MEASURES TO INTRODUCE COMPUTER TECHNOLOGY INTO THE MUSICAL EDUCATION SYSTEM OF UZBEKISTAN

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Abstract

This article presents the stages of the introduction of computer technologies into the music education system of Uzbekistan and their integration into the educational process. It also reviews and analyzes local scientific research and practical results in this area. Electronic resources, web programs and mobile applications, and interactive textbooks developed for music education in our country were analyzed, and based on them, proposals were made for special music education in the Uzbek education system. In particular, the study discusses new methods of teaching Uzbek national music to the younger generation using computer technology. Were discussed not only new teaching methods, but also how computer technologies fit into the teaching methods of our national music in a way that is characteristic of the "ustoz-shogird" tradition and what opportunities they can provide. Considerations and comparisons are mainly based on the curriculum and teaching methods of subjects such as "Music" in the system of general education subjects and "Solfeggio", "Maqom alphabet", "Maqom art history" in children's music schools. The main goal of the study is to monitor the extent to which innovations are being implemented in the music education system of Uzbekistan and to identify new scientific and practical problems arising within it.

Keywords: *Computer technologies; music education; digital resources; Uzbek national music; music pedagogy; solfeggio; electronic learning applications; music theory*

Introduction

It is known that computer technologies have taken an important place in all stages of the education system today. It can also be observed that a number of higher educational institutions around the world are conducting research on theoretical and practical problems of computerization of education. The direction of music education is no exception.

Level of Research Literature Analysis. It is no exaggeration to say that the equipping of the Uzbek State Conservatory with personal computers in the 1990's was the first step in the process of musical informatics in our country. The first notation programs at this educational institution were introduced due to the interest in musical informatics tools and the initiative to study them by the famous composer F. M. Yanov-Yanovsky (Umurov, N. K.,

2018). At the same time, Sh. Gafurova's articles on creating music on a computer (Gafurova S. H., 2003), working with music editing programs (Gofurova, S. H., 2003), and digital sound deserve attention (Gafurova S. H., 2007). In particular, the article by Yu. V. Katz entitled "Application of computers in music theoretical disciplines" contains proposals for creating a musical database and using computers in the analysis of musical works, which indicates that a movement to introduce computer technologies into music education has begun in our country (Kac U. V., 2009).

Technical support has begun to be provided not only in higher education institutions, but also at the level of music schools. Under the 2010 decree of the first president of our state, I. A. Karimov, "On paying special attention to art and music schools by 2014," music and art schools are provided with electronic music boards and other technical means. Among these, it should be noted that although the classrooms for teaching music theory and history are equipped with electronic music boards. Unfortunately it was observed that they were almost never used due to the lack of instructions and instructions for teachers on how to use them, and the general lack of experience in teaching using electronic devices. As a result of our experience, we can say that any tools, settings and technologies that are attached to musical education should be based on the theoretical and practical basis of their application, as well as the purpose of the science and system.

The issues of using computer technologies in music education are covered in articles such as "Musical computer technologies in teaching students of the digital age school" by M. K. Karimjonova (Karimzhonova M. K., 2020) and "Musical informatics. Features of teaching computer science to students in higher musical educational institutions of Uzbekistan" by D. M. Shamakhmudova (Shamahmudova D. M., 2020).

Practical results and proposals

In 2020, humanity's confrontation with the COVID-19 pandemic raised the issue of distance learning forms in the education system. Even in countries with well-developed education systems and methodological experience, we have witnessed disruptions in the educational process. This unexpected experience has further strengthened the need for computerization of the education system. A number of local e-education portals have been launched in Uzbekistan since 2020: eduportal.uz (Eduportal.uz. 2017), kitob. uz (Kitob.uz. 2023), maktab.uz (Maktab.uz. 2025). Although the aforementioned educational platforms are aimed at the continuity of education and the formation of independent educational thinking in our country, the methodological, theoretical, psychological and pedagogical issues of computerizing the education system in our country require in-depth study.

In recent years, we can also observe efforts to develop electronic resources for music education. Although the majority of them are aimed at general music education, some electronic resources can be used at the initial stages of specialized music education. The methodical manual "Technology of using "4K" model in music lessons" compiled by Rakhimov is intended for teaching grades 1–4 of general education schools (Rahimov, A. R., 2024). It was developed as an electronic manual with methodical descriptions for educating critical thinking, creativity, collaboration, and communication aspects in music lessons. The resource provides a total of 30 interactive methods that help build each skill. In addition, a number of methods are described in the sample lesson plans for grades 1–4. These sample lessons are designed in the form of presentation programs, with graphic images and audio links of the given song examples. Lesson examples presented in the manual cannot rely on teacher-computer-student feedback because the exercises and control work are not computerized. But the interactive methods presented in the manual can undoubtedly serve as a methodical guide for the creation of electronic interactive textbooks and web programs for the theoretical discipline of music education. In particular, there is a possibility that the author's monograph "Modern pedagogical technologies and interactive methods in teaching music" will serve as a necessary resource for this process. Students of the "Art Studies" Faculty of Chirchik Pedagogical University M. Abduhalilov and G. Dzhinbaeva developed an interactive electronic textbook for independent

music education. It is noteworthy that there are stages of explanation of the topic, listening to music, and control, which are designed according to the student-computer feedback. The source is organized in the form of hypertext presentation programs, and the necessary information can be accessed by selecting blocks. By clicking on the "Outline" button, students can get acquainted with the work of Uzbek composers and songwriters. In addition, they are given the opportunity to sing melodies in karaoke format, complete crossword puzzles for practice, and take tests for control. The "Source" button allows students to go to web links to various web pages and programs related to the subject. Another advantage of this is that in the section on the work of Uzbek composers and songwriters, the text is presented in a verbal form and citations are provided for the necessary terms. However, it cannot be said to be without shortcomings. First, the electronic textbook deviates from the goals and objectives of the subject. It can be noted that the work of representatives of the "Vienna Classical School" is presented in this manual along with Uzbek composers, including the incorrect selection of musical works that are played during the verbal explanation of the text. For example, the use of works by J. S. Bach or W. A. Mozart on a page devoted to the work of Abdukodyr Ismailov can lead to the formation of misconceptions and incorrect skills among students. In this situation, it seems logical to present works belonging to the artist's work. Secondly, the crossword questions given in the exercise blog are designed to deviate from the topics of the textbook. In addition, it is illogical that the questions are aimed at testing general knowledge, not at mastering the received information. It is undoubtedly appropriate to take the mentioned shortcomings into account in future electronic educational resources. It should be noted that this electronic interactive application is one of the first examples of creating independent learning and distance learning resources.

The "Digital Textbooks AR" web application, launched in 2023 by the Ministry of Public Education of the Republic of Uzbekistan and the Republican Education Center, has become one of the most visible projects in the movement to create electronic resources.

This multimedia application consists of electronic textbooks with interactive whiteboards, mobile devices and is intended for use in traditional, distance and independent forms of education. The music textbooks presented in the application fully meet the requirements of an interactive electronic textbook and rely on the functions of teacher-computer-student feedback. The music textbook application consists of the blocks "Karaoke", "Movement", "Piano" and "Test your knowledge". As in the previous electronic resource analyzed, in this application, the control questions are not focused on testing the knowledge acquired in the textbook. For example, while the "Test Your Knowledge" block contains structured questions on music theory, the app surprisingly lacks an information section. Although the application is said to be based on the methodology of teaching the subject "Music", one of its major shortcomings is that it is not based on the logic of lesson stages. However, it is noteworthy that the melodies presented in the "Karaoke" section are professionally arranged, and the works in the "Song Movement" section (works by Uzbek, Russian, and Western composers in various genres) are presented as original in terms of sound (the melody is not synthetic or computerized). In particular, the presentation of the given song samples in karaoke form can be an effective tool for developing listening skills in music schools. The fact that the samples are based on Uzbek folk songs and works of composers dedicated specifically to children can partially solve the problem of the lack of original audio recordings in music schools. The ability to customize the resource in Uzbek (in Latin and Cyrillic alphabets), Russian, English, Kazakh, Kyrgyz, Tajik, and Turkmen languages creates conditions for its use throughout Uzbekistan.

One of the electronic resources that can make a significant contribution to the audio base of Uzbek national music is the website "Novda" (Novda.uz. 2025). This resource, which includes interactive electronic textbooks and resources, presents audio recordings of works that are important for the direction of music education. Although the site only provides music audio recordings for grades 1–5, it is noteworthy that it has musical samples for all subjects of the science curriculum. That is, the electronic resource

consists of works of Uzbek folk art and composers, Uzbek folk instrumental music, works of Russian and Western composers, audio and video recordings of various musical genres. Although it is not a textbook in terms of structure, it should be recognized that it can be used as an additional tool in the educational process. One of its advantages is that the provided melody samples are not large in size, they are selected in accordance with the children's thinking and music science program, and the recorded melody samples are processed competently (the excess noise in the audio recording is removed). It is noteworthy that it can be effectively used not only in the general education music system, but also in the subjects of "Solfeggio", "Maqom Alphabet", "History of Maqom Art", "Listening to Music" and "Musical Literature" in music schools in Uzbekistan. In particular, melodies performed on Uzbek musical instruments can be very useful in teaching their timbre characteristics, and in writing timbre dictations in solfeggio lessons. We know that music editing programs such as Sibelius, Finale, and Muse Score have the ability to reproduce the timbres of European musical instruments. For this reason, it is not difficult for foreign teachers to edit and transfer musical examples to different timbres for textbooks. However, it is currently impossible to express the timbres of Uzbek national musical instruments in these programs. From this point of view, this website is expected to be a valuable tool for musicologists and teachers.

Conclusion

Although the introduction of computer technologies into music education in Uzbekistan began with the study and use of music publishing programs, it can be seen that over the years, work has been carried out on electronic resources, interactive textbooks, and web applications. In turn, it is noticeable that the methods of teaching music in the local web programs and applications listed above are adapted based on the characteristics of Uzbek music. That is, it was found that the audio-visual capabilities of computer technology are very effective in teaching Uzbek music based on the oral traditions of "ustozshogird". In addition to the above, CTs are expected to serve as an important tool in the creation of a single musical information base for the music education system, the development of the direction of "computer ethnomusicology" in our country, and the promotion of the science of "ethnosolfeggio".

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