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Multimedia technologies for teaching musical art under present-day conditions

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Abstract—The processes of society's informatization and digitalization necessitate the widespread use of new pedagogical technologies. Through these technologies, comprehensive disclosure of didactic functions of new methods of educational activity and the realization of the potential and creative potential. The use of information and computer multimedia technologies in teaching music art is especially relevant in the intensification of the development of interactive technologies, the transition to mixed forms of learning, and a period of socio-economic and socio-political upheavals. The study aims to substantiate the theoretical and applied principles of the analysis of multimedia technology learning musical art in modern conditions and assess the status and trends in their use in conducting educational activities. The study uses general scientific and unique methods of economic analysis, in particular, analysis and synthesis, analogy and comparison, generalization and systematization, and graphic ways.

Regarding the results of the study of multimedia technologies for teaching musical art in current conditions, it was found that they contribute to the development of the seeker's creative, creative, and cognitive activity, have a positive impact on learning material, and diversify the educational process. Multimedia technologies such as presentations, programs for watching a video, listening to audio, music and singing karaoke, electronic encyclopedias, and Internet resources are proven to be the most used in music education. They have several qualitative and quantitative advantages, manifested in the possibilities of audio-visual presentation of educational material and significantly higher information density. It is suggested to strengthen the use of such computer programs as Microsoft Word, Ahead Nero, Finale, Adobe Audition, Sound Forge, and Microsoft PowerPoint for musical art classes.

Key words—multimedia, interactive technologies, educational activity methods, musical art, educational activities.

I. INTRODUCTION

The strengthening of globalization processes and the desire to integrate into the European space requires reforming the national education system, improving the professional training of teachers, and adapting the positive pedagogical experience of the European Union. The priority task of modern musical art education is the development of a creative, creative, and initiative personality, ensuring its self-improvement and self-development. Improving the efficiency and quality of training requires introducing new forms of the educational process, a quality tool: information technology. Note that the lessons of musical art have specific features and specifics in their teaching methodology, so they require changes in the students' involvement forms to the musical art. At the same time, the development of the students' abilities to perceive and understand the language of musical art and the definition of its place and importance in society becomes essential. At the same time, teaching musical art is focused not on learning, repeating, fixing, and studying the material but on feeling, creating, expressing, understanding, and perceiving. For this reason, only with the help of multimedia technology can be achieved the goal of teaching music and conducting a systematic assessment and monitoring of the state and trends in their use in carrying out educational activities will contribute to improving the teaching quality.

II. LITERATURE REVIEW

The current socio-economic development conditions of world countries are characterized by the globalization of socio-political, financial, and economic relations. There is total instability, uncertainty, and the strengthening of threats, risks, and dangers. The COVID-19 pandemic has created conditions in which both the global and national education systems have been forced to seek alternative ways of conducting educational activities. The transition to distance learning has necessitated the search for alternatives to traditional forms of education, among which multimedia technologies have taken one of the most significant places. Note that the actualization of the use of multimedia technologies in music education has arisen not only as a response to the problems created by the pandemic but also related to the intensification of the provision of educational services remotely through the means of Internet

communication: training, scientific events, professional development and so on. Stosic (2015) [1] attributes multimedia technology use to the increasing demand for distance education and the benefits that result from it, while Koryakin (2018) [2] emphasizes the need to adhere to the methodological principles and stages of using multimedia technology for music education.

Abdulrahaman et al. (2020) [3] specify the definition of multimedia technology, by which they mean the combination of more than one medium of text, image, audio, and video to increase understanding and memorization of educational material through the use of visualization technologies. At the same time, scholars give specific characteristics to multimedia technology, including 1) integration, 2) diversity, and 3) interaction.

Mantiri (2014) [4], when studying the characteristics of multimedia technologies' use, notes their appropriateness and necessity in a distance learning environment, as it is possible to obtain and transfer data and information quickly. However, multimedia content use has a low level of copyright protection and easily lends itself to borrowing and unauthorized use.

Arystova (2017) [5] and Fan (2021) [6], while investigating the features of teaching music art in the conditions of the European integration process, concluded that the use of multimedia technologies has a significant impact on the final result of teaching music art and indicates the level of organization of the educational process.

Instead, Maatuk et al. (2021) [7] postulate the feasibility and validity of e-learning using information and communication technologies in countries' critical and unstable socio-economic development conditions. In doing so, the scholars believe that the challenges triggered by the COVID-19 pandemic are effectively minimized, and the innovative multimedia learning technologies implemented for co-citizens demonstrate the effectiveness and high level of learning comprehension.

Umrykhina (2019) [8], while investigating the features of education development in Ukraine, concluded that one of the directions of its modernization is the introduction of innovative technologies for teaching musical art, which will improve the quality of teaching educational material and the level of its perception by education applicants. A similar position is held by Biletska et al. (2021) [9]. They associate the use of multimedia technologies in musical art classes with the possibilities of activating the cognitive and creative activity of students, increasing their activity and initiative, and the quality of learning and performance. It is especially true for teaching musical art to elementary school pupils because, for them, it is crucial to visualize educational materials [10]. In particular, Tagiltseva et al. (2017) [11] identify multimedia technologies such as electronic textbooks, presentations, multimedia programs for music, music recording, and tempo changes as the most optimal ones to use in music art classes.

Wang (2022) [12] insists on the need to make changes in the traditional educational concept and create a new one, which should be based on the introduction of the method of analyzing the multimedia path of music art teaching using the multiple intelligence learning models, which allows detailed analysis of music characteristics and cultivate innovative consciousness of students. The scholar's opinion is shared by Zhihong (2019) [13], who convinces that the combination of multimedia technology enhances the learning efficiency and strengthens the students' consciousness. Ma's (2021) [14] research also suggests the feasibility of applying artificial intelligence technology to enhance the effect of contemporary music teaching.

At the same time, Wang (2021) [15] considers the use of multimedia technology to teach music art as a consequence of education reform and proposes the introduction of intelligent learning. Dong (2022) [16], who develops the theory of combining innovative technology of music art function recognition and learning strategy based on the construction of a multimedia system, agrees with his view.

Pavithra (2018) [17] interprets the use of multimedia as the controlled computer integration of text, graphics, video, audio, and any other medium transmitted digitally after processing. Multimedia technology in music education is in demand because it allows for the recording, playback, and display of instructional material.

Norlis et al. (2018) [18] consider multimedia technologies as an effective tool to make training sessions less theoretical and abstract, and their implementation is regarded as an element of innovative activities of the educational institution. Thus, emphasizing the need to use multimedia technologies in the training of music art teachers themselves becomes important [19]. Pidvarko T. O. (2020) [20] believes that, in addition to all indicated, the teacher's level of artistry and creativity is essential, ensuring optimal decision-making on the choice of multimedia technologies and their implementation in the educational process. Undoubtedly, multimedia technologies open up new opportunities to implement educational activities and teach musical art to diversify the textual, audio, graphic, and video information, enhancing the methodological aspects of the academic lesson [21]. Zarja (2013) [22] concluded that multimedia technology contributes to the flexibility of managing the flow of information of different outputs: from text to the graphic image, music, and video.

At the same time, the teaching of modern music art pays significant attention to the creative thinking of students and focuses on its development through innovative methods, which, according to Song & Wang (2013) [23], is a way to obtain a positive effect on learning.

Research aims. The study aims to substantiate the theoretical and applied foundations for the study of multimedia technologies for teaching musical art in modern

conditions and assess the status and trends of their use in conducting educational activities.

III. METHODS AND MATERIALS

The study uses general scientific and special methods of economic analysis, in particular: analysis and synthesis, to determine the essence of multimedia technology training in music art; analogy and comparison to assess the state and trends in the use of multimedia technology training in music art; generalization and systematization to formulate hypotheses and the formation of conclusions and research results; graphic method to visualize the results of research.

The study's information base relies on the research of leading scientists on multimedia technologies for teaching musical art.

IV. RESULTS

The sustainable information and technological development of society and the increasing globalization processes impact, European integration and geo-politization have made adjustments in ensuring the education system's effectiveness both internationally and nationally, significantly changing its methodology, technology, and practice. Reforming the education system and the implementation of structural transformation involves introducing the educational process of qualitatively new pedagogical innovations aimed at the development of personal spiritual culture. Under such conditions, the intensification of the development of multimedia technologies as a means of search, creation, application, and transfer of data, through which the quality of education is improved, has acquired great importance. Furthermore, new challenges associated with the COVID-19 pandemic have deepened the destructive changes in the education system and necessitated a transition to distance learning. Consequently, the need for visualization of educational material has intensified, requiring the use of multimedia technologies, the main of which are summarized in Figure 1.

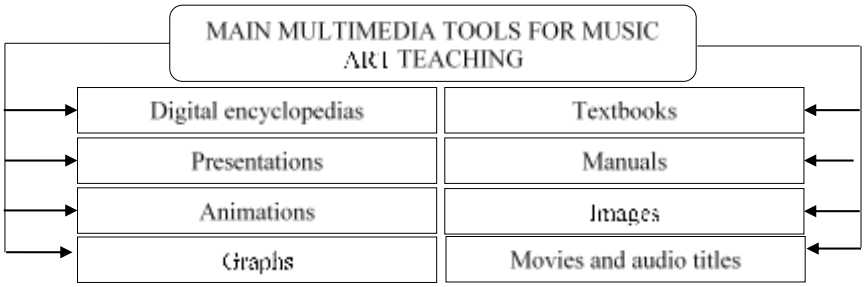

Figure 1. The main multimedia tools for music art teaching.

Author's elaboration

At the same time, the use of specific multimedia tools significantly depends on the understanding of music as art and the topics that need to be covered during the training session, namely: perception of the world around through the language of sounds, stories about people's lives and feelings, coverage of vocal, instrumental, folk or composer music, mastery of individual musical instruments.

All these multimedia means of teaching musical art require presentations created using Microsoft PowerPoint, which is considered one of the most effective forms of educational material presentation. It reduces the learning time and optimizes students' physical activity and attention.

Note that conducting music education is a specific area of the pedagogical activity, regulated by the relevant normative legal acts. State standards regulate the basic principles and define optimal training approaches and provide requirements for mandatory competencies and learning outcomes for students. Therefore, the teaching of musical art has its specifics, and multimedia programs are characterized by their diversity, in particular: 1) music players; 2) karaoke singing applications; 3) music encyclopedias; 4) music constructors and others.

Meanwhile, the main objectives of multimedia technology use are:

- to increase the perception, memorization, attention, imagination, and thinking of students, activation of their activities in the classroom;
- to update basic knowledge of musical art;
- to set planning tasks for revealing the relationship of training content of musical art with the realities of life and features of national and world music
- to provide the development of artistic thinking and practical experience of seekers.

The use of multimedia technologies in musical art involves the establishment of a close relationship between the organizational structure of the training session and its methodological support, allowing to fulfill the following conditions:

1) stimulation of students' aspirations for cognitive activity and self-development;

2) promotion of a positive emotional attitude to the process of learning;

3) development of skills of independent goal setting and search for their achievement;

4) enrichment of musical thesaurus;

5) development of particular skills to use given algorithms;

6) formation of self-control and evaluation skills.

Given the indicated tendencies, we consider it expedient to systematize the organizational and methodical aspects of conducting a musical art class, and the algorithm formed is reflected in Figure 2.

As the results show, the algorithmic model of a musical teaching lesson using multimedia technology involves an order of stages of its implementation. In the first stage, it is necessary to focus the attention of applicants, create a creative atmosphere, and interest applicants. The second stage includes actualizing the basic knowledge and realization of homework, after which it is essential to realize aspects of motivation for work. In the fourth stage, the applicants' attention is focused on the problematic issues of personally important work goals and indicators of their achievement, an appropriate work plan is drawn up, and its implementation is organized. In the final stage, the results are summarized, conclusions are formulated, work results are evaluated, and homework is given.

We should note that the methodical basis of teaching musical art assumes implementing such basic blocks as planning the purposes and tasks, forecasting interaction results, choosing of practical training means system, and an educational result assessment.

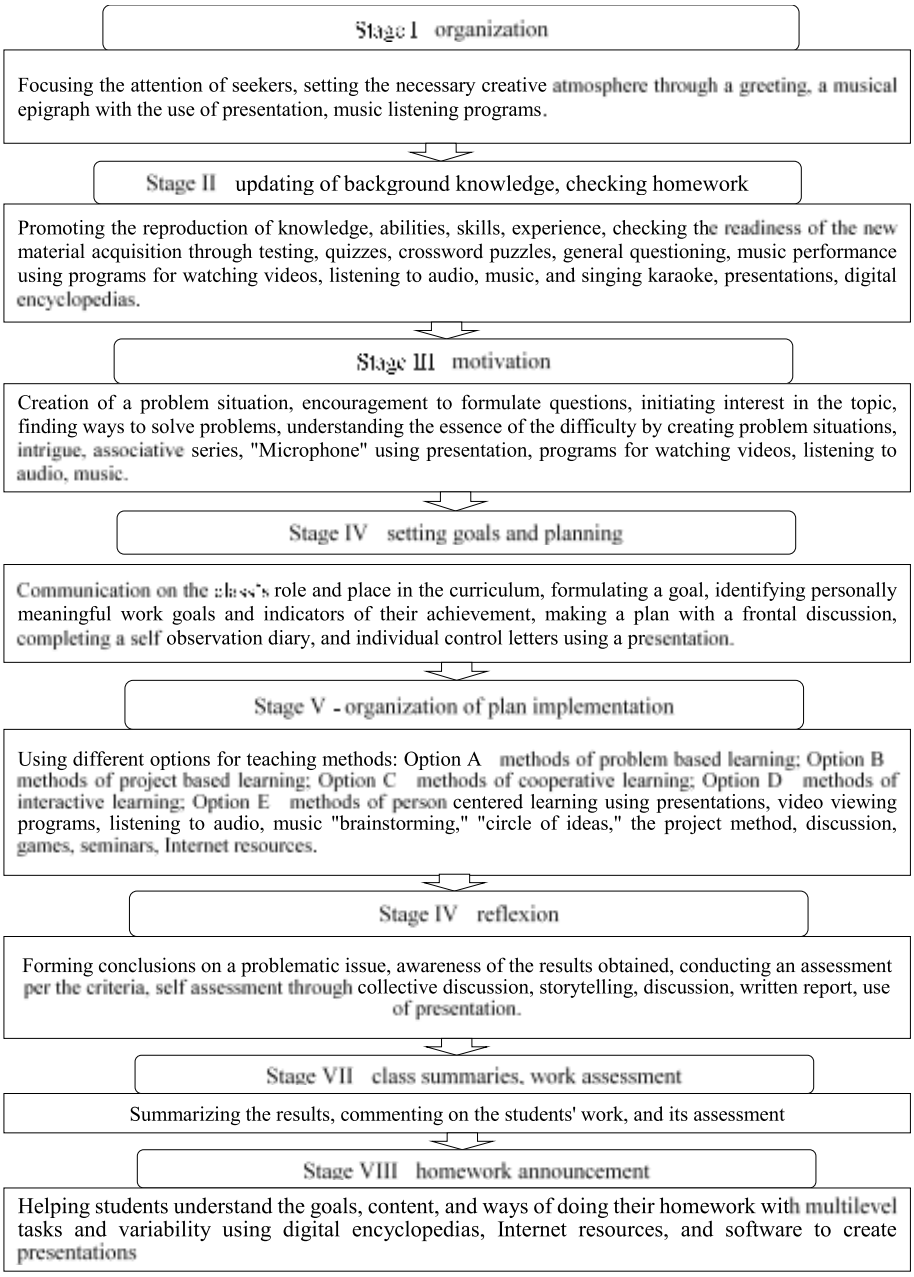

Figure 2. Music education lesson model using multimedia technology.

Compiled according to: Novikova, N.V. (2010) [24]

Besides, multimedia technologies have significant qualitative and quantitative advantages. Qualitative advantages are reflected due to the possibilities of audio-visual presentation of educational material and quantitative – in a higher information density. Multimedia technologies allow us to combine innovative and technical functions with traditional means and teaching methods, which, in turn, enables us to improve learning, increase motivation and quality of education, and significantly increase the information culture. Multimedia technologies are used in different ways, namely:

1. To announce the topic and task of the training session.
2. To accompany the presentation of training material.
3. As an information and training manual.
4. As a means of knowledge control.

At the same time, the provision of broad didactic capabilities depends significantly on the choice of multimedia technologies. In Figure 3, we will reflect on the main didactic possibilities of multimedia technologies for teaching musical art because they help make comparisons, promote the search for analogies and solve creative

problems. In particular, conducting individual and group training sessions helps uncover general competencies such as the ability of education applicants to work in a team and autonomously. At the same time, the development of applicants' cognitive interests allows them to manifest their abilities and activate their professional interests. The effectiveness of using multimedia technologies for teaching musical art involves:

- The use of different approaches to the study of musical art.
- Taking into account the applicants' capabilities.
- Abilities.
- Education level to the accessible presentation of educational material and its easy use assimilation.

In this context, the innovative component of the educational process acquires significant importance. Using innovative forms and methods of teaching musical art improves the quality of teaching and learning material and creates additional opportunities for a comfortable learning environment.

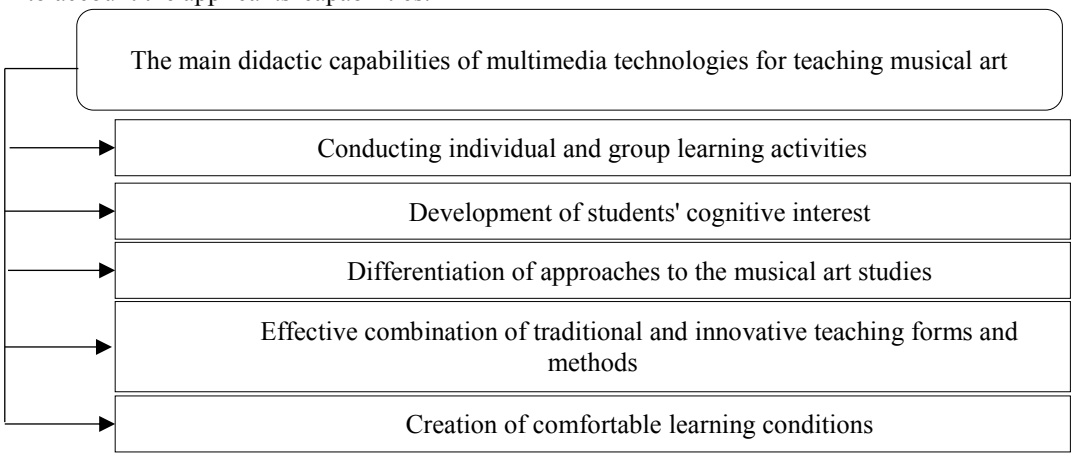

Figure 3. The main didactic capabilities of multimedia technologies for teaching music art.

Author's elaboration

The latest computer software tools are essential to mastering the knowledge and skills of musicianship. Such software as Microsoft Word text editor, Ahead Nero sound recording software, Finale music typesetting and layout software, Adobe Audition and Sound Forge sound recording and processing software, and Microsoft PowerPoint presentation software are crucial in this context.

The use of multimedia technology in learning musical art is an appropriate, reasonable and necessary tool for implementing the main objectives of the educational process, as it allows audio-visual presentation of information relating to educational material, increases the level of information density, combines innovative and technical functions with traditional forms of teaching methods.

V. DISCUSSION

The study results on multimedia technology teaching musical art in current conditions allow us to argue that their use is widespread, appropriate and justified. Furthermore, we found that multimedia technology increases the effectiveness of teaching musical art and the quality of the educational process and contributes to the development of creative, creative, and cognitive activity and self-development of applicants. Furthermore, they form the skills of collective and individual cooperation and help show their abilities, abilities, and skills to master the learning material quickly, handle problem situations, and seek ways to resolve them. Nowadays, such computer programs as Microsoft Word, Ahead Nero, Finale, Adobe Audition, Sound Forge, and Microsoft PowerPoint are the most often used for conducting educational classes. It allows quickly, efficiently, and accurately to work out textual educational material, perform sound recording and processing, and make a quality music notation and layout of the musical text.

The use of multimedia technologies for teaching music art allows:

1) to develop the individual abilities of students;
2) to form abilities and skills of information-communication interaction of students;
3) to optimize learning time;
4) to form research creative and creative skills;
5) to make optimal decisions;
6) to form the ability to use multimedia technologies to implement practical activities.

Without any doubt, multimedia technologies for teaching musical art are a quality tool for the educational process and contribute to improving the quality of teaching, providing opportunities to use different teaching methods, and helping applicants to understand the content and purpose of teaching musical art.

VI. CONCLUSIONS

Therefore, the study of multimedia technologies for teaching musical art and the specifics of their application under current conditions of deepening financial, economic, and socio-political global instability give reason to assert that the international and national education system is experiencing a significant destabilizing influence. Risks, threats, and challenges caused by unpredictable events on a global scale make it necessary to conduct educational activities at a distance form, the primary tool of which at the present stage is the use of multimedia technologies. Through the help and widespread use of multimedia technologies in teaching musical art, it is possible to improve the quality of education and interest in learning musical art to optimize the processes of understanding and perception of educational material. The use of multimedia technologies intensifies the learning process and makes it dynamic and visual. The validity of using such computer programs as Microsoft Word, Ahead Nero, Finale, Adobe Audition, Sound Forge, and Microsoft PowerPoint in conducting classes on musical art is proved.

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