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Bilingual model of future specialists' training by means of artistic design

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Abstract. The article presents the authors' bilingual model of future specialists' training by means of artistic design. It outlines the content, forms, methods, criteria, and indicators of future specialists' training in the conditions of bilingual educational process. The authors demonstrate that the development of the bilingual model contributed to the variety of students' artistic and creative activities forms (team, group, individual) and to a wide range of methods used. The formation of the analyzed skills manifests itself in the level scale (primary, sufficient, high). The primary level of creative skills formation is realized on the basis of the developed criteria (motivation-oriented, content-procedural, evaluative-reflexive). The experimental study was carried out in several stages using theoretical, empirical methods of research. The authors also used the Pearson's consistency criterion x2 to analyze statistical hypotheses based on observational data. The research outlines the levels of future specialists' abilities development (association, visual (figurative) creativity, transformations, variability of thinking). The authors used the N. Vyshniakova and R. Tkach's "Creativity" test, the S. Zievert's "Freedom of associations" modified test.

Keywords: model, bilingual model of training of future specialists audio-lingual method, communicative method, professional diagram of preschool and primary education specialists, artistic design.

1 Introduction

In the context of a current state-building process, in particular the reforms of the national higher education system the problem of training

graduates of higher education institutions for professional activity is especially urgent. The question of improving the future specialists' training with a high level of expertise and creative activity, who would be responsible for the results of their own education and level of preparedness for their future professional activity, is crucial nowadays. The fulfillment of these tasks largely depends on the process of formation of the future specialists' readiness for modern professional activity, considering the peculiarities of real pedagogical activity in general, and the modern requirements for the educational process of constantly developing educational institutions. Ensuring the continuity of future specialists' knowledge acquisition is possible provided the principles of perspective and integrity between the related links of education, in particular preschool and primary stage, are implemented.

State documents (Law of Ukraine "On Higher Education" [3], "National Strategy for the Development of Education in Ukraine until 2021" [2]) emphasize on the strategic task towards the European educational quality level, namely it is an innovative development of education and science of Ukraine, taking into account its national educational and scientific potential. The issue of improving the quality of preschool and primary school education specialists' training by means of artistic design is also supported by the European organizations. It is reflected in such documents of the Council of Europe as "Common European Framework of Reference for Languages: learning, teaching, assessment" [8], "European Language Portfolio" [4], "Strategic Research Agenda for Multilingual Europe 2020" [17], etc.

It should be noted that the Law of Ukraine "On Higher Education" [3] states that "the state facilitates the study of languages of international communication, first and foremost English, in state and municipal educational institutions". "According to the educational program one or more subjects may be taught in two or more languages, namely in the official language, English, or any other official language of the European Union".

The outlined documents claim that the training of teaching staff is a central task of educational system modernization, and a guiding principle of state educational policy. The development of new approaches to professional education, including competence, bilingual, integrated, interdisciplinary approaches, is carried out within the framework of the general tendencies of higher education system in Ukraine. It concerns the acquisition of foreign language skills by future preschool and primary education specialists; the creation of proper conditions for personal and professional growth of

students with the help of artistic design, which is considered to be a source of their awareness of the realities of the artistic and multicultural space.

Various aspects of bilingual learning have become the subject of research for linguists, sociologists, and educators. A number of researches is devoted to qualitative specialists' training by means of bilingualism (S. Sytniakivska [19]). The linguistic aspect of bilingual education is revealed in the work of U. Weinreich [21], P. Charaudeau investigate the cultural aspect of bilingual training [7]. Current psychological and pedagogical studies consider bilingual learning in a different context: as a way of integrating students in the multicultural society of Europe (A. Hurina [11], G. S. Lotfi Ghahrodi [12, 13]), and as a tool for multicultural education of students. The main models of bilingual education have been investigated by I. Zozulia [25]. The theoretical foundations of educational bilingual programs in higher education institutions were presented in [6, 9, 10].

It is worth mentioning that the largest amount of research is devoted to the disclosure of the conceptual framework and content of students' bilingual training. However, the bilingual approach in preparing future preschool and primary school teachers has not been thoroughly studied.

Thus, the interdisciplinary nature of the problem, the need to synthesize a range of issues in the context of a personal and cultural competence paradigm, actualizes the necessity to introduce bilingualism in the educational process of a higher education institution. The organization of bilingual education involves the introduction of the English Language into the bachelor's and master's curriculum of the artistic vocational training. Such approach ensures the bilingual development of students of the specialty 012 Preschool Education and 013 Primary Education by integrating the disciplines of the humanity and professional cycles. In the process of such integration, the future specialist acquires general and specific competences, which allow to realize European standards in professional and creative activity and to spread their own experience in the world community. It fosters the general level of education of the respondents, in particular, the ability of intercultural communication.

The analysis of current system of training of future preschool and primary school teachers proves the absence of a system of bilingual pedagogical education in higher education, stipulates the need for proper methodological support, and the need to develop an additive bilingual model.

The objective of the article is to develop, scientifically justify and experimentally check the bilingual additive (supplementary) model of training of future specialists of preschool and primary education by means

of artistic design.

2 Materials and methods

The experimental study was carried out in several stages using the following research methods: theoretical (analysis, synthesis, generalization, modeling, design, classification, extrapolation and prognostication); empirical (online interviewing, questioning, testing, conversation, methods of mathematical statistics) to provide quantitative and qualitative analysis of the results of the study, and to test their objectivity and validity; Pearson's consistency criterion χ^2 method to test statistical hypotheses on the basis of observational data.

In the process of organizing the experimental study, the control and experimental groups were determined, the levels of preparedness of future specialists of preschool and primary education by means of artistic design were outlined. This enabled us to compare the initial and final results of the study and to provide a quantitative analysis of the results of the process of implementation of the appropriate training model using the selected methodology of the test.

In the course of the experiment, we suggest using the N. Vyshniakova and R. Tkach's test "Creativity", and a modified version of Zievert's test "Freedom of associations" to determine the level of development of the abilities of future specialists of preschool and primary education to associate, visually (figuratively) create, use transformations, and think variably.

The objective of the article is to present the bilingual model of future preschool and primary education specialists' training by means of artistic design (Fig. 10).

As the defining characteristics of the present day are the processes of globalization, intensive informatization, dynamics of change, we foresee the solution of such problems of the future preschool and primary education specialists' training by means of artistic design in the conditions of bilingual educational process. The tasks of the article are: 1) to develop a additive (complementary) model and to design the content, forms and methods of future preschool and primary education specialists' training by means of artistic design in the conditions of bilingual educational process; 2) to define criteria and indicators of future preschool and primary education specialists' readiness formation by means of artistic design on the basis of bilingual approach; 3) to experimentally test the effectiveness of the bilingual model of training future specialists of preschool and primary education by means of artistic design.

3 Results and Discussion

The creation of a bilingual additive (complementary) model of training of future specialists of preschool and primary education by means of artistic design; determination of its structural components; definition of the criteria and indicators of the readiness of graduates of higher educational institutions for this type of activity involves the analysis of modern scientific researches and the results of the ascertainment stage of the experiment.

After all educational transformations there comes a process of justification and development of optimal decisions that characterize the activity on educational objects modeling. It is the modeling of future educators and teachers' professional training process that gives grounds for answering the question: how to build the educational process so that the personal quality growth of the teacher of a higher educational establishment is sufficient for the pursuit of professional activity. The questions about the essence of the teacher profession of a higher educational establishment, about the content and competence of fulfilling their functional duties, the culture of their pedagogical influence, values, ideals, and professionalism have become of a great importance [18].

The term "model" comes from Latin meaning measure, a sample, an instance of something, a scheme to explain some phenomenon or process [1]. It is also stated that "... the model should be understood as an artificial system of elements, which, with some precision, reflects some of the properties, sides, connections of the object under the study" [1].

In our opinion, the construction of this model should be carried out on the basis of a holistic systematic approach to the organization of the educational process in a higher educational institution and taking into account the professional profile of the personality of the preschool and primary education specialist as well as modern scientific concepts of pedagogical activity structure, a model of the graduate (characterization of main personal qualities, knowledge, skills, abilities that a graduate needs for artistic design).

The bilingual model of training of future specialists of preschool and elementary education by means of artistic design was implemented in accordance with the principles of:

- cultural responsibility, which takes into account regional traditions of forming the basis of students' personal culture; and provides constructive influence on one's professional life;
- informed perspective (awareness of incentives for learning; optimal balance of management and self-management processes);

- thematic cyclicality (complication of content according to its theme);
- synthesis and integration (cross-curricular and inter-subject: generalization and variation of representations, modes of action, techniques, materials, tools, and methods aimed at creating expressive artistic images);
- humanization (orientation on human values, creation of a healthy microclimate on the basis of mutual understanding, mutual support, mutual assistance);
- efficiency (formation of effective knowledge and skills for students' independent usage in practical activity);
- dynamism (change of content of thematic cycles according to social request);
- flexibility (adaptation of the teaching content to the individual needs and interests of students);
- individualization (the basis for artistic design, which provides mobility of conditions for the development of creative abilities of future specialists of preschool and elementary education);
- aestheticization (introduction of artistic elements into the content and forms of work with students, which positively influence their emotional sphere, cause creative exaltation, joy, satisfaction) [5, p. 5–10].

The main purpose of the higher education system is the professional training of future preschool and primary school specialists of high qualification according to the social procurement.

The developed additive model reveals the peculiarities of content, structure, sequence, and interconnection of all components of the training process. The bilingual model of future preschool and primary education specialists' training by means of artistic design contains such basic blocks (theoretical, practical, scientific and methodical). It provides for active mental activity of students both in the classroom (in the process of studying the disciplines of psychological, pedagogical, artistic and aesthetic cycles, pedagogical practice, research work), and out-of-class activity with the involvement of future specialists in the team, group, individual work, in the problem solvation using active and interactive teaching methods.

It is determined that theoretical training of preschool and elementary education specialists is practical and is marked by the usage of the audio-lingual method (the technique of American linguists Charles Frieze and Robert Lado) and the communicative method (the technique of the British linguist D. A. Wilkins).

It should be noted that the construction of a bilingual model of training specialists of preschool and primary education requires the definition of conceptual approaches to artistic design.

As a result of the analysis of the psychological, pedagogical, and philosophical literature on the problem of the research, we have focused our attention on systemic, personality-oriented, cultural and competence approaches as such, which provide the scientific and methodological basis for the development of the program of the study. Let us consider them.

The systematic approach is considered as the only general scientific methodological direction, which aims to develop the principles, methods and means of research, organization and functioning of pedagogical objects and processes.

In particular, the structure of the additive model were introduced into the educational process of bilingual training of specialists in artistic design, as well as advanced speech training using a system of oral exercises, team methods of work, students' activity during practical classes, lively pace of classes, widespread usage of technical tools and visual aids that stimulate the interest of future specialists in the culture of the native speaker [24, p. 93–94].

The additive (complementary) model is the presentation of additional information in a foreign language, which enriches the content learned in the native language through printed texts, didactic materials and foreign speech. The discussion of the material occurs in two languages (I. Zozulia).

In philosophical terms, a systematic approach means the formation of a holistic view of the world, which takes the idea of the integrity of the complex organization of the studied objects and their internal activity and dynamism as its basis.

O. Bogdanov, G. Simon, P. Drucker, A. Chandler were the founders of the systematic approach. They defined this approach as a direction of research methodology, which consists in the study of the object as a whole set of elements in the relationships between them, that is, they consider the object as a model of the system.

The implementation of the systematic approach in the development of a additive model of preschool and primary education specialists' training by means of artistic design creates the most favorable conditions for a comprehensive study of this phenomenon, which is characterized by high dynamism, complexity and multifactority. It allows you to see, perceive, and imagine it as a whole system (technology of creative skills formation) in all its complexity, with all connections and changes.

The personality-oriented approach is based on the subject-subjective

educational paradigm. As I. Yakimanskaia [22] and S. Podmazin [16] point out, a personality-oriented approach involves a transition from explanation to understanding, from monologue to dialogue, from social control to development, from management to self-management. The key elements of the personality-oriented approach paradigm are the humanization and humanitarization of the educational process, the development according to personal abilities, the creation of an educational environment in which the formation of a student's personality takes place [20].

Moral, aesthetic, economic, legal and other values characterize the individual, and their development is the main task of humanistic pedagogy. V. Lozova's opinion, which emphasizes on the dialectical unity of personal and proactive approaches as a necessary condition for the orientation of a subject of education to self-movement, self-growth, and self-realization, is crucial for our research [14].

Accordingly, the decisive feature of the personality-oriented approach is the creation of favorable conditions for the development and self-development of a student's personality, the teachert's realization of a responsible standpoint for the educational process results, the construction of an appropriate level of creative skills development in the sphere of artistic design based on dialogue and cooperation.

Thus, the personality-oriented approach in the process of future preschool and primary education specialists' training by means of artistic design can be considered as a multidimensional, multi-aspect, multilevel structure that reflects the substantive and procedural completeness of professional bilingual (Ukrainian and English) model of training of students, and is aimed at the development and self-development of a student's activity. This is a common method of teaching, designed to intensify personal and professional sphere in the joint teacher-and-student activity through self-knowledge, self-organization, self-realization, through interaction and inter-influence of subject-subjective relations.

The position of the cultural approach, focused on the personality, a person's sense perception, the understanding of the most important facts of social life, of transformation of knowledge and skills possessed by a teacher, of self-study into the means of their professional development and self-improvement is conceptually important for our study.

The competence approach is now recognized by the majority of scientists as the key one in the process of modernization of all branches of education in Ukraine and, according to A. Mekhrabov, it is "an attempt of the world community to bring education and market needs into line, to eliminate the contradictions between educational and professional activities" [15, p. 3–7].

The implementation of the competence approach involves the support of a student's personality, the growth of self-development mechanisms, self-defense, self-education, which are necessary for human life, the formation of social and creative self-realization capacity [23, p. 44–53].

The organization of the educational process in the conditions of the competence approach is intended to satisfy the society need in the educated qualified competent specialists who come into independent life prepared, able to solve problems on their own and to take responsibility for their own decisions. The formation of professional bilingual competence of specialists of preschool and primary school education is conditioned by the society demands (the number of people who speak the language is increasing; the need to teach English in educational institutions is urgent; the admission to the magistracy).

Therefore, the bilingual additive model of training of future specialists of preschool and primary education by means of artistic design, implemented on the basis of the approaches analyzed above, is predetermined by the Ukrainian educational system, will allow us to predict the future results and to plan the course of actions for its achievement. It will clearly demonstrate the structure of the created object to all participants of the educational process and will serve as a criterion for evaluating the results of all activity cycles that are parts of artistic design.

In order to identify the attitude of "bachelor" and "master" students to the artistic design in the process of bilingual training, their awareness in this area, their understanding of further prospects under the training conditions, during 2017–2019 we interviewed future specialists of preschool and elementary education of Kryvyi Rih State Pedagogical University — 207 respondents; Zhytomyr Ivan Franko State University — 158 respondents. The total number of the interviewed is 365.

The study shows that most of the students interviewed, that is 259 respondents (70.9%) were familiar with the concept of "bilingual learning".

It also reveals that 74.7% of respondents (154 students) of Kryvyi Rih State Pedagogical University and 89% of respondents (140 students) of Zhytomyr Ivan Franko State Zhytomyr are willing to study bilingual disciplines in professional and training cycles.

Such large percentage can be explained by the fact that bilingual training is implemented in the higher education institutions mentioned above, and students are able to trace the advantages of the graduates who have studied bilingually over the graduates who have studied in a traditional way.

The experimental work also presupposes the conduction of a diagnostic

control test and the opportunity for the experimental groups to determine the effectiveness of the proposed bilingual model of training of future specialists of preschool and primary education by means of artistic design (Fig. 10).

At the control stage of the experimental work, a practical study of creative emotional-evaluating attitude level of students to the implementation of ideas of artistic design was accompanied by a set of questionnaire questions. The analysis of the questionnaire results demonstrates that 56 students (35.0%) of the experimental and 42 students (30.0%) of the control groups show interest in the implementation of ideas of artistic design. Compared with the indicators of the ascertaining stage of the study, a positive trend in the experimental groups is observed regarding the formation of the motivation-oriented component. Thus, 35.0% of students consider that it is necessary for future specialists of preschool and primary education to master creative ideas of artistic design.

At the same time insignificant changes of the indicators of students' orientation towards the realization of artistic design ideas are revealed in 40.0% of respondents with sufficient level of development. The change in the indicators of students with the primary level of development in the experimental group is 40.6%.

The results obtained in the control groups indicate a slight change in students' emotional-evaluating attitude towards the implementation of ideas of artistic design. It should be noted that the majority of the interviewed respondents of the control groups (45.0%) do not always set a priority on the implementation of ideas of artistic design in the process of professional training in a higher educational institution. Compared with the beginning of the experimental work, the indicator in the analyzed CG with the high level of development increased by 2.9%; with the sufficient level of development — by 7.8%; with the primary level of development it decreased by 10.7%.

To determine the level of creative potential of the respondents we use N. Vyshniakova and R. Tkach's "Creativity" test. The analysis of indicators of the creative potential level of students provide us with an opportunity to compare their manifestations in the experimental and control groups. Depending on the level of an individual's creative qualities expression the limits of the creative potential reserve have changed.

The analysis of the results at the control stage of the experimental study shows the expression of sufficient (65.6%) and high (34.4%) levels of creative potential among students of experimental groups. Analyzing the indicators of students' creative potential at the ascertaining and control stages of the study, we come to the conclusion that their variability is

positive. Thus, in the experimental groups the high level of manifestation of the indicator increased by 13.4%; sufficient manifestation of the indicator — by 10.4%; the primary level decreased by 3.0%.

We conclude that the decrease in the number of EG students with a sufficient level of manifestation of the indicator was due to the increase in the number of EG students with a high level of expression of creative potential. It should also be noted that the students in the control groups have the following changes of the indicators: the high level of manifestation of the indicator increased by 2.2%; sufficient level — has not changed; the primary level decreased by 2.2%.

Note that the change presented is situational. We assume that a certain group of students has passed the stage of adaptation to the conditions of the study at the university and changed their attitude to the profession and the educational process.

It is a generally accepted view that the effectiveness of professional skills development depends on the level of development of creativity as an indicator of the development of the inborn talents.

In order to find out the level of development of the ability to association, visual (figurative) creativity, transformations, variability of thinking, students were offered a modified version of S. Zievert's "Freedom of association" test.

The content of the test allows us to determine the level of artistic, creative and aesthetic abilities of future specialists of preschool and primary education and the variability of their thinking using the drawings. Watching the image, the respondent should find several interpretations of the dynamic image (creative abilities), record them, determine the number and quality of emotional expressiveness of the images (aesthetic abilities). If at the beginning of the experimental study a student illustrated a word with the help of an image (aesthetic abilities) and vice versa — an image with the help of a word (creative abilities), and found new creative ideas about its usage, at the control stage of the experimental study the task of the S. Zievert's modified test, in our opinion, presented an integrated way with the presence of the emotional component. Positive emotions helped to generate interest in knowledge, to develop students' productive creativity, which was reflected in a variety of strategies. The quality of the tasks performed by the students of the experimental groups, which characterized the level of development of artistic, creative and aesthetic abilities of future specialists of preschool and primary education is presented in Fig. 1.

Fig. 1 demonstrates that the majority of EG students have the high level of creative abilities development (50.0%); 38.1% of students — sufficient, 11.9% — primary. At the same time, the amout of the answers was: 69.0%

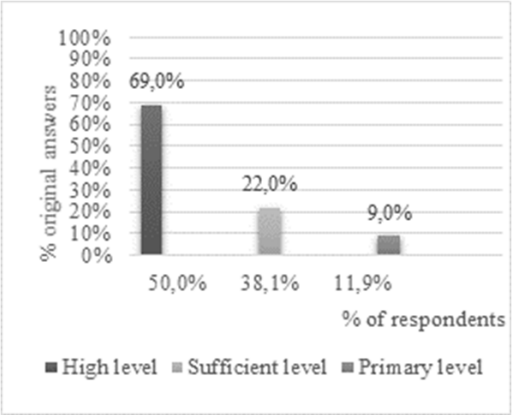

Fig. 1. The dynamics of the level of development of artistic, creative and aesthetic abilities of future specialists in experimental groups at the control stage of the experiment

of the respondents with high level of development; 22,0% — with sufficient; 9.0% — with the. The peculiar feature of the experimental work was to present the level of creative abilities development of future specialists of preschool and primary education of control groups (see Fig. 2).

The diagnostics of the level of creative abilities of the respondents of the control groups in fig. 2 showes that 44.3% of students have a high level of development of creative abilities, 25.7% of students possess the sufficient one, and 30.0% of students are with the primary level. The diagnostics of the level of development of creative abilities of future specialists of preschool and elementary education at the end of the experiment in EG and CG is presented schematically in Fig. 3.

The results obtained show a positive change in the indicator of the primary level of development of creative abilities in the experimental and control groups by 18.1%; at the sufficient level of development by 12.4%; and high — by 5.7%. As we can see, a significant positive dynamics of the indicator of the primary level of development of creative abilities of students in experimental groups is revealed. In the experimental groups, the presented indicator tends to decrease due to the introduction of experimental and research technology of the creative skills formation.

To compare the results of the level of creative abilities development in the experimental and control groups at the ascertaining and control stages of the study, we analyzed the dynamics of their development.

The results show a positive change of the indicators in the experimental groups. Thus, we see an increase in the indicator of students with the high level of creative abilities development by 10%, with a sufficient level of

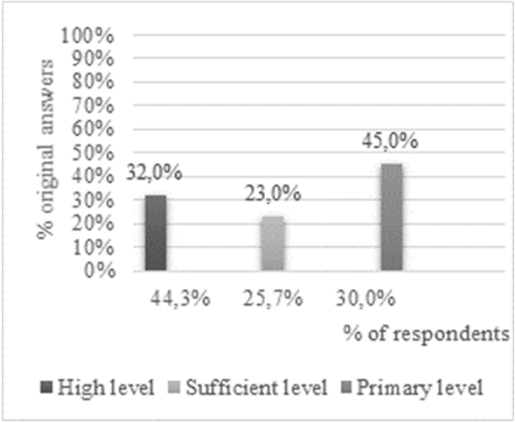

Fig. 2. The dynamics of the level of development of artistic, creative and aesthetic abilities of future specialists in control groups at the control stage of the experiment

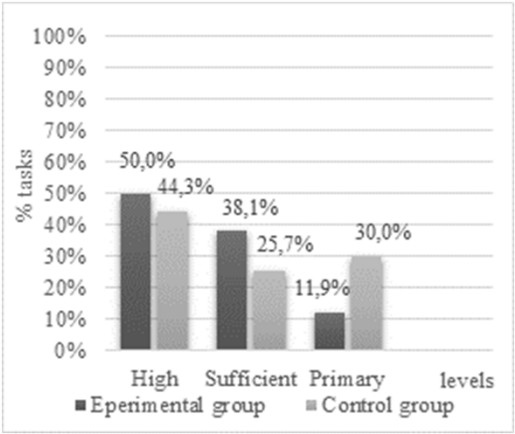

Fig. 3. The dynamics of level of development of creative abilities of future specialists of preschool and elementary education in EG and CG at the control stage of the experiment

development by 13.1%; and a decrease in the indicators of students with a

primary level of development by 23.1%. In control group, the indicator of the high level of development increased by 2.1%; sufficient level — by 0.7%; the primary level — decreased by 2.8%.

Summarizing the presented indicators, we come to the conclusion about the positive influence of the creative abilities development on the level of the artistic image expressiveness.

Considering the fact that pictorial creativity has specific features, we decided to analyze the dynamics of the level of aesthetic abilities development of the future specialists of preschool and primary education with the help of S. Zievert's modified test "Freedom of associations".

The analysis of quantitative indicators of completed tasks of EG students show that 2.5% of students have the highest rate of completed tasks (90%). Such an indicator characterizes the high level of manifestation of aesthetic abilities. Also, 5.0% of students completed 55% of tasks, 30% of respondents completed 69% of tasks, and 40% of students completed 60% of suggested tasks (Fig. 4).

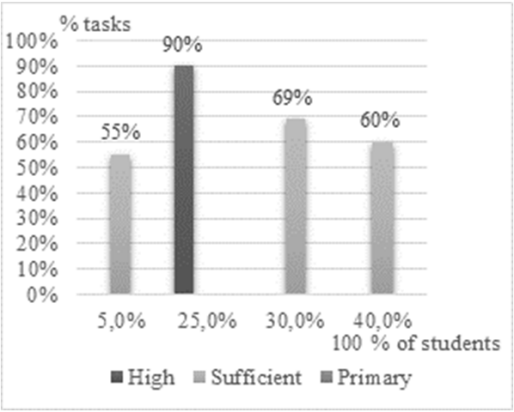

Fig. 4. The diagram of the quality of the tasks of the EG students at the control stage of the experiment

The presented results characterize the sufficient level of manifestation of aesthetic abilities of the EG respondents. The indicators related to the quality of the tasks performed by the students of the control groups, are shown in Fig. 5.

The obtained data show that 77.9% of students completed sufficient number of tasks (60%), 22.1% of respondents did not cope with the task (20%).

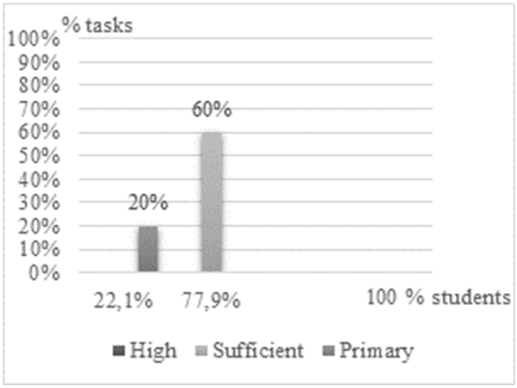

Fig. 5. The diagram of the quality of tasks performed by the students of CG at the control stage of the experiment

Among the control group of the respondents at the end of the experiment (Fig. 5) the decrease in the primary level of development is 22.2%; an increase in the level of sufficient development is observed by 22.2% of students; the indicator of the high level of development is stable (0%).

Therefore, the generalized indicators presented in Fig. 5, allow us to determine the dynamics of levels of aesthetic abilities development in experimental and control groups of students.

Fig. 6 shows that at the end of the experiment EG revealed a decrease of the primary level of development of aesthetic abilities of students by 30%; an increase of the sufficient level of development by 10%; of the high level by 20%. In control group of students, the initial level of development of aesthetic abilities decreased and the sufficient level of development increased by 22.2%; the high level of manifestation of the outlined indicator was not observed.

The results show positive changes of the indicators of primary and high level of development of aesthetic abilities of students in experimental groups and slight changes of indicators of primary and sufficient levels of development of aesthetic abilities of students in control groups at the end of the study.

The increase of the indicators of the high level of development of 32 students in EG (20%); of the sufficient level of development of 47 students in EG and CG (15,66%) was due to a decrease of the indicator of the primary level of development of 79 students (26,33%). It is significant result according to the S. Zievert's modified test "Freedom of associations" at the

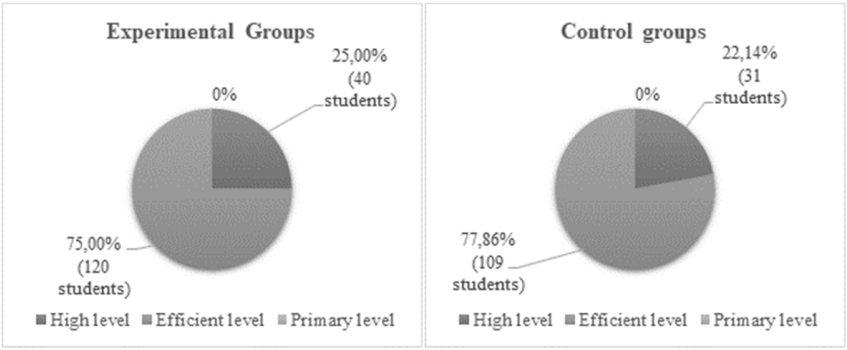

Fig. 6. Indicators of the level of development of aesthetic abilities of students in experimental and control groups at the control stage of the experiment

control stage of the study.

As shown by the results of the study of the level of development of aesthetic abilities of students, 10.33% of them need correctional work.

The presented experimental data allows us to trace the dynamics of the decrease of the primary level of students' aesthetic abilities development in EG and CG, to compare the level of aesthetic abilities development in both groups. Thus, the students in the control group have an indicator of a sufficient level of development of aesthetic abilities higher by 2.9% than the students in the experimental groups, but there is no indicator of the high level of development. The students do not have highly developed aesthetic abilities: 31 students (22.1%) require additional focused work in the outlined direction. This number constitutes 10.33% of the total number of the interviewed.

The generalized indicators of the levels of creative skill formation at the experimental stage were determined according to the monitoring formula:

$$S = \frac{max}{min} \cdot 100, \tag{1}$$

where S — level of artistic creative skills formation,
max — grades got by a student,
min — number of indicators according to which the creative skills were assessed.

The results are presented in Fig. 7 and 8.

Therefore, Fig. 7 demonstrates the positive dynamics in mastering artistic creative skills by students in experimental groups. The percentage of

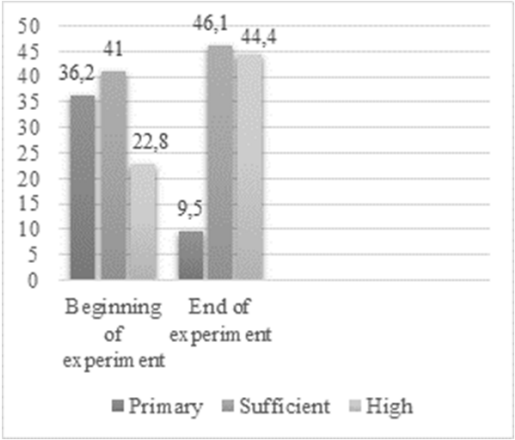

Fig. 7. Monitoring the students' level of creative skills formation in experimental groups

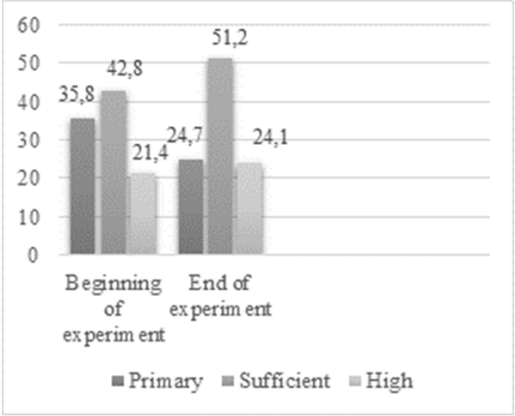

Fig. 8. Monitoring the students' level of creative skills formation in control groups

high-quality student training increased due to an increase in the percentage of students with the sufficient (at the beginning of the experiment — 41.0%, after conducting the experimental study — 46.1%) and the high levels of mastering artistic creative skills (before the experiment — 22.8%, after — 44.4%). The presented changes testify to the effectiveness of the developed

structural and functional model of creative skills formation.

Fig. 8 shows slight changes in the mastering artistic creative skills by students in the control groups: a slight positive trend is observed due to the increase in the percentage of students with the sufficient level of mastering artistic creative skills (at the beginning of the experiment it was 42.8%, after — 51.2%); decrease in the percentage of students with the primary level of mastering artistic creative skills (35.8% and 24.7% respectively). At the same time, generalized qualitative indicators of the monitoring study of the level of artistic creative skills formation are presented with the help of pie charts (Fig. 9).

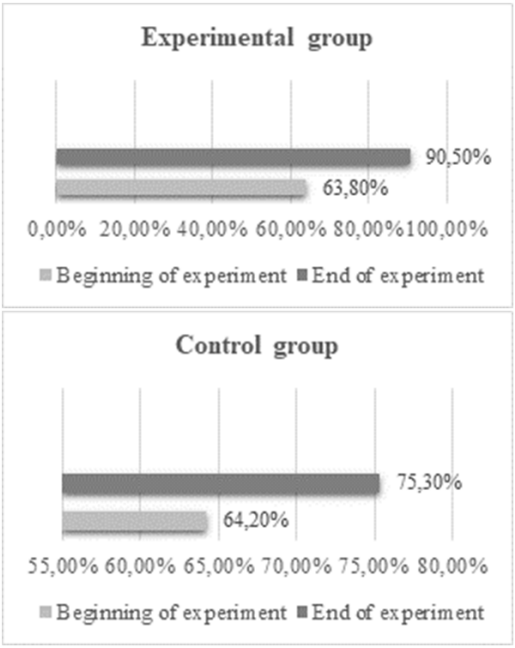

Fig. 9. The ratio of indicators of the quality of students' creative skills formation in control and experimental groups

The comparison of the pie charts shown in Fig. 9, indicates that the qualitative indicator of the outlined process in the EG at the end of the experimental study increased by 26.7%, and in the control groups — by 11.1%.

To check the effectiveness of the experimental work we use methods of mathematical statistics, namely Pearson's consistency criterion χ^2 to test

statistical hypotheses based on observational data.

The equation for this function is as follows:

$$\chi^2 = \sum_{k=1}^{m} \frac{(V_k - P_k)^2}{P_k}, \tag{2}$$

where P — frequency of pre-experimental results of observation (%);
V — frequency of post-experimental results of observation;
m — general number of stages of students' artistic creative skills formation ($m = 3$).

Thus, the calculation shows changes in the level of artistic creative skills formation of future preschool teachers. They are so significant that the probability of error is almost impossible.

4 Conclusions

1. We developed the model, content, forms and methods of future preschool and primary education specialists' training of by means of artistic design in the conditions of bilingual educational process (Fig. 10).

The development of the bilingual model contributed to the variety of forms of students' artistic and creative activities (team, group, individual) and to a wide range of methods used (games, presentations, essay writing, etc.).

Students' work on artistic design contributed to the gaining the experience of flexible and original usage of artistic image means, to the formation of professional knowledge, skills and comprehensive intellectual development of future specialists.

The synthesis of types of artistic design, means, methods and techniques contributed to the emergence of internal motives of the interviewed, which encouraged them to creative activity, as well as to the variability of creative actions and ways of creative skills realization. Individuality and lack of timeliness ensured the efficiency of the process of students' forming a certain group of skills.

2. We determined the criteria and indicators of future preschool and primary education specialists' training by means of artistic design based on the bilingual approach. The primary level of creative skills formation was diagnosed on the basis of the developed criteria (motivation-oriented, content-procedural, evaluative-reflexive). The formation of the skills was manifested in its level characteristics (primary, sufficient, high level).

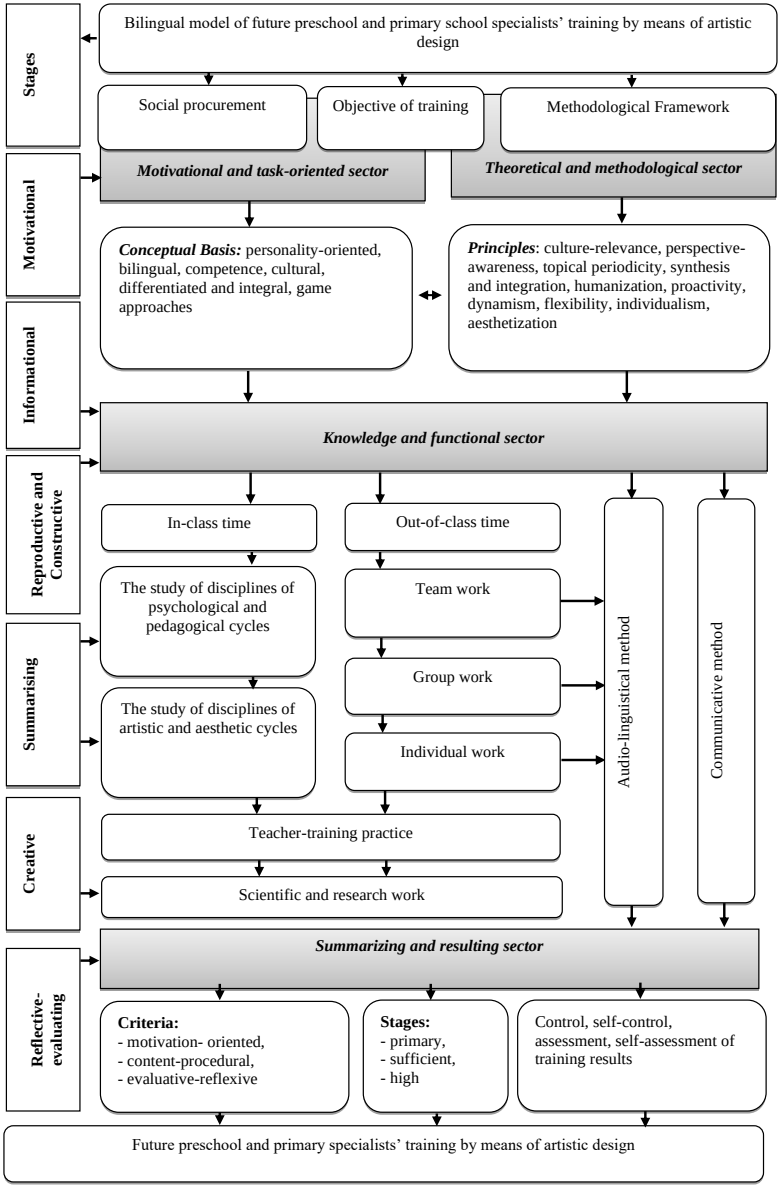

Fig. 10. Bilingual model of future specialists' training by means of artistic design

3. The effectiveness of the bilingual model of future preschool and primary education specialists' training by means of artistic design was experimentally tested.

Statistical analysis of the empirical data of the ascertainment stage of the experiment showed that the majority of students in EG have the sufficient (41.0%) and the primary (36.2%) levels of artistic creative skills formation. In the control groups, these indicators were 42.8% and 35.8%, respectively. The high level was manifested by 22.8% in the experimental groups and by 21.4% in the control groups.

The analysis of the results of the experimental study confirmed the hypothesis that the students' level of creative skills formation is significantly increased if we provide the implementation of an experimental bilingual model of future specialists' training by means of artistic design. It is revealed in the unity of motivational and assessment-reflexive components.

The introduction of the experimental model proved that the students' practical creative skills mastery is possible only in the process of systematically organized work on solving creative problems of different levels of complexity, which require making various decisions on artistic design.

The results of the experiment testify to the efficiency of the proposed bilingual model of future preschool and primary education specialists' training by means of artistic design (the percentage of students in experimental groups who reached the high level of development of creative skills has almost doubled: before the introduction of experimental technology it was 22.8%, after the introduction of experimental technology it was 44.4%).

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