The Use of ICT for Training Future Teachers: An Example of the Course on «Art Education of Preschool Children»

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Abstract

The article highlights the problem of training of future teachers on the material of the course «Art Education of Preschool Children». The main attention is paid to the use of ICT as an effective means of improving the quality of education and the formation of information culture of applicants. The scientific researches devoted to application of Information and Communication Technologies, definition of levels of readiness of students to use ICT and the outline of the received skills of the teacher who has mastered information and communication competence are analyzed. The principles, methods and forms of ICT use in the context of the discipline «Art Education of Preschool Children» are revealed and its efficiency is demonstrated. The correlation between forms and methods of interaction with applicants and certain information and communication technologies is shown, the possibilities of using each of them are specified. Factors of ICT use efficiency are determined.

Keywords

Professional training, future teachers, Information and Communication Technologies, Art Education, forms and methods of interaction with students

1. Introduction

At the present stage of the development of society and education one of the main tasks is to prepare future professionals for active and constructive vital activity in the information society, ensuring quality, accessibility and efficiency of education, creating conditions for lifelong learning through widespread implementation of ICT methods and tools in educational practice. Implementation of this task involves achieving the following goals: the formation of information culture of applicants, the creation of new and additional conditions to improve the quality of education, development of new forms of education and educational technologies that based on ICT, etc. [1].

2. Analysis of Publications

In a worldwide scientists project «Intel Education. Transformation. Policy. Tool» one of the main tasks of UNESCO is to train professionals who know how to use ICT to work with information, are able to reflect, agile and flexible in solving tasks, effectively manage their life trajectory [5].

The challenges caused by COVID-19 in the context of the socio-economic situation in the world, and in Ukraine in particular, actualizes using distance learning technology in higher education institutions. Despite the unstable socio-economic situation, the system of distance education is developing rapidly in higher education [7]. Distance learning in higher education contributes to the introduction of new forms of learning, individualization, optimization of the educational process, is the

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logical evolution of the traditional model of learning. Most universities use different platforms for distance learning (mostly Moodle) [6].

Scientific and practical conferences on various levels on the introduction of e-learning and distance learning in higher education institutions are systematically held. In particular ICTERI: International Conference on ICT in Research, Education and Industrial Applications, gives scientists and practitioners the opportunity to get acquainted with quality developments, innovations in the field of ICT and use them in professional activities. The number of studies aimed at using ICT in the educational process of higher education institutions increased. This is a study of such Ukrainian scientists as D. Bodnenko [11], O. Buynytska [9], L. Varchenko-Trotsenko [9], S. Vasylenko [4], O. Zhiltsov [10], O. Lytvyn [10, 11], N. Morse [4], V. Proshkin [10,11] and others. Scientists S. Vasylenko and N. Morse conducted research to identify the most used, popular innovative technologies, ICT, best pedagogical practices, through comparison with the experience of EU universities and provided recommendations for the training of higher education competitive in the labor market [4].

The focus is on the quality of courses for higher education and their availability for the needs of the current generation of students. ICT in the educational process creates the preconditions for updating both content and learning technologies. One of the requirements for all participants in the educational process in the high educational institutions is the readiness of the future specialist to use ICT in educational work with children and their own professional development. G. Kozlakova identifies three levels of such readiness, namely: their own level of computer technology skills, the ability to directly use them in professional activities, the ability to improve their professional level through the Internet. Head of an International Research Project on Assessing and Teaching 21st Century Skills and Competencies of the Melbourne University notes that in the XXI century. Emphasis was placed on the ability to interact and communicate, to be creative and to think critically. Educational programs should be aimed at developing critical thinking, creative ingenuity, creativity, etc. [2]. The International Society for Technology in Education has identified six categories of National Educational Technology Standards that characterize the skills of a teacher with information and communication competence: 1) comprehension skills creation and use of technologies, the ability to use them; 2) skills in ethical, cultural and social specifics related to technology; 3) skills that emerge as a result of using technology tools to improve the learning process, the development of creative potential; 4) skills in using telecommunication tools to cooperate with participants in the educational process; 5) use of ICT tools for collecting, researching information; 6) skills in using ICT to solve problems, decision-making [3].

Among the problems of ensuring the quality of the educational process with the use of ICT is a partial violation of the principle of human-centeredness. This is especially acute during the training polylogue: focus on test slices of quality of education, to perform tasks online, students experience serious difficulties in communication, in the ability to persuade, argue, motivate, interest, present, conduct, organize any form of work. This problem has a negative impact on the quality of training of future preschool teachers, as the key task is to teach students professional communication with all participants in the educational process, and, most importantly, with children. Such skills, first of all, are formed in the process of teaching professional methods and, at the same time, show contradictions between the existing theoretical basis (basic research, innovative technologies, new educational programs) of professional training of future teachers and low level of professional competence. parts of students to work in preschool institutions [8]. For us, there are certain challenges in preparing students of the second (master's) level of specialty 012 Preschool Education for the Organization of Art Education in a blended and distance learning: prejudice against artistic activity, misunderstanding of the role of art for personal development; underestimation of ICT tools and technologies in art professional education, etc.

The purpose of the study is to theoretically substantiate and experimentally test the effectiveness of the use of ICT in the training of future teachers on the material of the course «Art Education of Preschool Children».

3. Discussion

The observational experiment was aimed at determining the motivation of future teachers for the discipline «Art Education of Preschool Children» and clarifying their levels of artistic competence.

3.1. The Level of formation artistic Competence of future Teachers

Criteria, indicators of formation of artistic competence in future teachers were determined, in particular:

1) motivational criterion (indicators: the presence of positive motives for mastering artistic competence; the ability to set goals with faith in achieving them; the need for creativity and the desire to implement it);

2) emotional criterion (indicators: emotional support of creativity and emotional attitude to the creative process; sincerity, immediacy of the experience caused by works of art; readiness for artistic reflection);

3) intellectual criterion (indicators: the presence and stability of artistic knowledge; the presence of knowledge about the impact of art on the development of children's personality and forms of organization of art education; the presence of associative and creative thinking, creative imagination);

4) activity criterion (indicators: possession of technical and methodological tools for the organization of art education of preschool children; demonstration of special abilities (figurative vision, poetic and musical hearing, stage diction and plasticity, etc.); independence and initiative in finding and trying to find original creative solutions).

According to the results of the research, the levels of formation of artistic competence of future teachers are determined and characterized:

- *sufficient* level (there are positive motives for mastering artistic competence; the ability to set goals with faith in achieving them; the need for creativity and the desire to achieve it; sincerity, truthfulness, immediacy of experience caused by works of art; willingness to artistic reflection; availability knowledge of the influence of art on the development of children's personality and forms of art education, a high level of associative and creative thinking, creative imagination, mastery of technical and methodological tools for art education of preschool children, willingness to demonstrate artistic abilities, independence and initiative in finding and trying to find original methods of solving creative tasks).

- *latent* level (characterized by the partial presence of positive motives for artistic activity; lack of clear idea and desire to master certain competencies; the dominance of internal motives and a certain dependence on external factors; partially expressed creative activity; variability in the needs for learning, creativity, self-improvement; the level of development of creative thinking, creative imagination, creative imagination at the stage of readiness, but without vivid expression; presence of manifestations of insecurity, fear, copying, etc.);

- *juvenile* level (marked by a small indicator of positive motives for artistic activity; reduced ability to set goals and lack of strong faith in achieving the goal; low level of creative activity, thinking, imagination; weakly expressed needs for learning, creativity, self-improvement, continuous professional growth, in self-expression, indicators of pedagogical, intellectual and creative abilities are characterized by imperfection and primitiveness).

Corrective pedagogical diagnosis of the study of the levels of formation of artistic competence took place in future teachers, who were conditionally united into two groups: experimental group (EG) 58 people and control group (CG) 63 people.

Methods of pedagogical diagnostics were comprehensively used to determine the levels of artistic competence of future educators: observation, dialogues / polylogues, conversations, questionnaires, interviews, diagnostic creative tasks. An author's online questionnaire «I am in the Art Space» was proposed, which contained three blocks of questions:

1. emotionally oriented (aimed at determining the presence of an emotional reaction to works of art);
2. technologically oriented (determined the level of understanding, awareness and formation of students' tools regarding the influence of art on the development of the child's personality);
3. reflection-activity (aimed at clarifying the situation regarding the needs of future teachers) in communication with art and its implementation.

In general, the questionnaire was aimed at determining the level of formation of future teachers of artistic competence: emotional and reflective attitude to art and knowledge about artists and their works; the level of awareness of the influence of art education on the development of personality; the level of artistic activity of future teachers (attending artistic thematic events, events, institutions).

We also determined the levels of artistic competence of future teachers with the help of a use the method Spiderscribe «I know five…» (outlining the level of awareness of students about artists from different arts) and a reflection exercise «The artistic potential of my childhood».

Using of a number of diagnostic methods allowed determining different levels of formation of artistic culture in the respondents, mostly latent: 63% of EG students and 61% – CG. Juvenile level was found in 26% of EG respondents and, accordingly, 29% of CG students. Only 11% of future EG teachers and 10% of CG teachers showed a sufficient level. The data are presented in Figure 1.

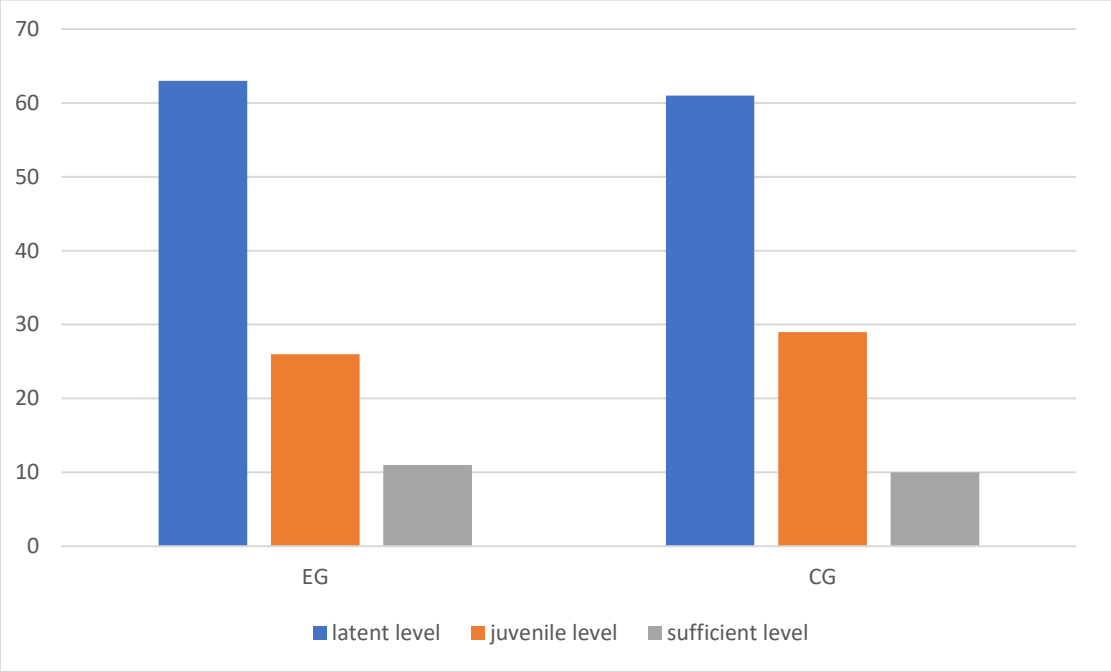

Figure 1: The level of formation of artistic competence to the formative stage of the study

According to the results of the statement stage and the logic of the study, the need to use ICT to improve the effectiveness of the formation of artistic competence of future teachers in mastering the discipline «Art Education of preschool children» was outlined.

3.2. Program for using ICT in the format of the discipline «Art Education of Preschool Children»

We have developed a step-by-step program for using ICT in the format of the discipline «Art Education of Preschool Children», which is based on the principles of:

1. the unity of three formats – online, offline and mixed;
2. synthesis of approaches to education (technological, culturological, competence);
3. electivity (giving learners some freedom to use ICT to achieve goals, content, forms, methods, teaching aids; giving learners some freedom to use ICT as a tool to determine the timing, time, place and evaluation of results);
4. creating a corporate learning atmosphere;
5. software a situation of success.

The program was tested remotely on the moodle platform and involved the active use of information and communication tools for the implementation of teaching methods:

1. Hangouts, Easel.ly, Movie Maker, Padlet, Piktochart, AnswerGarden for the implementation of cognitive-cognitive teaching methods (methods of concentrated learning, critical thinking, commenting, heuristic observation, comparisons, facts, research, hypotheses, prediction, errors);

2. Web 3.0 Technologies, Zoom, Slides, Prezi, Hangouts, Padlet, Socrative, Spiderscribe, bubble.us for the implementation of methods of cooperative learning (method of intervision; learning in small groups; team learning; group generation of ideas; intergroup dialogue; projects, group puzzle or mosaic, method «I-You-We», diary of artistic impressions);

3. Hangouts, Zoom, Easel.ly, Padlet, Piktochart, AnswerGarden for the implementation of interactive learning methods (techniques «Aquarium», «Brownian motion», «Bunch», «Rivin's dialogue», «Socrates' dialogue», «Vienn diagram», «Roundabout», «Angles», «Microphone», «Debate», «Brainstorming», «Unfinished sentences», «Loop discussion», «Press», «Tornado», «6x6x6»; games «Six hats of thinking», «Six pairs of shoes»);

4. Hangouts, Zoom, Pinterest, Padlet, Socrative using of multimedia support contributed to the modeling of various personal and professional situations, the development of emotional culture skills. Allowed to implement the method of imitation or role (metaphor method; observation, games (role, imitation, operational; business theater, blitz performance), empathy, psychological or plastic studies, psychogymnastics, meditation and relaxation exercises);

5. editors to create information and graphic models GoAnimate, GIF– animations, Movie Maker, Microsoft Excel, Powtoon, Pinterest, Spiderscribe o use the method of graphic models or illustrative (frames approach, diagrams, «I know, I want to know» table, graphic exercises, poster symbolic visualization, projective techniques, art techniques) provided a combination of verbal presentation of learning content with its symbolic and verbal image, which greatly facilitated the processes of self-knowledge and to understand;

6. diagnostic methods (biographical method (history of the act), acmeological methods, interviews, questionnaires, surveys, diagnostic and emotional exercises).

The approbation of these methods took place due to the fact that the university created a single information and educational environment – an integrated environment of information and educational resources (electronic library, educational systems and programs), software and hardware and telecommunications tools, current rules for their support, administration and use. provide unified technological means of information, information support and organization of the educational process.

Using ICT in the art world of future teachers was aimed at developing their analytical abilities, critical thinking, the ability to reasonably use multimedia applications for educational purposes: multimedia presentation; slide show; electronic report; multimedia report; electronic journal; virtual tour; multimedia edition; educational games hosted both on the Internet and on various media (off-line), multimedia simulators, educational multimedia systems, linguistic multimedia systems, multimedia Internet resources, such skills were formed, in particular, under while working on the topic «Using artistic retronovations and innovations». Students prepared a video presentation using PowerPoint, Powtoon, Slides, Movie Maker) about a certain technology («Museum Pedagogy» by Karl Friesen [12], technology of creativity development by Emilia Reggio and Loris Malaguzzi [13], technology «Talent education» by Shinichi Suzuki [14], «Lessons of admiration» [15], etc.), and then in a practical lesson created «pedagogical advertising» (GIF-animations, video advertising, video excursions). The lesson was conducted in the form of a business game in audio and video chats. Students – «advertisers» convinced the «expert» in the effectiveness and efficiency of the created product. Should note that the task of the «expert» is to indicate the arrows (identify weak aspects) of this technology. It is worth noting that the students got acquainted with art technologies in other thematic classes. For example, while studying the topic «Fine arts activities of preschool children», students studied the technologies «Colorful Joy» by L. Shulga [16], «The intrigue of the art of painting or how to talk to children about art» by Françoise Barb-Gall [17], the technology of free drawing (experience of educational institutions in the Czech Republic) [8], «Iroritay» – a system of working with color [18], «Sumy-e すいぼくが» – painting based on 5 elements (Japan) [19], etc. In the context of music education, we studied the technologies of Emile Jacques-Dalcroze «Music and Rhythmic Education» (Switzerland) [20], Zoltan Koday «National Music Development» (Hungary) [21, 22], Karl Orff «Schulwerk» (Germany) [23], Marie-Louise Aucher «Singing Maternity Hospital» (France) [8] and others. Shared information on forums, blogs, microblogs, websites.

Conducting practical classes required finding tools that would conditionally create an atmosphere offline. Among the effective information and communication tools we note educational and game simulators, which allowed to organize discussion platforms:

- «Early child development: cognitive violence or stimulation of creative activity?»;
- debate «Will beauty save the world?»;
- of Socrates' dialogues «Order? Sample? Art? Freedom of choice?»;
- role-playing games «Six hats of thinking», «Six pairs of shoes of the mode of action» (by E. Bono);
- role theater «Plastic Etudes»;
- simulate rhythmic minutes, musical-rhythmic exercises, musical engines, musical pauses and musical greetings;
- work in the workshop «Creating a case of an animator»;
- interactive game «Roundabout» on the topic «Practice in working with the grain of the image», etc.

Interactive games conducted on Hangouts, Zoom, Cisco Webex, Skype «Art Book Trailers» platforms became popular among students. With the help of the graphic editor Adobe Photoshop, Elena Tararina mastered art techniques; author's methods of Olena Polovina's education and Inna Kondratets' reflection exercises. Effectively discussed the issues:

- «Formation of critical thinking skills in the analysis of albums for the development of creative abilities of preschool children»;
- «Creating conditions for emotionally uplifting mood of children during art activities junior and middle group»;
- «Individual and collective art activity»;
- «Musical and rhythmic activity of preschool children: from imitation to improvisation»;
- «Method of creative structured improvisation of Oleg Drach and the possibility of its application in working with preschool children»;
- «Environment in a preschool institution».

For this used presentations based on the Pecha-Kucha method (jap. ペチャクチャchatter). This method contributes to the formation of digital competence, as the time-limited format of the presentation requires the absence of textual information on the slide text. Instead, there should be a series of associative illustrated slides, each of which is displayed for 20 seconds, after which it changes automatically. The standard limited duration of the report of 6 minutes 40 seconds puts students in the conditions of careful selection of information and its critical rethinking; teaches concise formulation of ideas; hone skills in identifying accurate associative illustrations and searching for them in online sources.

The pedagogical tools of elaboration of the theme «Communication in art» allow select the method of «picturesque performances». Picturesque performance as a method of art education of future educators is used in two versions – offline and online and involves the presentation of the idea; elaboration of literature and other sources that can be used by participants to deepen their understanding of a particular picture and create an appropriate thematic atmosphere; work by the method of creative structured improvisation to characterize the images of the characters; the choice of props that will help convey the atmosphere of the picture; modeling of picturesque performances; artistic reflection at the final stage (reflection exercises that motivate students to self-knowledge and determine their own emotions; develop the ability to analyze and evaluate their feelings, the process and results of artistic activity). We used multimedia (digital information (texts, graphics, animation), analog information of visual image (video, photos, pictures, etc.), analog information of sound (language, music, other sounds). The final product is a video created in ICT, on the basis of which artistic reflection is carried out.

The task for independent work of students provided a comprehensive approach to its implementation and was optimized by one task: to develop, test and present an art project (theme of the student's choice) for preschool children. While working on the project, students used multimedia tools: electronic simulators, publications placed in the institutional repository, process modeling, Microsoft PowerPoint, PhotoShowPro, etc. The presentation of independent work takes place at an interactive educational teleconference.

The construction of a system of control and testing of knowledge and skills of students was carried out through the use of control programs-tests. Thus, there was a approbation of forms, methods and techniques that ensure the effectiveness of the formation of students' digital competence on the material of art.

The correlation of certain forms and methods of interaction with students and information and communication technologies in the format of the discipline is given in Table 1.

Table 1

The correlation of certain forms and methods of interaction with students using information and communication technologies in the format of the discipline

The forms and methods of interaction with students	ICT	Possibilities of use
Pedagogical advertising	GIF animations Go Animate Movie Maker	Creation of video advertising, video excursions
The implementation of interactive learning methods	Hangouts Zoom Easel.ly Padlet Piktochart AnswerGarden	Techniques «Aquarium», «Brownian motion», «Bunch», «Rivin's dialogue», «Socrates' dialogue»
Art techniques	Adobe Photoshop Pixlr Prezi Piktochart	Creating photo collages with further discussion
Methods of image	Prezi PowerPoint Facebook	«Prezi-Battle», presentation to discuss methods of education and their promotion on social networks
The Pecha-Kucha method	Power Point Movie Maker Prezi	Presentation of the obtained results
The method of «Painting Performance»	Pinterest Spiderscribe Socrative PowToon	Creation of multimedia (digital information (texts, graphics, animation); analog information of visual image (video, photos, pictures, etc.); analog information of sound (language, music, other sounds). The final product – video
The methods of cooperative learning	Zoom Slides Prezi Hangouts Padlet Socrative Spiderscribe bubble.us	Learning in small groups, team learning, group generation of ideas, intergroup dialogue
The implementation of cognitive-cognitive teaching methods	Hangouts Easel.ly Movie Maker	Development of critical thinking, commenting, heuristic observation,

	Padlet Piktochart AnswerGarden	comparison, facts, research, hypotheses, predictions
Project method	PowerPoint PhotoShow Pro Padlet AnswerGarden Skype Facebook	To create and design joint projects; gathering information and discussions on social networks; holding meetings
The method of imitation or role	Hangouts Zoom Pinterest Padlet Socrative	Using of multimedia support contributed to the modeling of various personal and professional situations, the development of emotional culture skills.
Reflection exercises	Google Drive Google Form (questionnaires) Fitback	Creating a portfolio of impressions.
The method of graphic models or illustrative	GoAnimate GIF– animations Movie Maker Microsoft Excel Powtoon Pinterest Spiderscribe	Greatly facilitated the processes of self-knowledge and to understand
The system of control and verification knowledge	Mooddle Google Form (tests, questionnaires) Prezi Slides Bubble.us	As a result of studying the discipline, students conduct «Prezi-Battle»; creation of final group projects, slide shows, schemes

4. Research results

The experimental work involved assessing the levels of artistic competence of future teachers and testing the effectiveness of the use of ICT in the format of the discipline «Art Education of preschool children». A comparative analysis of the levels of formation of artistic competence of future teachers is presented in the diagram (Figure 2).

Application of a number of diagnostic methods allowed to determine the levels of formation of artistic culture in the respondents after the formative stage of the experiment: the latent level was revealed by 18 % of EG students and 56 % – CG; juvenile level was found in 51 % of EG respondents and 31 % of CG students; 31 % EG future teachers and 13 % of teachers CG showed a sufficient level.

The obtained data testify to the positive changes that took place in the experimental group during the formative stage of the experimental work due to the use of ICT in the format of the discipline «Art Education of Preschool Children».

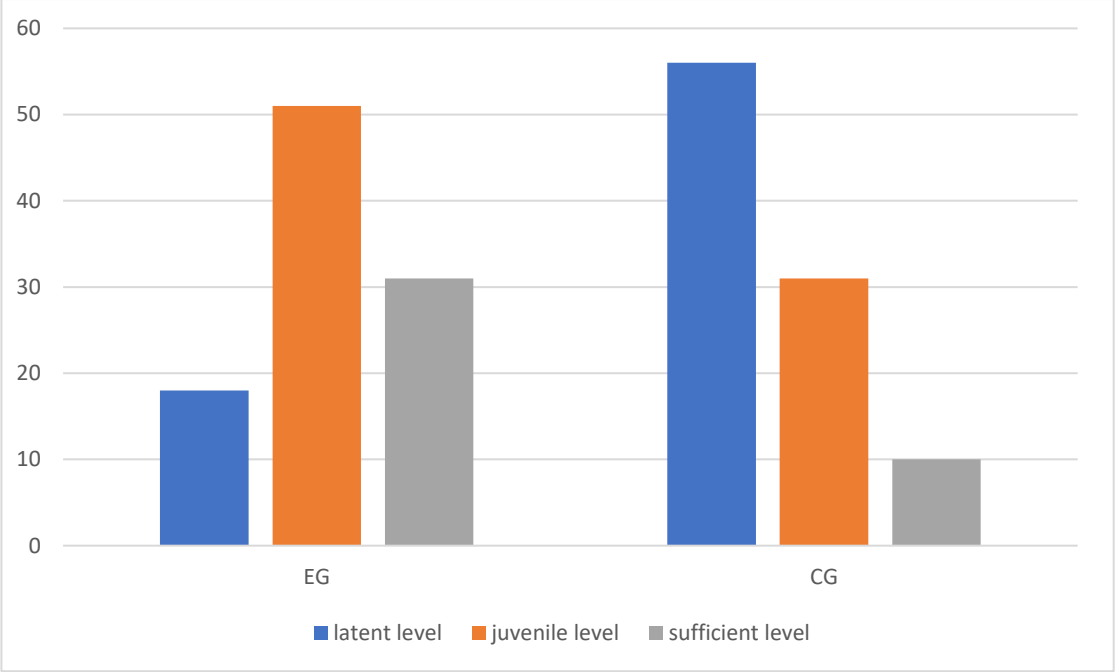

Figure 2: The level of formation of artistic competence after the formative stage of the study

5. Conclusion

The experimental study showed that the development of any topic in the initial discipline «Art Education of Preschool Children» involves the use of ICT. It allows students to view and display video fragments, photographs, illustrations; demonstrate reproductions of works by artists, works of sculptors, architects, musicians, actors, composers, dancers; visualize technological methods by means of multimedia display of short slide films; create graphic material (tables, diagrams); carry out and model online tours and art routes through museums, theaters of the world and Ukraine; to model various forms of art education; immerse yourself in space and time; to intensify the learning process.

Approbation of the ICT program proved that the use of various information and communication technologies increases students' interest in the discipline; motivates to self-improvement and self-development; modernizes the content of disciplines with innovative forms of interaction and methods and techniques; forms the appropriate professional competence of future teachers.

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