is focused on approbation of a DML course – digital and media literacy of teachers working in preschool education in Switzerland. The case study proved that even a short training course allows teachers to use ICT in their professional activities. This confirms the conclusions about improving the efficiency of the educational process through ICT implementation.

The research of D. Masoumi [10] and S. Kerckaert, R. Vanderlinde & J. van Braak [11] is focused on identifying ways of ICT application in preschool education. D. Masoumi's research demonstrated that in three experimental preschools in Sweden, ICT is used in the following ways: as an object of enrichment of existing practice; as a cultural mediator; as a way to entertain young children; and as a communication and documentation tool [10]. In addition, the study revealed the positions of teachers who consider ICT to be non-effective for preschool education. The results of this study confirm the existence of problems in the use of any innovations in preschool institutions, in particular, ICT [10]. A current study by S. Kerckaert, R. Vanderlinde & J. van Braak in Flanders found two kinds of ICT use in Flemish preschools: "ICT use supporting basic ICT skills and attitudes" and "ICT use supporting contents and individual learning needs" [11]. The obtained results confirm the opinion that ICT increases the efficiency of preschool education, giving additional opportunities for enrichment and transformation of existing curricula.

Related to the above is a study by K. Nikolopoulou and V. Gialamas, conducted in Greek preschools [12]. As ICT is not sufficiently integrated into preschool education in Greece, the emphasis is put on the use of ICT in play activities. Two factors were identified: "Playing with ICT as an effective mode of learning and developing children's technological competence" and "ICT use as free play" [12]. The following pattern was revealed: young teachers with a high level of ICT competence considered plays with ICT implementation to be an effective means of teaching preschoolers. Other colleagues believed ICT plays/games to be a kind of

entertainment for children. Thus, there appeared the necessity to raise the level of the preschool teachers' ICT competence in Greece [12]. Similar scientific results have been obtained in the research of B. Hardersen [13] and X. Wang & J. Hoot [14]. The raised problem is also relevant for the Ukrainian educational system.

P. Mertala's study analyses the ideas of Finnish children about the use of digital media in preschool [15]. The most popular devices appeared to be computers, tablets and cameras. Tablet computers have been recognized to be a powerful tool for involving preschoolers in ICT [15]. L. Couse, D. Chen [16] and K. Wohlwend [17] have shown that the digital competence of young children is formed more successfully when they play with digital applications on touch devices. Attention is drawn to researches that are focused on the study of the feasibility of ICT implementation in the formation of health competence of senior preschoolers [18] and music education of children [19]. T. Andriushchenko, L. Lokhvytska, Y. Rudenko, N. Dudnyk presented the expediency of ICT use in the process of senior preschoolers' competence development in healthcare (multimedia presentation, computer games, YouTube, smart maps, etc.) [18]. The scholars have presented a system of methodological support of ICT implementation in the educational process of PEI: media library, lesson plans, catalogue of educational sites, children's game development programs, etc. [18]. C. Panagiotakou and J. Pange studied 4–6-year-old preschoolers' music and creative work perception through various ICT tools [19]. The effectiveness of the use of automatic motion recognition technologies is proved. They were proved to be more effective for preschoolers because they provided better results in terms of concentration and interest [19].

The works of J. Bats, R. Valkenburg, P.-P. Verbeek are related to the study of ICT influence on students' daily lives and the level of cognitive moral reasoning in ICT-related situations [20]. The necessity to include ICT in moral education was noted by I. Narinasamy, W. Mamat [21]. The results of their research confirmed that ICT is an important pedagogical tool for improving the effectiveness of moral education of the younger generation.

Moral education of an individual determines their moral development, based on the recognition of their moral values, which provide them with moral socialization [22]. According to research of E. Turiel, D. Narvaez, R. Woodbury, Y. Cheng et al., the sensitivity of this process is related to the preschool childhood, when a child develops emotional trust in others, then the primary assimilation of moral principles begins to accumulate their own moral experience [22] – [23]. Analysis of scientific provisions on the problem of moral education of the growing personality gives reasons to claim that this process is uneven in nature and has the following structural components: cognitive – awareness of moral norms and rules, formulation of moral judgments and inferences; emotional and value-oriented – the unity of the emotional sphere formation, value orientations and empathy; behavioural – exercise in the moral behavior manifestations in a situation of moral choice, moral orientation in interaction with peers, etc. [22], [23]. The outlined components of moral education were taken as the basis in determining the criteria of senior preschoolers' moral education during our experimental work. However, as H. Usakli [24], M. Buon, M. Habib, D. Frey rightly noted [25], moral education is a complex process and it provokes many difficulties in the process of children's moral development. The main task is to improve morality of each individual, which results in the search for new approaches in the implementation of moral education tasks.

Thus, the results of the analysed research provide grounds to claim that ICT in preschool education is an innovation which is worth implementing. The best world practice of preschool education proves that in many countries in recent years there has been a tendency to develop and implement a strategy for the use of ICT in preschool education.

The purpose of the article is to outline the advantages of ICT implementation in home and foreign preschool education on the basis of the analysis of the existing research; to specify the ICT influence on preschool children's moral education; to specify criteria, indexes and

levels of senior preschoolers' moral education; to determine the educational potential of ICT in the process of performing tasks of moral education in PEI; to verify experimentally the method of ICT implementation in the senior preschoolers' moral education; to make an analysis of the study results on the effectiveness of the ICT implementation in raising the level of senior preschoolers' moral education; to substantiate ICT use in children's moral education in modern system of preschool education.

2. RESEARCH METHODS

The following theoretical methods were used to conduct the study: analysis and synthesis of resource base (for the problem statement, its theoretical study and comprehension); systematization, specification and generalization of scientific positions. The empirical study used a diagnostic method to determine the levels of moral education of senior preschool children and a method of mathematical statistics (Fisher's φ^* criterion was used) for quantitative and qualitative analysis of the results (at the constitutive and control stages of the experiment).

At the formative stage, the method of formation of moral education in senior preschoolers using ICT was used, which was tested during an experimental study in 2019–2021 in 9 preschool institutions in Kyiv, Cherkasy and Poltava regions and the city of Kyiv (Ukraine). The study involved n = 432 senior preschoolers, of which n = 214 were the children in the control group (CG) and n = 218 children in the experimental group (EG). The groups were homogeneous in terms of age and gender differences. Experimental research work was aimed at studying the influence of ICT on the effectiveness of the formation of senior preschoolers' moral education and was carried out in 3 stages: *constitutive, formative and control.*

3. RESULTS AND DISCUSSION

3.1. Constitutive Stage of the Research

At the constitutive stage of the experiment, the initial levels of senior preschoolers' moral education formation were determined. To implement this task, the diagnostic technique "Me and My Friends" was applied [26], it was based on the provisions of the modified methodology "Moral Identity Test (MIT) for Children" [27]. Data were collected by analysing the results of projective methods – children's drawings and by conducting conversations with them on the content of the image. This stage lasted from September 2019 to February 2020. Participants in the empirical study were children of senior preschool age, who were included in the CG and EG.

According to the defined components of moral education (E. Turiel, D. Narvaez, R. Woodbury, Y. Cheng et al.) [22] – [23], the following criteria of preschoolers' moral education were distinguished:

- *cognitive* with the following indexes: awareness of what is good and what is bad according to the age; development of moral judgments; ability to do moral reasoning;
- *emotional and value-oriented*, which include the following indexes: the presence of formed moral feelings; adequacy of emotional reactions; value-oriented attitude to moral norms and rules;
- *behavioral* with the following indexes: following moral norms; making moral choices; ability to carry out moral assessment and self-assessment.

Based on the theoretical analysis and content of the method "Me and My Friends" [26], the interpretation of the moral education levels in senior preschool children (high, sufficient, medium, low) was performed:

- *high level* – awareness of the concepts "the good" and "the bad", the ability to do moral reasoning, cope with emotions, express sympathy, empathy and care for others; moral behavior of a child is characterized by the fact that he/she does not only understand the importance of moral behavior, but also feels the necessity of and satisfaction with this behavior, is able to give a true picture of moral situation;
- *sufficient level* – is characterized by the fact that the child knows moral norms and declares them, but allows them to be neglected; partly offers his/her help to other children, taking care of their moral feelings; in the absence of control by adults sometimes violates the rules of moral behavior. The child is able to adapt to adults' moral requirements, focusing on the norms of moral behavior and assessing the possibility of using them for their own purposes;
- *intermediate level* – the child knows the need to follow moral norms and rules; however, may manifest indifference to peers, although when he/she is reminded by an adult he/she can be polite; has the skills in moral behaviour in a particular moral situation, but seeks at the first opportunity to avoid the required moral responsibility, putting their own interests above others;
- *low level* – the child has insufficient moral awareness for his/her age and little consciousness of the essence of moral behaviour; does not want to manifest cooperation with peers in a situation of moral content, reacts rudely and aggressively; often the child's behaviour has signs of deviation from moral norms, moral behaviour skills are not valuable for the child, he/she is not able to give reasonable moral assessment and self-assessment.

Quantitative results of the suggested levels of moral education in the children of EG and CG at the stage of the constitutive experiment are reflected in Figure 1.

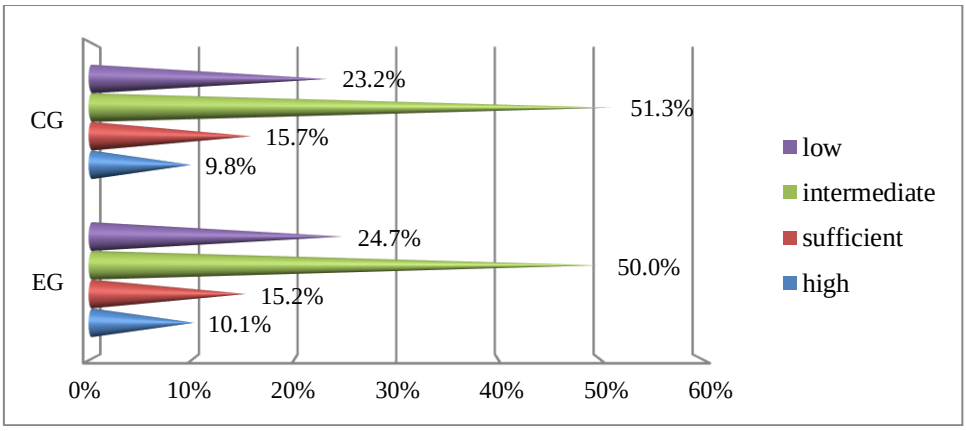

Figure1. Initial levels of senior preschoolers' moral education (constitutive stage) (%)

To verify the reliability of the experimental results as to the quantitative indexes of the moral education levels of senior preschoolers in EG in comparison with CG, we used a multifunctional *Fisher's* φ^**test (F-test, Fisher's angular transformation)* [28].

Empirical value φ^* was calculated by the formula:

$$\varphi^* = (\varphi_1 - \varphi_2)\sqrt{\frac{n_1 n_2}{n_1 + n_2}} \qquad (1)$$

where:

φ_1 – the angle corresponding to the larger fraction;

φ_2 – the angle corresponding to the smaller fraction;

n_1 – the number of observations in the first sample (EG) (n=218);

n_2 – the number of observations in the second sample (CG) (n=214).

Calculations demonstrated reliability of the results at the constitutive stage of the experiment, since with level of α=0,05, the fraction of senior preschoolers with indexes "High" and "Sufficient" level of moral education in EG is *not more than* the fraction of senior preschoolers with similar levels of moral education in CG.

3.2. The Formative Stage of the Study

To provide a scientific and methodological basis for the process of senior preschoolers' moral education with the use of ICT, a method of formative experiment was developed, which from March 2020 to February 2021 was tested in 9 preschool educational institutions of different regions of Ukraine. It is based on research ideas of R. Bolstad [6], D. Masoumi [10], K. Nikolopoulou, V. Gialamas [12], B. Hardersen [13], X. Wang, J. Hoot [14] and others, on the necessity of ICT implementation and their integration into the educational process of preschool educational institutions.

It is ***assumed*** that senior preschoolers' moral education will be more effective and efficient if ICT is integrated into the educational process. The implementation of ICT will expand the capabilities of traditional methods of moral education, diversify the resource base of information, which will increase the moral education of children.

The content of the experimental method of using ICT in the moral education of preschoolers is based on the conceptual principles and objectives of individual thematic modules of the "Treasury of Morality" program [29] and the regulations of the Basic component of preschool education [2]. In particular, the latter document states the necessity to develop in children the desire to obtain the necessary information, consciously consume media products and transfer them to active practical application in the field of dissemination of experience (a variable component of the standard of preschool education "Computer Literacy") [2, p. 28]. Thus, the planned, systematic and purposeful implementation of ICT in moral education is the demand to improve preschool education.

The main **tasks** of the experimental technique were:

- raising the level of moral education of senior preschoolers according to three defined criteria: cognitive, emotional and value-oriented, behavioural;
- formation of children's positive attitude to ICT as a source of information aimed at consolidating knowledge about moral norms and development of skills of moral behaviour in society;
- development of preschoolers' basic skills in working with a computer while doing play tasks and developmental tasks on moral education.

The work according to the method took place both in the process of organized activity with all children of EG preschool institutions (in special classes) and during their independent activity. The general algorithm of application of ICT in moral education of senior preschoolers was reduced to the organization of educational process on such three consecutive and interconnected stages:

- *information-introductory*, which was to acquaint the children with new moral concepts, providing them with knowledge about moral norms and rules;

- *reconstructive-formative*, which ensured the development of the children's emotional attitudes and moral awareness of the need to apply moral norms and principles of treatment of others;
- *affirmative-consolidating*, during which there was a stimulation for the children to accept and produce personally mastered moral norms and rules and the development of their ability to carry out moral assessment and self-assessment.

For each of these stages, a complex of ICT and its psychological and pedagogical support was chosen. After analyzing the research results of modern scientists (S. Papadakis, M. Kalogiannakis [8], S. Kerckaert, R. Vanderlinde, J. van Braak [11], L. Couse, D. Chen [16], K. Wohlwend [17] et al.) regarding the possibilities of using ICT in preschool education, the following were identified as dominant: watching videos, multimedia presentations, cartoons, video tales, using online games, making smart maps, etc. Previous work involved the development of an ICT resource base for moral education, compiling a catalogue of educational sites, which contains educational online games, videos, cartoons, video tales, etc. Table 1 presents a system of using ICT in the educational process of preschool education institutions aimed at raising the level of children's moral education.

Table 1

The system of ICT application in senior preschoolers' moral education

Thematic module of the program "Treasury of Morality"	**ICT support at different stages of moral education**		
	information-introductory	**reconstructive-formative**	**affirmative-consolidating**
About moral you know – without problems you grow	Video "Honesty" https://cutt.ly/nETVn7K Video fairytale "Fox and Crane" https://cutt.ly/hvtPulp	Video "About Thefts" https://cutt.ly/5vtPhIa Video fairytale "Rabbit Chill" https://cutt.ly/NETVS1H	Video fairytale "A Bully Goat" https://cutt.ly/rvtPLKE Video fairytale "A Cat and Rooster" https://cutt.ly/VvtP1qr
Adults respect – a polite child you can get	Video "Mother and Father" https://cutt.ly/ZvtP7od Video fairy-tale "Mother Hilda" https://cutt.ly/tvtAeF5	Video "One Day of adult life" https://cutt.ly/RvtApqw Video "Respect" https://cutt.ly/ivtAffX	Cartoon "Mia and Morton" https://cutt.ly/QvtAlDO Online game "How to Understand Another" https://cutt.ly/OvtAnWh
To live in a harmony with children and understand them	Video "Flowers of Friendship" https://cutt.ly/MvtAAk8 Video fairy-tale "Don't Offend Friends" https://cutt.ly/GvtAJyJ	Cartoon "About Everyone in the World" https://cutt.ly/9vtAVBu Online game "Two Little Sheep" https://cutt.ly/ZvtA07k	Video "What is a True Friend?" https://cutt.ly/7vtA5TD Cartoon "Lama and Friends" https://cutt.ly/zvtStRI
Confidence exercise and emphasize	Smart map development "Experience the Emotions of People" web service Google (www.coggle.it) Video "New" https://cutt.ly/WvtSc10	Multimedia presentation "Sympathy" https://cutt.ly/WETBcaz Cartoon "Little Big Dog" https://cutt.ly/svtSRbi	Multimedia presentations "Experiences of People", "Little Helpers" Audio Tale "Nightingale with One Wing" https://cutt.ly/QETV1C3
Good manners acquire – in some time politeness admire	Video "Polite words" http://bit.ly/2TETK3Z Cartoon "Whim" https://cutt.ly/MvtSVRh	Video "About Whims and Brawls" https://cutt.ly/PvtS2GP Video tale "Hare and the Hedgehog" https://cutt.ly/yvtS5YQ	Online game "Merry Who-kids" https://cutt.ly/6vtDt57 Video "Lessons of Good Behaviour" https://cutt.ly/LvtDsSJ

To do good deeds – to great enjoy it leads	Video “If You are not Friends” https://cutt.ly/BvtDvrD Making smart maps “Welcome Back. Boomerang of Good” https://cutt.ly/8vtDEAL	Video “How Ants Work” https://cutt.ly/DvtDP7O Cartoon “Lily and the Snowman” https://cutt.ly/pvtDL5T	Multimedia presentation “Joy” https://cutt.ly/0ETNmnc Video “Charity” https://cutt.ly/8vtD2Jq
To live in understanding means to forget about insults	Video “Useful Tips. To Fight or not to Fight?” http://bit.ly/3371grf Audio tale “Little Mouse Mytsyk” https://cutt.ly/8vtFyDj	Cartoon “Three Piglets” http://bit.ly/335WQRv Videostory “Spikelet” http://bit.ly/2PTum8e	Online game “Emotion and Feelings” http://bit.ly/2wGwwkW Video “School of Good Mood” https://cutt.ly/XvtFdJJ
Estimate your Self and do better yourself	Audio tale “About Greed and Generosity” https://cutt.ly/BvtFvn5 Cartoon “Kapitoshka” https://cutt.ly/UvtFRoq	Cartoon “Boastful Chicken” https://cutt.ly/9vtFPkx Video “Punish or Forgive” https://cutt.ly/svtFGEp	Video “The One who Lives Inside You” https://cutt.ly/AvtFXhf Online game “If You Did a Bad Deed” https://cutt.ly/tvtFMMX

The obligatory condition for the implementation of the tasks of experimental work was the provision of PEI with various gadgets (computers, laptops, tablets, multimedia projectors, etc.) and dosed use (up to 10 minutes per session in accordance with the requirements of paragraph XII.8 of Sanitary Regulations for PEI, 2016) [30].

The main resource was YouTube, which provides a wide range of videos, cartoons, video tales for viewing and discussion with children in accordance with the topic of moral education being studied. For example, watching videos “If you are not friends”, “Polite words”, “Charity” is worth combining with polylogue, transformation, making situations of success that stimulate children to moral reasoning and analysis of their own moral behavior.

During the formative experiment teachers chose situations of moral content similar to those that happened to children and make multimedia presentations. It created the basis for children to perform moral reflection, encouraging them to identify and provide moral assessment and self-assessment. Such were the multimedia presentations “Experiences of people”, “Little helpers”, “Joy” and others. Their use was combined with innovative methodological tools: besting, positive predicate, visualization, etc. The following programs are useful for creating multimedia presentations: Microsoft PowerPoint, Corel Presentations, Star Office, OpenOffice Impress.

For practical training of the children, online games and making of smart maps were used. Such game tasks have developmental and educational character. Based on the activation of interest, they contribute to the fact that children think about making their own decisions (for example, to make moral choices, although in a virtual form). An example of such ICT-based activity is the making of smart maps “Good returns. Boomerang of Good”, “Feelings and Emotions of a Person”, etc.; games “Merry Who-kids”, “How to Understand Another”, etc. During their performance, children have an opportunity to demonstrate independence and get confirmation of the correctness/incorrectness of their actions and results: if right, the approval music sounds, or if wrong, then a wail is heard, and they are encouraged to redo the task.

Picture 1 demonstrates the organization of the educational process on the use of ICT in the moral education of senior preschoolers.

Picture 1.Visual depiction of the use of ICT in the senior preschoolers' moral education

Organized in this way, the educational process of senior preschool children's moral education provides motivation for moral activity, helps to maintain a positive emotional climate, develops the ability to predict the outcome of children's own moral actions and promotes basic computer skills. The effectiveness of the method of using ICT in the senior preschoolers' moral education depends on the following factors: taking into consideration the age characteristics of senior preschoolers; integration of ICT into practical, individual and group activities of children; teachers' awareness of the resource potential of the chosen means of ICT for the formation of moral education of each individual.

The expected result of the introduction of the experimental method was a rise in the level of senior preschoolers' moral education, which was tested during the control experiment.

3.3. Control Stage of the Research

Assessment of the effectiveness of the experimental method of ICT application in the senior preschoolers' moral education was carried out on the basis of analysis of changes in the levels of EG and CG children's moral education in March–April 2021. At the control stage of the experiment, repeated diagnostic study was performed using the same projective method as at the constitutive stage of the study ("Me and my friends" [26]).

According to the obtained results, significant positive changes in the quantitative indexes of the levels of the senior preschoolers' moral education were recorded: the indexes of the high level of the EG children increased by 17.7%, in the children of CG – by 10.8%; indexes of sufficient level in the children of EG increased by 25.5%, in the children of CG – by 22.2%; the indicators of the average level decreased by 21.3% in the children of EG and by 16.3% in the children of CG; indicators of low level decreased by 21.9% in the children of EG and by 16.7% in the children of CG. The control data showed much higher indexes of high and sufficient levels of moral education in EG, where the educational process was carried out according to the experimental method. The CG also improved its results compared to the constitutive stage, which is explained by the systematic and meaningful organization of the educational process according to traditional methods. Comparative quantitative data on the levels of moral education in EG and CG at the control stage are displayed in Figure 2.

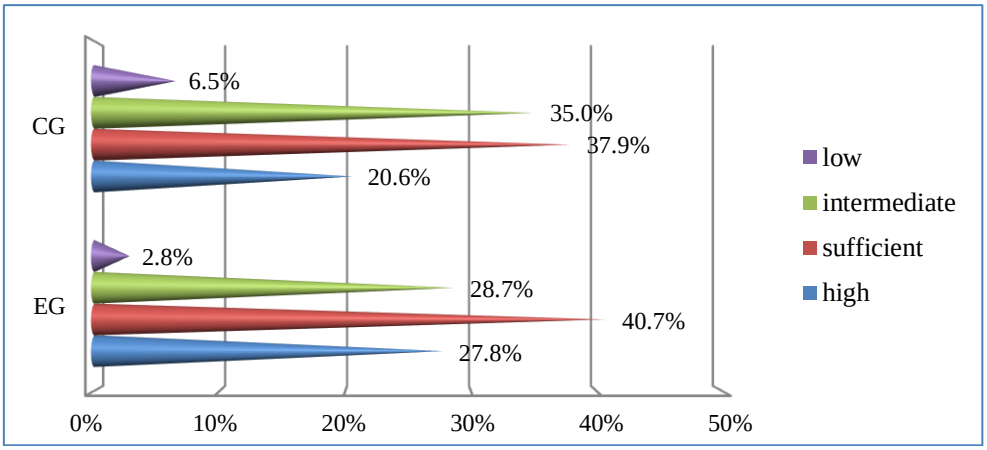

Figure 2. Levels of senior preschoolers' moral education (control stage) (%)

Based on the data demonstrated in Fig. 2, we checked the validity of our assumption that after the control phase of the experimental study, the share of senior preschoolers with "High" and "Sufficient" levels of moral education in EG *differs* statistically from the share of senior preschoolers with similar indexes of levels of moral education in CG.

The following hypothesis was offered:

H_0: the distributions are homogeneous, i.e. the senior preschoolers are included in EG and CG and belong to one and the same general unity. In other words, the obtained quantitative results in terms of "High" and "Sufficient" levels of moral education in EG and CG are close in value. Thus, according to this characteristic they can be considered to be identical.

H_a: the distributions are nonhomogeneous, i.e. samples are taken from different general units. The share of senior preschoolers with "High" and "Sufficient" levels of moral education in EG is higher than in CG. In other words, the difference between the levels of moral education of children from EG and CG is statistically significant.

According to the relevant table [28, pp. 330–331] values of ϕ were determined, that correspond to the shares of 27.8% + 40.7% = 68.5% (EG) and 20.6% + 37.9% = 58.5% (CG) in the corresponding groups: $\varphi_1(68.5\%) = 1{,}95$; $\varphi_2(58.5\%) = 1{,}742$. Using formula (1), we obtained an empirical value $\varphi^*_{emp} = 1{,}765$, that satisfies the inequality: $\varphi^*_{emp} = 1{,}765 > \varphi^*_{cr} = 1{,}64$. That is, the empirical value φ^*_{emp} is in the *zone of significance* and hypothesis H_0 is not valid. It means that reliably, with a level of significance $\alpha = 0{,}05$, the share of senior preschoolers with indexes "High" and "Sufficient" level of moral education in EG is *higher* than the share of senior preschoolers with similar indexes of levels of moral education in CG. That is, the studied groups belong to different general units, so they can not be considered homogeneous according to such feature as levels of moral education. It proves the statistical significance of the difference in the indexes of EG and CG obtained at the stage of the control experiment. Accordingly, the positive dynamics of growth of "High" and "Sufficient" levels of senior preschoolers' moral education is statistically significant only in EG. This result was obtained due to the introduction of the suggested experimental methodology using ICT in the senior preschoolers' moral education, which proves its effectiveness and the possibility of implementing it in preschool education.

Thus, the results of the diagnosis confirmed the effectiveness of the ICT implementation in the senior preschoolers' moral education, which coincides with the provisions of J. Bats, R. Valkenburg, P. Verbeek [20]; I. Narinasamy, W. Mamat [21]. Taking into consideration given above, the scientific ideas regarding the necessity for limited influence on children of various ICT tools seem debatable [10], [11]. The research proved that with the right choice of ICT, their reasonable content, which has a developmental and educational function, as well as

skilful pedagogical guidance, they give an opportunity to raise the level of senior preschool children's moral education before starting school.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The results of the research of the ICT influence on improving the level of senior preschoolers' moral education in PEI became the basis for making the following conclusions:

At the present stage of preschool education development, ICT is considered to be one of its important and effective components, which has information and visual content. ICT implementation is aimed at meeting children's individual needs, requests and interests, their activation. It helps to increase the resource potential of each individual's moral activity. Its consequence is the development of cognitive, emotional and value-oriented and behavioral components in the children's moral development.

At the constitutive stage of the study, the criteria, indexes and levels of senior preschool children's moral education were determined. Diagnostic assessment of the levels of senior preschoolers' moral education, members of the CG and EG, revealed the necessity to develop experimental methods of moral education with the introduction of ICT.

It is proved that the implementation of digital resources into the main tasks of the thematic modules of the Treasury of Morality program (videos, multimedia presentations, cartoons, video stories, online games, smart cards, etc.), their watching and discussion contributed to the preschoolers' moral growth. The use of the suggested content at the following stages of moral education: information-introductory, reconstructive-formative, affirmative-consolidating, ensured the formation of children's positive attitude to ICT as a source of information in regard to moral norms. Thus, the hypothesis that the senior preschoolers' moral development will be more effective if the process of ICT implementation is thematically related, was confirmed.

Carrying out the experimental methodology, we found out that the ICT implementation intensifies the potential of informational, emotional and value-oriented and action-based content for the implementation of the tasks of senior preschool children's moral education. According to the results of the control experiment, the advantages of ICT implementation in combination with traditional and innovative methods and techniques were established. It ensured the efficiency of the suggested method of moral education. Quantitative analysis revealed an increase in the fraction of children from EG with high and sufficient levels of moral education and a decrease in those who had medium and low levels compared to the constitutive stage of the experiment. The result is confirmed by calculations using the multifunctional Fisher's φ^* criterion, which proves that the noted positive dynamics of growth of high and sufficient levels of senior preschoolers' moral education was statistically significant only in EG. The proposed methodology deserves implementation in the daily work of PEI in Ukraine.

Prospects for further research are seen in: 1) the development of psychological and pedagogical support for the ICT implementation in the preschool children's moral education in cooperation with parents; 2) ensuring the continuity of the ICT implementation in preschool and primary education to increase the level of children's moral education; 3) development of guidelines for university students majoring in "Preschool Education" on ICT implementation in formation of moral competence.

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ІКТ В МОРАЛЬНОМУ ВИХОВАННІ СТАРШИХ ДОШКІЛЬНИКІВ

Лохвицька Любов Василівна
кандидат педагогічних наук, доцент, професорка
кафедри психології і педагогіки дошкільної освіти,
заступник декана з наукової роботи факультету історичної і соціально-психологічної освіти
Університет Григорія Сковороди в Переяславі, м. Переяслав, Україна
ORCID ID 0000-0001-6852-5477
lokhvytska@gmail.com

Андрющенко Тетяна Костянтинівна
доктор педагогічних наук, професор,
завідувачка кафедри дошкільної освіти та професійного розвитку педагогів
КНЗ «Черкаський обласний інститут післядипломної освіти
педагогічних працівників Черкаської обласної ради», м. Черкаси, Україна
ORCID ID 0000-0002-9881-5018
antatko97@gmail.com

Мартовицька Наталія Володимирівна
кандидат педагогічних наук, старша викладачка кафедри іноземних мов
Черкаський національний університет імені Богдана Хмельницького, м. Черкаси, Україна
ORCID ID 0000-0002-7258-3458
nv.martovytska@gmail.com

Йонілієне Марія
PhD з педагогічних наук, доцент кафедри дослідження дитинства
Академія освіти Університету Вітовта Великого, м. Вільнюс, Литовська Республіка
ORCID ID 0000-0002-7902-5694
marija.joniliene@gmail.com

Анотація. Подано результати дослідження ефективності впровадження інформаційно-комунікаційних технологій (ІКТ) під час морального виховання старших дошкільників у закладах дошкільної освіти (ЗДО). Розглянуто переваги ІКТ у дошкільній освіті різних країн світу, а також з'ясовано баланс між ІКТ і моральною освітою. Підкреслено потребу пошуку нових підходів для підвищення рівня моральної вихованості старших дошкільників, що визначило актуальність піднятої наукової проблеми. Проведено експериментальне дослідження використання ІКТ у моральному вихованні старших дошкільників (n = 432), що

передбачало констатувальний, формувальний і контрольний етапи. Конкретизовано критерії (когнітивний, емоційно-ціннісний, поведінковий), їх показники та рівні моральної вихованості дітей старшого дошкільного віку. На основі діагностичної методики «Я і мої друзі» з'ясовано вихідні рівні (високий, достатній, середній і низький) моральної вихованості старших дошкільників. Презентовано експериментальну методику використання ІКТ у моральному вихованні старших дошкільників. Вона укладена з урахуванням вимог Базового компонента дошкільної освіти України (2021) та парціальної програми «Скарбниця моралі» (2020) (додаткова тематична програма з організації морального виховання в закладі дошкільної освіти). Методика спрямована на формування у дітей позитивного ставлення до ІКТ як джерела інформації, що сприяє закріпленню знань про моральні норми і становлення навичок морального поводження в соціумі. Проаналізовано освітній потенціал ІКТ, що доцільно використовувати для підвищення рівня моральної вихованості старших дошкільників, а саме: відеоролики, мультимедійні презентації, мультфільми, відеоказки, онлайн-ігри, інтелектуальні карти тощо. Розкрито послідовність реалізації методики на інформаційно-інтродуктивному, реконструктивно-формувальному, афірмативно-закріплювальному етапах. На контрольному етапі оцінено ефективність використання ІКТ у моральному вихованні старших дошкільників. Доведено позитивну динаміку зростання високого і достатнього рівнів моральної вихованості старших дошкільників в експериментальній групі (ЕГ). Розкрито значущість впровадження методики використання ІКТ у моральному вихованні старших дошкільників у сучасну систему дошкільної освіти. Окреслено перспективні напрями започаткованого дослідження: взаємодія з батьками, забезпечення наступності між закладами дошкільної освіти і початковою школою з морального виховання дітей, а також питання розвитку моральної компетентності у студентів спеціальності «Дошкільна освіта».

Ключові слова: інформаційно-комунікаційні технології (ІКТ); моральне виховання; діти старшого дошкільного віку; експериментальна методика.

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