

Preparation of future teachers of artistic specialties for application of computer technologies in professional activity

Preparación de los futuros maestros de especialidades artísticas para el empleo de las tecnologías informáticas en la actividad profesional

FURSYKOVA, Tetiana V. 1

Received: 02/02/2019 • Approved: 24/06/2019 • Published 08/07/2019

Contents

1. Introduction
 2. Methodology
 3. Results and discussion
 4. Conclusions
- Bibliographic references

ABSTRACT:

In the article the components of readiness of future teachers of artistic specialties for application of computer technologies have been examined, the indicators and levels have been revealed. The pedagogical conditions of students' training for the application of computer technologies in professional activity are described: provision of a stable motivation of students; realization of interpersonal relations; implementation of the special course "Modern Computer Technologies in Art Education"; directing pedagogical practice of students to gain experience in using computer technologies at art lessons. The results of the empirical research aimed at introducing the author's methodology, which was realized according to the logic of three interrelated stages: propaedeutic, professional-oriented, creative-independent, are presented.

Keywords: Training, future teachers, artistic education, computer technology.

RESUMEN:

En el artículo se han examinados los componentes de disposición de los maestros futuros de las profesiones artísticas para el empleo de las tecnologías informáticas, han sido revelados los indicadores y niveles. Han sido caracterizadas las condiciones pedagógicas de preparación de los estudiantes para el empleo de las tecnologías informáticas en la actividad profesional: aseguramiento de la motivación estable de los estudiantes; la realización de las relaciones entre las asignaturas; introducción del curso especial "Tecnologías informáticas modernas en la educación artística"; dirección de la práctica pedagógica de los estudiantes para ganar experiencia de la aplicación de las tecnologías informáticas en las clases de arte. Son citados los resultados de la investigación empírica dirigida a la introducción de la metodología del autor, que se implementó de acuerdo con la lógica de tres etapas interrelacionadas: propedéutica, orientada a los profesionales, creativa e independiente.

Palabras clave: Preparación, maestros futuros, educación artística, tecnologías informáticas.

1. Introduction

The current stage of development of education in Ukraine is characterized by a range of up-to-date requirements. The priorities of state policy in the field of artistic education are the training of teachers with a high level of education and culture capable of creative work, professional development, mobility in the development and implementation of new scientific and computer technologies. These tasks are outlined by the Pedagogical Constitution of Europe (2013), the National Strategy for the Development of Education in Ukraine for the period up to 2021 (2013), the Law of Ukraine "On Higher Education" (2014), the Concept "New Ukrainian School: Conceptual Principles of Reforming the Secondary School" (2016), The Concept of Modern Art School (2017). Their successful implementation involves the reorientation of higher education to the training of a teacher as a socially active, intellectually developed person, who must not only thoroughly know his subject and possess the method of teaching it, but also use the modern achievements of science and computer technologies in the educational process.

The process of computerization of artistic education – the creation, implementation and development of a computer-oriented educational environment on the basis of information systems, resources and technologies – is now becoming more urgent, since computerization of educational institutions requires the search for all possibilities of using the computer in the educational process, thorough the research on the effectiveness of the introduction of these teaching aids, the definition of the optimal limits of their didactic application in the study of disciplines of the artistic and aesthetic cycle.

The analysis of the theory and practice of vocational training of teachers of artistic specialties makes it possible to identify a number of contradictions between the new qualitative requirements for pedagogical activity and the professional level of future teachers and the real level of their readiness for the use of computer technologies in professional activity. This request is mostly met by graduates of higher education institutions that are self-sufficient in mastering new technical facilities.

Based on the foregoing, it is possible to claim that the problem of training of future teachers of artistic specialties to the use of computer technology in professional activities is quite relevant, but the features and conditions of this training in institutions of higher pedagogical education were not the subject of a holistic pedagogical study.

The purpose of the article is to study the pedagogical conditions for the training of future teachers of artistic specialties for application of computer technologies in their professional activity.

In scientific research (Bykov, 2009; Morze, 2003; Nishi et al., 2017; Piekhota & Tykhonova, 2013; Rizakhojayeva et al., 2017), emphasis is placed on the fact that computer technology is an instrument that enables a teacher to change qualitatively the methods, as well as organizational forms of their work and due to this to develop individual abilities of schoolchildren, to encourage everyone to harmonize his peculiar qualities; to focus on the formation of cognitive abilities, on effective learning activities; to maintain and develop the aspiration for self-improvement; to strengthen interdisciplinary connections in education, to integrate the study of the phenomena of reality, to ensure the inextricable interrelations between humanities and art; to carry out a dynamic updating of the educational process, its forms and methods, to provide adaptation of educational institutions to changing external conditions and contingent of those who study. At the same time, scientists (Zhaldak, 2011) emphasize that the basis of informatization of the educational process should be the creation and use in the pedagogical practice of new computer-oriented teaching methods based on the principles of gradual and non-antagonistic, without destructive changes and reforms, the integration of information and communication technologies in active didactic systems, a harmonious combination of traditional and computer-centered learning technologies, not the denial and rejection of the achievements of the pedagogical science of the past, but just the contrary, their improvement and strengthening, including those due to advances in the development of computer technology.

For our study the concept of computer technology has the nature of the leading, but

subordinate to the problem of professional training of students. Therefore, we need to determine the content of the training of future teachers of artistic specialties to the application of computer technologies.

According to the Law of Ukraine "On Higher Education" (2014), professional development is understood as the process of formation of specialists for one of the branches of labor activity, associated with the acquisition of a certain type of occupation, profession.

The philosophical encyclopedic dictionary (Shynkaruk, 2002) defines professional training as an objective process, which is based on certain regularities: the condition of the system of professional readiness for the needs of the socio-pedagogical and spiritual development of society, the task of the formation of the individual; conformity of content, forms and methods of professional training to the level of development of pedagogical science and practice, the nature and content of pedagogical work; education and development of future specialists in the process of professional training.

In the encyclopedic pedagogical dictionary (Honcharenko, 2011), vocational training of specialists is interpreted as a set of special knowledge, skills and abilities, qualities, labor experience and norms of conduct that ensure the possibility of successful work in a particular profession; the process of communicating relevant knowledge and skills.

In the study we consider the professional training of the future teacher as the unity of the content, structure, goals of education and training of students, ways of implementing the acquired knowledge, skills and abilities in work with students. It is necessary to point out, that vocational training has double significance, we interpret it as a process of learning (a specially organized process of forming readiness for the execution of future tasks), and the result (readiness, which means the availability of the competence, knowledge, skills and abilities necessary for the successful performance of professional tasks).

We analyze the readiness of teachers of artistic specialties for the application of computer technologies in professional activities as an integrated characteristic of a student's personality, based on conscious perception and implied interest in the future profession of a teacher of artistic disciplines and characterized by the need for knowledge, skills and abilities to carry out professional activities with the use of computer technology.

While conducting our research, we systematized scientific approaches (Dychkivska, 2004; Konovets, 2009) to determine the components of readiness and generalize its structure with four components: motivational, cognitive, creative, reflexive, with criteria, indicators and levels of formation.

We distinguish between the following criteria for the formation of the studied readiness: needs-motivation involves finding out the reasons and factors that encourage, initiate, direct the teachers of artistic specialties to the application of computer technology (indicators: awareness of the need to use computer technology in the process of learning and education of students and the desire to see the positive result of their activities, interest in computer technology and interest in their use during art lessons; teacher's desire to design creatively and extraordinary a variety of organizational forms in close interaction with students); the knowledge criterion combines a set of knowledge of the teacher of artistic specialties about the essence and specificity of computer technology, its types and features, as well as a set of skills and abilities in the application of computer technologies in the structure of their own professional activities (indicators: knowledge of computer technology; competence in the application of computer technology tools necessary for use in professional activities; information about the sources of knowledge acquisition, in particular, in the field of application of computer technologies, and is capable of the right to apply them in future professional activities); creative-activity criterion provides an original solution of the teacher's tasks of the teacher of art with the use of various methods and means of teaching, in particular, computer technologies (indicators: creative approach to the organization of studying art using computer technology; creative solution of professional tasks by means of computer technologies, originality in solving artistic and creative tasks); evaluative-reflexive criterion characterizes cognition and analysis by the teacher of the phenomena of his own activities (indicators: an assessment by the teacher of his own professional activities with the use of computer technologies).

2. Methodology

In the research such methods were used: theoretical: analysis, synthesis, comparison, systematization of theoretical and research data to identify the state of the problem under study, the definition of key concepts of research; empirical: studying and summarizing the experience of future teachers of artistic specialties, analysis of students' activity in the process of professional training, interviews, questionnaires, control tests and creative tasks, content analysis of creative work of students, pedagogical evaluation – for diagnosing the level of readiness of future teachers of artistic specialties for application of computer technologies in their professional activity, quantitative and qualitative analysis of empirical data; the methods of mathematical statistics were used to determine the correlation connection, the processing of the data obtained and the verification of the reliability of the results of the experiment using the student's t-criterion; graphic – for illustration and comparison of results of experimental work in graphics and tabular forms.

The methodical tool for assessing the indicators and levels of formation of students' readiness for the use of computer technologies were: a test on motivation of professional activity (Bordovskaya & Rean, 2007), a questionnaire on vocational and pedagogical motivation for the introduction of information technologies (Fetiskin et al., 2005), questionnaire on the significance of the courses "Fundamentals of Informatics and Information and Communication Technologies" & "Modern computer technologies in artistic education" (Dubovitskaya, 2003), the test "Level of knowledge in information technology" (Fursykova & Babenko, 2013), the P. Torrens creative thinking test in the modification of E. Tunic (Tunic, 1998); diagnostic portfolio "Determination of readiness components of future teachers of artistic specialties for the application of computer technologies" (Fursykova & Babenko, 2013).

Experimental work was carried out on the basis of the arts department of the Central Ukrainian State Pedagogical University named after Volodymyr Vynnychenko, the Faculty of Arts of the Kryvyi Rih Pedagogical Institute, Kryvyi Rih National University, and the artistic and graphic faculty of the DZ "South Ukrainian State Pedagogical University named after K. Ushynskiy".

The purpose of the experiment was achieved during three periods:

- 1) the content of preparation and components of readiness of future teachers of artistic specialties for the application of computer technologies (2012-2014) have been determined;
- 2) a methodology has been developed and a diagnostics of the formation of the levels of readiness of the students of the first and fourth courses have been conducted, the pedagogical conditions of the professional training of students in institutions of higher education to the application of computer technologies in professional activity (2014-2015) have been substantiated;
- 3) a methodology for the implementation of pedagogical conditions has been implemented, the received experimental data have been analyzed and summarized, the results of the study have been processed (2015-2018).

In various forms of experimental work 327 students – future teachers of artistic specialties and 26 faculty-experts – were involved.

On the basis of the separate components of readiness of future teachers of artistic specialties for the application of computer technologies, we consider it necessary to check the correlation relationship between them, which is revealed when each of the values of one random variable corresponds to the probability distribution of values of another value, and vice versa, each of the values of the second value corresponds to the probability distribution of the values of the first random variable (Sukhodolskyi, 1972; Sydorenko, 2001).

For this check we selected a group of 23 students of artistic specialties. To obtain levels of readiness, methodologies, test and creative tasks were used, which allowed to some extent assess the level of development of all four of its components: motivational, cognitive, creative and reflexive.

The results are obtained by calculating the Spearman Ranks Correlation Ratio. In the study of the correlation connection we put forward the hypotheses: H_0 – the correlation between the

components of readiness does not differ from zero; H1 – the correlation between readiness components is significantly different from zero. After calculating the rs Spirman rank correlation coefficient for each pair of components of readiness, we further compare the found value with the critical value (Sydorenko, 2001).

3. Results and discussion

In accordance with the results we compiled the matrix of correlations (Table 1).

Table 1
Matrix of correlation connection components of readiness of future teachers of artistic specialties for the application of computer technologies

Components	Motivational	Cognitive	Creative	Reflexive
Motivational	1	0,8103	0,7204	0,6650
Cognitive	0,8103	1	0,8893	0,6196
Creative	0,7204	0,8893	1	0,6364
Reflexive	0,6650	0,6196	0,6364	1

The indicators in Table 1 show that there is a correlation between the components of readiness which we have identified. Particularly tangible motivational readiness affects the cognitive and creative component, that is, there is a close relationship between them. The obtained data also demonstrate the interconnection of the dense force between the cognitive and creative components.

The verification of the significance of the obtained ratios of the rank correlation according to Student table indicates that for each pair of components, $T_{exp} > T_{tabl}$. This means that the Spearman rank correlation coefficient in our study is statistically significant ($p \leq 0.05$).

The next task of the experiment was to determine the initial level of formation of components of readiness of future teachers of artistic specialties for the use of computer technologies in professional activities.

The respondents were 193 students of the first and 134 students of the fourth year.

To investigate the motivational component of readiness, the subject of our analysis was the individual motivation of future teachers: purpose, needs, attitudes, motives for studying computer technologies and their application in educational and professional activities.

The questionnaire for determining motivation contains closed motives-judgments, which we combined into six groups, so students had to choose only six of the suggested judgments that best coincide with their positions. The results of the questionnaire were analyzed on qualitative and quantitative levels. At the qualitative level, the motives that a student or the entire study group chooses are identified. Their quantity, content, features are determined. At the quantitative level, we determined the importance of each group of motives.

We conducted a comparative study of the structure of motivational readiness of students of the first and fourth year, which allows us to analyze its level regarding the application of computer technologies in professional activities. The survey was conducted at the end of the first semester, when the first-year students adapted to the study and already had some idea of the future profession (Table 2).

Table 2
Summarizing the results of studying the motivation of students of the first and fourth year to the study of computer technology

	Importance of the motives

Nº	Groups of motives	First-year students	Fourth-year students
1	Motives for professional development	39,2	44,6
2	Cognitive motives	51,2	32,5
3	Motives for planning future professional activities	46,6	54,2
4	Motives of creative nature	27,3	29,9
5	Motives of the application of computer technologies as a means of facilitating the work of a teacher of artistic specialties	31,8	48,4
6	Motives-Requirements	42,7	27,8

According to the results presented in table 2, the highest rating in the structure of motives, which prompt students to study and use computer technologies, have motives related to the planning of future professional activities, the motives "computer technologies – a tool for facilitating the work of a teacher of artistic specialties" and cognitive motives. They form the core of the motivational sphere. Motivations-requirements, motives of creative character are considered to be less important motives. As we see, on the fourth year of study, in comparison with the first, the importance of cognitive motives in the structure of general motivation decreases to a certain extent, which testifies to the decrease of interest in studies, to the means of computer technologies. The reason is the lack of systematic work of students with the means of computer technology.

The students of the fourth year lose their previous knowledge, skills in working with computer technologies, motivation for their application in the educational process, while solving professional tasks. Consequently, the analysis of the results of the testing of students of the first and fourth year made it possible to conclude, that minor changes in the dynamics of the growth of the level of motivational component of the readiness of future teachers of artistic specialties to the use of computer technology in professional activities and their unsustainable nature.

To study the state of formation of the cognitive component of readiness, we conducted a control assessment in the form of testing. The first year students do not have any training in the "Fundamentals of Informatics and Information and Communication Technologies" courses, so they were asked to identify their level of knowledge on the school's computer science course. The students in the fourth year were to demonstrate the level of retained knowledge in the discipline "Fundamentals of Informatics and Information and Communication Technologies", which they studied during the second semester.

The results of the study show that students in both the first and the fourth courses have the theoretical bases of computer technology, mostly at medium and low levels. In our opinion, the reason is the delimitation of work with computer programs at senior courses that is why they lose their knowledge and skills. High level of training remains with students who throughout the period of study constantly work with computer technologies. This allowed them to maintain and improve the skills developed in the course of studying the discipline "Fundamentals of Informatics and Information and Communication Technologies" in the first year.

To determine the level of the creative component, we invited prospective specialists a questionnaire, which included not only test but also creative tasks. Using the method of independent characteristics (the professors and faculty members were the experts), we studied the peculiarities of the formation of skills and abilities of students with computer technologies, the results of the performance of the suggested artistic and creative tasks.

To assess creativity, experts observed the social interaction of future teachers during educational activities, at individual classes, in the process of performing artistic and creative tasks. To study the level of the creative component, we were guided by the studies of Ponomarev (1976), in which the main qualities of the creative personality that can serve as criteria of creativity are singled out:

- creative autonomy as the ability to find new solutions not only on the basis of the acquired knowledge, but also in the systematic purposeful search for new ones;
- scientific outlook, which determines the direction and to a large extent the effectiveness of creative activity of the individual;
- formed, steady need to apply their own creative abilities in professional activities;
- insuperable desire and ability to self-improvement, to conscious development and the formation of their own opportunities for creativity (Ponomarev, 1976).

Defining the level of formation of the reflexive component was carried out in two stages. At the first stage (for the first and fourth year students), we studied the indicators that characterize the attitude of students to mastering knowledge, namely: activity in learning; learning success; independence; and discipline. At the second stage of diagnostics (for students of the fourth year), during the students' lessons and extracurricular activities in pedagogical practice, we identified a number of educational activities, namely: the ability to plan, organize and control the activities of students; and competence in evaluating student activity.

The results of the component diagnosis of the readiness of students to use computer technology in future professional activities are summarized and presented in Table 3.

Table 3
Generalized results of readiness of future teachers of artistic specialties
for the use of computer technologies in professional activity

Components of readiness	Levels of readiness											
	Low				Average				High			
	I year		IV year		I year		IV year		I year		IV year	
	number	%	number	%	number	%	number	%	number	%	number	%
Motivational	87	45,1	68	50,8	69	35,8	45	33,6	37	19,2	21	15,7
Cognitive	98	50,8	61	45,5	61	31,6	53	39,6	34	17,6	20	14,9
Creative	99	51,3	69	51,5	64	33,2	48	35,8	30	15,5	17	12,7
Reflexive	108	56,0	62	46,3	62	32,1	54	40,3	23	11,9	18	13,4
State of readiness	98	50,8	65	48,5	64	33,2	50	37,3	31	16,1	19	14,2

Table 4
A summary table of the results of the future teachers of artistic specialties
to the application of computer technologies in professional activity

Groups	Levels		
	low	average	high

	number	%	number	%	number	%
Control	49	50,5	33	34,0	15	15,5
Experimental	49	51,0	31	32,3	16	16,7

The data obtained during the diagnostic phase of the experiment allowed to form a CG – control group (97 persons) and an EG – experimental group (96 persons) of the first-year students of artistic specialties and to compile a summary table of results (Table 4).

Consequently, the results of the diagnostic phase of the experiment made it possible to draw conclusions about the unsatisfactory state of training of future teachers of artistic specialties for the use of computer technologies in professional activities.

In the future, it must be ensured that the discrepancies in the results of the control and experimental groups are statistically insignificant. Under such conditions we can claim about the homogeneity of the sample and the correctness of further experimental work.

We apply the t-criterion of Student to compare the mean values of two numerical readiness characteristics obtained at the diagnostic stage of experimental work. We have volumes of independent samples $n_1 = 97$, $n_2 = 96$ more than 30, therefore, the sample average is normally distributed. The difference between the mean values of the control (6.35) and the experimental (6.36) groups is insignificant, which confirms the conclusion about the statistical homogeneity of the control and experimental groups at the beginning of the experiment and the possibility of further experimentation, that is, the sampling of the control and experimental groups by statistical parameters was carried out correctly.

On the basis of theoretical analysis of scientific sources on the professional training of future teachers of artistic specialties and the study of practical experience, we have identified the pedagogical conditions for the training of future teachers of artistic specialties to the application of computer technologies, namely: a) ensuring a sustainable motivation of students to use computer technologies; b) realization of interdisciplinary connections in the course of teaching disciplines of the professional-pedagogical cycle; c) implementation of the special course “Modern Computer Technologies in Artistic Education” in the structure of professional training of future teachers of artistic specialties; d) directing pedagogical practice of students to gain experience in using computer technologies at art lessons.

The first pedagogical condition contributes to the development of professional orientation of the individual and the enrichment of its internal motives. That is, the pedagogical condition, as a necessary external circumstance, awakens the internal need for professional development, leads to the advantage of the internal motives of choosing a profession over external ones. In such conditions, the use of computer technology in education becomes a value-oriented activity; it expands and deepens the system of knowledge, skills and abilities on the use of computer technology in future professional activities. Ensuring sustainable motivation of students to study computer technologies facilitates the formation of a motivational component of readiness, creates the basis for the implementation of the principle of professional orientation of training and professional development of the student’s personality.

The second pedagogical condition involves enriching the content of the disciplines of the professional and pedagogical cycle with knowledge about the content, classification, didactic and artistic possibilities of computer technologies in the professional activity of teachers of artistic specialties. Such preparation synthesizes theoretical knowledge on computer technologies and disciplines of the professional cycle, therefore interdisciplinary connections we consider as links between structural elements of the content of professionally oriented disciplines, expressed in concepts, theories, laws and contribute to the formation of a system of knowledge, skills and abilities and development of students’ readiness to use computer technologies in their professional activities.

Regarding the third pedagogical condition, we note that the special course “Modern Computer

Technologies in Artistic Education” is professionally oriented, since the main objective of its practical part is the professional study of artistic possibilities of computer technologies, and the theoretical part should give students deep knowledge of history, theory and modern principles of creation of artistic and didactic materials by means of computer technologies, knowledge about the aesthetics of computer technologies, about the technique of their application in the future professional activity. Consequently, this condition ensures the development of the cognitive and creative components of the studied readiness.

As for the fourth pedagogical condition, pedagogical practice, as a component of the future teacher’s professional training, is at the same time one of the main ways of forming his personal experience and willingness to implement this type of activity. Student-trainee has the opportunity to try his or her strength in the chosen profession, learn to apply theoretical knowledge in professional activities, perform new functions – of the teacher, acting as a subject of new, unusual relationships. Thus, pedagogical practice contributes to the development of creative and reflexive components of the specified readiness.

The method of realization of pedagogical conditions was implemented during 2013-2018 on the basis of propaedeutic, professional-oriented, creative and independent stages.

The first stage is propaedeutic. In the dictionary of foreign words the term “propaedeutics” is interpreted as a preparatory, introductory course, an introduction to some science (Melnychuk, 1985), therefore at this stage we developed the author’s program (Babenko & Fursykova, 2013) of the propaedeutic special course “Fundamentals of Informatics and Information and Communication Technologies” as a preparatory to study the professionally oriented course “Modern computer technologies in artistic education”. The purpose of this phase was to increase the motivation of students to study computer technology, expanding the range of computer knowledge. We analyzed and made appropriate changes to the curricula of professional and practical training of specialists of artistic specialties. The propaedeutic stage is aimed at conducting of events that will promote the awareness of students of the didactic and artistic possibilities of computer technologies, the formation and improvement of skills for solving artistic and creative tasks by means of computer technologies.

The second stage is professional-oriented. At this stage, a program and educational-methodical complex of the author’s special course “Modern computer technologies in artistic education” (Fursykova & Babenko, 2014) has been developed. It is aimed at forming the readiness of future teachers of artistic specialties for the application of computer technologies in professional activities.

Implementation of the artistic-oriented special course will greatly promote the professional abilities of students and the formation of their sustainable motivation to use computer technologies, since the creation of artistic projects is a creative process. It should be noted that the introduction of the author’s special course is only a component of the experimental study. We will be able to achieve the most optimal results provided that the system work of students is organized on the issues of the possibilities of using computer technologies within the framework of the study of the disciplines of the professional-pedagogical cycle.

Implementation of interdisciplinary connections was carried out during lectures, seminars with the use of computer technologies. Thus, the professional-oriented stage is aimed at the training of future teachers of artistic specialties, the development of their skills and skills necessary for the use of computer technologies in their future professional activities.

The third stage is creative and independent. The purpose of this phase was to create conditions for the practical application of the students’ knowledge and skills in the process of educational and pedagogical activities, and in particular pedagogical practice.

Taking into account the didactic and artistic possibilities of computer technologies, we also updated the topics of coursework and qualification work on the methodology of musical and artistic training, added to the program of pedagogical practice. Consequently, the creative and independent stage provided the improvement of the acquired knowledge, skills and abilities of independent application of computer technologies in the educational and professional activity, formation of skills of self-education.

In the process of experimental work in experimental groups, we determined the pedagogical

conditions for the formation of the readiness of future teachers of artistic specialties to the application of computer technologies in professional activities and implemented them. There was no special work in the control groups. It should be noted that the same teachers worked in the CG and EG, that is, we avoided the influence of the subjective factor on the results of the study.

The purposeful methodological work was carried out in the process of professional training of future teachers of artistic specialties during the I-IV year of study within the framework of studying professionally oriented disciplines, special course "Modern computer technologies in artistic education" and during pedagogical practice.

The analysis of the results of the implementation of the methodology was conducted on the basis of current progress on each discipline, modular and semester assessments, with the participation of students in creative contests, as well as the results of expert assessments of teachers. Objectivity of the results of the study was achieved by the fact that at the end of the experiment stage we proposed a comprehensive diagnostic work for students of CG and EG. The results made it possible to compare goals and motivation of students to use computer technologies in their future professional activity (motivational component); level of knowledge of students in computer technologies (cognitive component); level of methodical skills and skills of students on the application of computer technologies in artistic and pedagogical activities (creative component); the ability of future teachers of artistic specialties to realize and evaluate professional activity with the use of computer technologies (reflexive component) (Table 5, 6).

Table 5

The formation of components of readiness of students to the application of computer technologies based on the results of the final diagnostic work

Components of readiness	Levels											
	Low				Average				High			
	CG		EG		CG		EG		CG		EG	
	number	%	number	%	number	%	number	%	number	%	number	%
Motivational	39	40,2	12	12,5	41	42,3	49	51,0	17	17,5	35	36,5
Cognitive	41	42,3	15	15,6	36	37,1	55	57,3	20	20,6	26	27,1
Creative	38	39,2	12	12,5	38	39,2	52	54,2	21	21,7	32	33,3
Reflexive	42	43,3	17	17,7	37	38,1	56	58,3	18	18,6	23	24,0

Table 6

Generalized table of formation of components of readiness of future teachers of artistic specialties for the application of computer technologies in professional activity

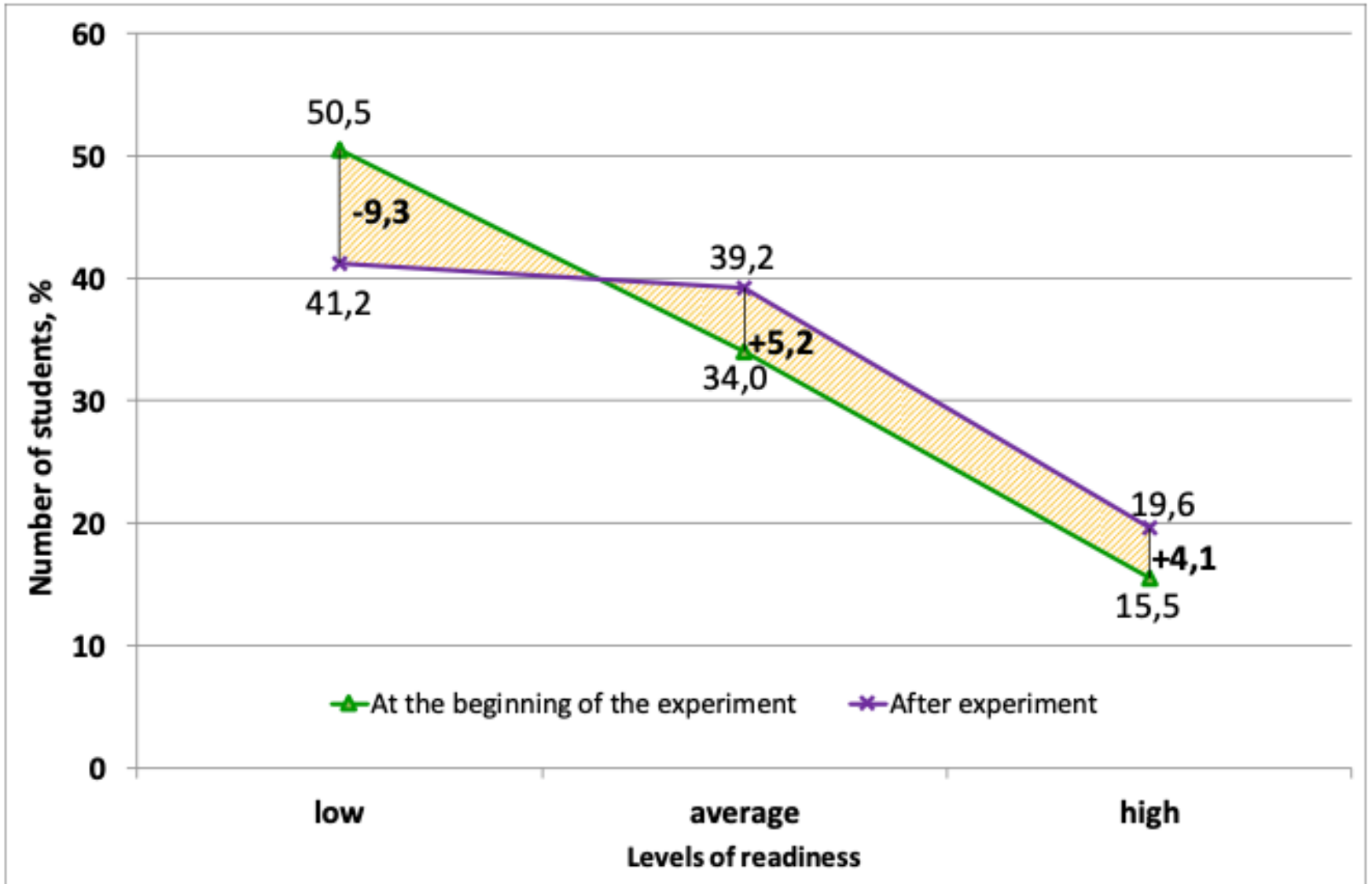
Groups	Levels					
	Low		Average		High	
	Number	%	Number	%	Number	%
Control	40	41,2	38	39,2	19	19,6

Experimental	14	14,6	53	55,2	29	30,2
--------------	----	------	----	------	----	------

The comparative averaged characteristic of the formation of readiness levels of future teachers of artistic specialties to the application of computer technologies in CG and EG before and after the formation stage of the experiment is given in Figures 1 and 2.

Figure 1

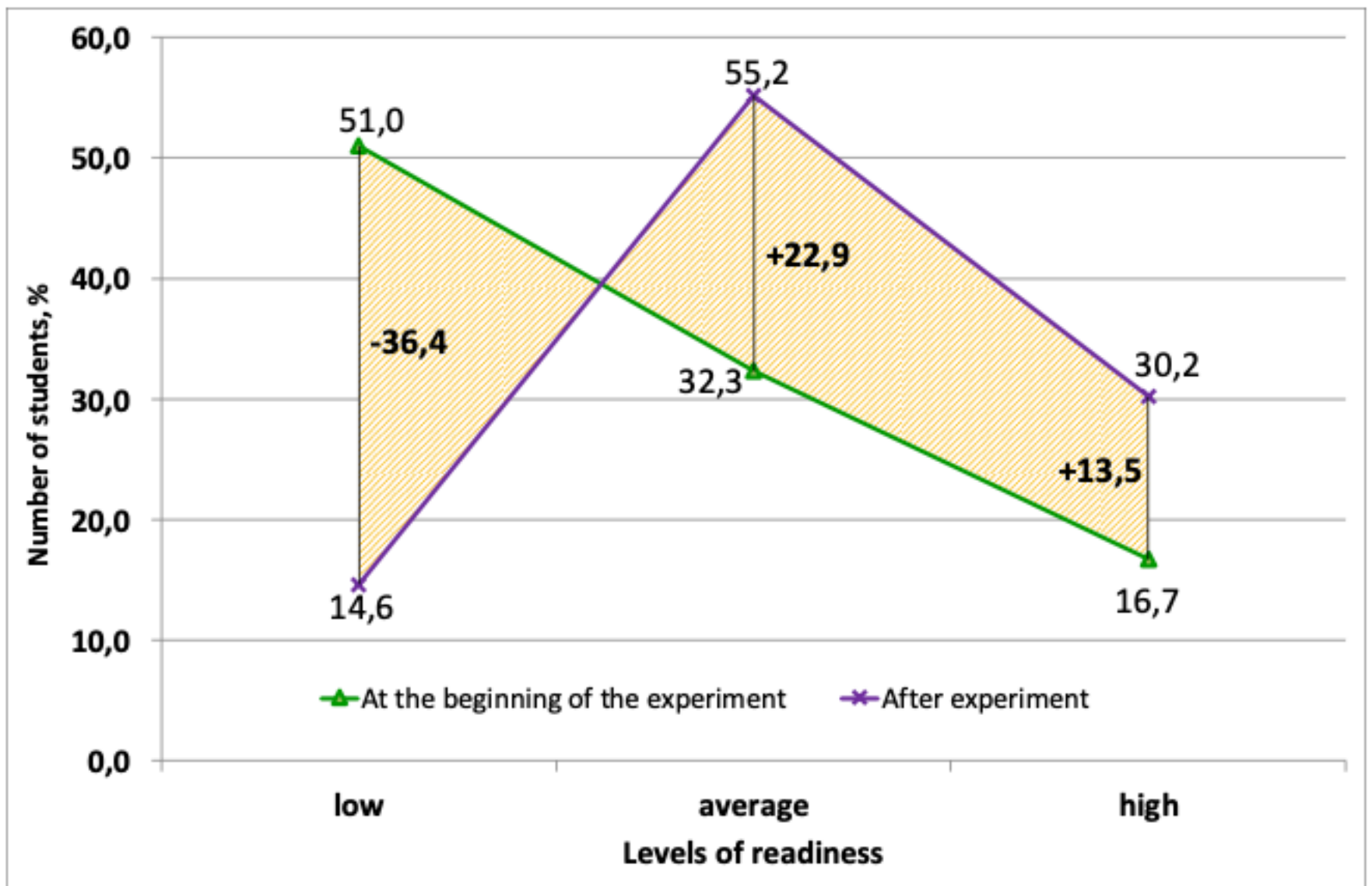
The results of preparation of students of the CG for the application of computer technologies before and after the experiment.



The results of research and experimental work show that the distribution of students by the levels of readiness for the use of computer technologies in professional activities has changed significantly in EG: the number of students with high readiness level has almost doubled (from 16.7% to 30.2%), with an average level of readiness also significantly increased (from 32.3% to 55.2%). Such changes have caused a significant decrease (almost three times) of the relative number of students with a low level of readiness to use computer technologies (from 51.0% to 14.6%). Indicators of readiness levels for the use of computer technologies in the CG have also improved: the number of high-level students increased from 15.5% to 19.6%, with an average of 34.0% to 39.2%, with a low level decreased from 50.5% to 41.2%.

Figure 2

The results of preparation of students of EG to the application of computer technologies before and after the experiment.



Consequently, the positive changes that took place in the process of professional training of future teachers of artistic specialties due to the introduction of certain pedagogical conditions in the EG were more significant than in the CG.

The obtained t-criterion values make it possible to conclude that the differences between the average grades of the students of CG and EG are probable. It is possible to claim, that the measured changes in the levels of readiness are conditioned by the implementation of the developed pedagogical conditions, and the proposed methodology for preparing future teachers of artistic specialties for the application of computer technologies, which was introduced in the EG, is effective and statistically substantiated.

4. Conclusions

In the conditions of modernization of the Ukrainian education system there is a need to rethink the experience of the theory and practice of training teachers of artistic specialties. The teacher addresses the actual tasks of artistic and aesthetic development of students in the conditions of informatization of society. Information technologies mobilize pedagogical creativity and open the way to pedagogical innovations. The use of computer technologies in the professional activities of teachers of artistic specialties enables updating of content, methods and forms of education, raising the level of software, material and technical resources of the process of teaching art in a modern school.

The article provides a theoretical generalization and proposes a new approach to solving the problem of preparing students of artistic specialties for the use of computer technologies in professional activities. During the research and experimental work, the effectiveness of the author's methodology was verified and confirmed, which was carried out in stages, covering classroom activities and extracurricular work, the independent cognitive and creative activity of the students.

The obtained results of the study confirmed the effectiveness of pedagogical conditions for the training of teachers of artistic specialties to the application of computer technologies in professional activities, and showed a positive dynamics in the development of their readiness. The manual for the course "Modern computer technologies in art education" is recommended by the Ministry of Education and Science of Ukraine as a textbook for students of higher

pedagogical educational institutions (letter № 1 / 11-5563 dated 15.04.2014).

The study does not cover all aspects of the problem. Further study requires the issue of technological support and improvement of professional training of future teachers in the informatization of educational space, the development of teaching and methodological support for the training of teachers in the process of postgraduate pedagogical education and self-education.

Bibliographic references

Babenko, L. V. & Fursykova, T. V. (2013). Basics of computer systems. A manual for students of higher pedagogical educational institutions. Kirovohrad: RVV KSPU named after V. Vynnychenko, 250.

Bordovskaya, N. V. & Rean, A. A. (2007). Pedagogy. St. Petersburg: Peter, 304.

Bykov, V. Yu. (2009). Education should take a decisive place in the introduction of modern information and communication technologies into all areas of activity of people. Computer at school and family. No. 8, 7-13. Retrieved from: http://nbuv.gov.ua/UJRN/komp_2009_8_3.

Concept "New Ukrainian School: Conceptual Principles of Secondary School Reform" (2016). Decision of the Collegium of the Ministry of Education and Science of Ukraine No. 10 dated October 27, 2016. Retrieved from: <http://nus.org.ua/wp-content/uploads/2017/07/konczepczyia.pdf>

Concept of Modern Art School (2017). Order of the Ministry of Culture of Ukraine dated January 20, 2017, No. 1433. Retrieved from: http://mincult.kmu.gov.ua/control/publish/article?art_id=245318404

Dubovitskaya, T. D. (2003). The questionnaire of the importance of subjects for professional training of the future specialist. Psychological Journal. V. 24, No. 5, p. 103-109.

Dychkivska, I. M. (2004). Innovative pedagogical technologies: tutorial. Kyiv: Academic Edition, 352.

Fetiskin, N. P., Kozlov, V. V. & Manuilov, G. M. (2005). Socio-psychological diagnosis of personal development and small groups. Moscow: Publishing House of the Institute of Psychotherapy, 496.

Fursykova, T. V. & Babenko, L. V. (2014). Modern computer technologies in artistic education: a manual for future teachers of artistic specialties. Kirovohrad: Exclusive Systems, 2014, 164.

Honcharenko, S. U. (2011). Ukrainian Pedagogical Encyclopedia. Rivne: Volyn's Amulets, 552.

Konovets, S. V. (2009). Creative development of the teacher of fine arts: monograph. Rivne: Volyn's Amulets, 384.

Melnychuk, O. S. (1985). Dictionary of foreign words. Kyiv: The Main Edition of the Ukrainian Encyclopedia, 968.

Morze, N. V. (2003). Training of pedagogical personnel for the use of computer telecommunications. Computer-based learning systems. NPU named after M. Drahomanov. Edition 6, 12-25.

National Strategy for the Development of Education in Ukraine until 2021 (2013). The Edict of the President of Ukraine dated June 25, 2013, No. 344/2013. Retrieved from: <http://www.mon.gov.ua/images/files/news/12/05/4455.pdf>

Nishi, Ju. M., Silinske, J. & Lobler, M. L. The pedagogical use of ICTS: The perceptions of teachers on their technological skills. *Revista Espacios*. Vol 38, year 2017, number 15, page 10. Retrieved from: <http://www.revistaespacios.com/a17v38n15/17381510.html>

Pedagogical Constitution of Europe. Preamble (2013). Higher education of Ukraine. No. 3, 111-116. Retrieved from: http://nbuv.gov.ua/UJRN/vou_2013_3_17

Piekhota, O. M. & Tykhonova, T. V. (2013). Information and communication technologies in pedagogical education. Nikolaev: Ilyon, 252.

Ponomarev, Y. A. (1976). Psychology of creativity and pedagogy. Moscow: Pedagogics, 280.

Rizakhojayeva, G. A., Akeshova, M. M., Moldasheva, A. A., Dadashov, D. T. & Karpykbayeva, A. S. Developing the XXIst century competencies through integration of information and communication technologies. *Revista Espacios*. Vol 38, year 2017, number 40, page 31. Retrieved from: <http://www.revistaespacios.com/a17v38n40/17384031.html>

Shynkaruk, V. (2002). *Philosophical Encyclopedia Dictionary*. Kyiv: Abris, 75.

Slastenin, V. A., Isaiev, I. F. & Shyianov, E. N. (2002). *Pedagogy*. Moscow: Academy, 576.

Sukhodolskyi, G. V. (1972). *Fundamentals of Mathematical Statistics for Psychologists*. Leningrad: LSU, 178.

Sydorenko, E. V. (2001). *Methods of mathematical processing in psychology*. St. Petersburg: OOO "Speech", 200.

The Law of Ukraine "On Higher Education" of 01.07.2014 No. 1556-VII. Retrieved from: <http://zakon3.rada.gov.ua/laws/show/1556-18>

Tunik, E. E. (1998). *Diagnostics of creativity. Torrens test*. St. Petersburg: Imaton, 171.

Zhaldak, M. I. (2011). Teacher training system for the use of information and communication technologies in the educational process. *Scientific journal of Drahomanov NPU. Series 2: Computer-Oriented Learning Systems*. No. 11, p. 3-15. Retrieved from: http://nbuv.gov.ua/UJRN/Nchnpu_2_2011_11_3.

1. Associate Professor of the Department of Fine Arts and Design, Volodymyr Vynnychenko Central Ukrainian State Pedagogical University, 25006, Ukraine, Kropyvnytskyi, Shevchenka street, 1. Contact e-mail: tan_u@ukr.net

Revista ESPACIOS. ISSN 0798 1015
Vol. 40 (Nº 23) Year 2019

[\[Index\]](#)

[In case you find any errors on this site, please send e-mail to [webmaster](#)]