THEORETICAL BASIS OF THE USE OF COMPUTER PROGRAMS IN TEACHING (ON THE EXAMPLE OF THE SCIENCE OF MUSIC CULTURE)

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Annotation: ***this article covers the theoretical foundations and stages of development, history of using computer software in teaching music culture science. Also, great attention is paid to the issue of increasing the effectiveness of teaching the science of music culture through computer programs in the training of pedagogical personnel for general music education.***

Keywords: ***music education, pedagogy, MP3, MIDI, WAV, PowerDVD, AEG, NHK.***

Today, an increasingly growing part of the communication between people is entering the world of virtual communication technology. Music could not stand aside from information and communication technologies. With the help of a computer, a person can record sound recordings without leaving home, using amateur equipment, processing it in a special program with the help of various effects, and then start distributing “newly recorded hits”in MP3 format over the internet.

Computer music software can be divided into three main groups. The first group includes programs that work with sound waves. It is a variety of multimedia players designed to play audio and video files; all audio editors with which you can edit the sound wave; as well as programs for recording discs. We can say that the programs of this group are most often used in various types of human activities. The second group includes sequencer programs that combine many functions. Recently, sequencer has become the universal program for working with MIDI and audio sound, but initially they only worked with a MIDI group. And the third group of programs is music editors, with the help of which the method of musical spelling is the same as typing using Microsoft Word.

The simplest in everyday use are media players. The most popular are Windows Media, WinAmp and CyberLink PowerDVD. From CDs using Media players (uncompressed audio formats:*.WAV, *.AIFF; compressed audio formats whose data is not lost:*.APE,*.FLAC; compressed audio formats partially lost data:*. MP3,*.OGG) can listen to music in formats. Also, you can convert video files and other compressed formats (*.Avi,*. Avi,*. Avi,*. avi) to DVD format.Hunt,*.MPEG,*.WMV, *.VOB, *TS,*. MP4 and others) can be watched.

With the development of Internet technologies, the functionality of these programs is significantly improved, with the help of these programs it will be possible to listen to the internet. When copying a disc, the data and song names about the performer are automatically filled in, making the life of users much easier. Computer music programs also include audio editors, for example, Adobe Audition, Sony Sound Forge, Steinberg Wavelab. These programs are designed for more professional users. With their help, it is possible to change the audio compact disc to MP3 with the

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addition of a large number of additional options. It is also possible to edit an audio waveform of a track (cut sound with glue).

With the help of the sound editor it is possible to create a collage, popurri from several songs. In addition, audio editors are also used to restore old recordings from recordings and audio cassettes. It should be noted that this process requires a lot of time, for example, efforts in the process of restoring audio cassettes. Such recordings lose not only the quality palette and dynamics of sound over time, but what is most unpleasant is that the band stretches, begins to swim with time and intonation, it is desirable to use a wide range of computer music programs, mainly in digitization, in order to bring audio recordings in such cases to their original state and, or, closer to the original. Digitization of records is also a very laborious process, but automation work in the audio editors of computer music programs is easy.

One of the main disadvantages of plate recording is the moderate amount of dynamic gradations, the emergence of additional noise and slow beats. The noise level on the plate is constant from beginning to end, which allows us to determine the noise in pauses between the tracks and experimentally establish the optimal level of noise reduction in the sound-emitting areas of the work. If the noise reduction is set to the maximum, the timbre of the high range sounds (for example, scripka) will disappear. In most cases, the slow beat on the plate is also davriy, but it can be removed as much as possible with the help of their special plug-ins. The dynamic and timbre range can be corrected by the equalizer and custom plugins.

Sequencer allows you to create, edit, save, play musical compositions in a MIDI sequence. In addition, the sequencer can actively work with sound waves. MIDI abbreviation (abbreviation) Musical Instrument Digital Interface is a digital interface of musical instruments. This term refers to a generally accepted standard for the exchange of digital data between devices that carry out the synthesis and processing of electronic music.

The main difference of the musical data corresponding to the MIDI standard from the traditional digital sound is that it is not encoded the amplitude of the sound vibrations, but the commands that describe the instrumental composition of the orchestra involved in the performance of the composition, and not for each of these instruments are partitura soundtracks.

This standard was established jointly by Korg, Roland, Yamaha, the largest producers of electronic musical instruments in 1983. Developed by independent manufacturers, it ensured the interaction of synthesizers and other electrical devices.

Wherever a MIDI command comes to the device, it immediately generates a sound that corresponds to it. Thus, it is possible to control the entire electronic orchestra from a single console through this interface. Most often, such devices are externally similar to the piano keyboard, and accordingly are called MIDI keyboards. But the Control Panel on the computer is often made in software in the form of a special program - sequencer.

Naturally, the sound card, any other additional devices need software. The musician usually works with sequencer software. The most popular of them are Cakewalk Pro Audio, Cubase and Digital Orchestrator, each of which is presented in several versions. It should be noted that these

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programs of competing firms provide the user with a variety of options, but their interfaces and methods of working with them are very similar.

In separate tracks, acoustic instruments and vocals can be recorded, and then, signal processing and multi-channel Phonogram can be reduced to stereo. The musician has the opportunity to choose the composition of the instruments of the orchestra, to see the correct characters of their parties, to pre-adjust the relative sound level of each of them, to set the placement of performers in the panorama of the orchestra, to immediately understand the party of any instrument.

The ability to record sound is often associated with the idea of producing electronic music. But this does not mean that electronic music production is the goal of the recording process. In 1857 year, the French publisher and bookseller Edward Leon Scott de Martinville patented the device - phonootographer, which he himself invented. The phonootograph was the first device that could record sounds, but could not repeat them. American inventor Thomas A. in 1878 year Edison patented the phonograph. Edison's phonograph used cylinders to record sounds, just like Scott's phonootography, but unlike the phonootographer, the sound could be both recorded and repeated.

American inventor Emil Berliner in 1887 year presented his invention - a disc phonograph. In 1906 year, a great invention appeared, which greatly influenced the development of electronic music. It was a triod tube conductor (audion) developed by the American inventor Lee de Forest. It was the first electronic lamp that consisted of a glass vessel with a hot cathode inside, which would generate electrical signals and allow kuchaytirishga. The invention of the vacuum tube radioeshittirishga created the basis and allowed the emergence of electronic calculations.

Long before electronic music became available, composers wanted to use emerging technologies for musical purposes. Several instruments were created using both mechanical and electronic components. These same devices have paved the way for more improved electronic devices.

The first electronic instruments include the following: the sound cross (fr.), invented by the Russian composer Nikolai Obukhov in 1926 year. Croix Sonore), and “Martenot waves”, invented by the French musician Maurice Martenot in 1919 and 1928 years. The most famous example of the use of Martenot waves is Olivier Messiana's “Turangalila Symphony” and other works of his work. The martenotian wave instrument was used by other composers, mainly French, for example, Andre Jolivet, to record music.

1920-1930 years. In these ten years, many electronic devices and the first compositions for them appeared. The first electronic instrument was invented by Lev Termen in Leningrad in 1919-20 years, later changed to “Thermenvox”, an etheraphone. With the appearance of termenvox, the first compositions for electronic devices appeared. These compositions were quite different from the works of” noise-eaters". And this led to a change in the goals of using music machines.

In 1928 year, the French cellist Maurice Martenot invented the instrument "Martenot waves", with which he made his debut in Paris.

In 1929 year, the composer Joseph Shilinger wrote the first airfonic syuita (First Airphonic Suite)for the termenvoks and the orchestra. For the first time Syuita was presented with the Cleveland

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Orchestra, where she performed Lev Termen solo. In the same year, the American composer George Antell for the first time in his work wrote parties for mechanical instruments, electric noise machines, engines and compressors. He wrote these parties for the opera “Mr. Bloom” ("Gospodin Blum") and did not finish it.

In 1930, Lawrence Hammond (Hemmond) founded his own electronic instrumentation company. He began to produce the”Hammond organ " on a large scale, he carried out the principle of sound production, just like in the case of the Kakhila telharmony. Hammond also started other inventions, such as the first reverberator. Hammond is also John Hanert (John Hanert) and Si. The most. In cooperation with Williams invented another electronic instrument - Novakord. Novakord was the first commercial polyphonic synthesizer. For the first time, “Novakrd” was shown to the public in 1939 year in the Butunjahon show in New York, but in 1942 year it was suspended from production.

Development: 1940 and 1950 years. Electro-acoustic music for magnetic band.

Low-quality magnets of solid bodies existed since 1900 year, and at the beginning of the 1930-ies in the cinema industry began to use PHOTO - Optical sound recording for sound films. At the same time, the German company AEG electronics developed the first Magnetophon K-1 tape recorder. He was shown on the international radio show in Berlin in August 1935 year.

In 1940, German engineer Walter Weber received a patent for the technology of high-frequency alternating current, which significantly improved the quality of recording and playback. In 1941, AEG released a new model of tape recorder (Magnetophon K4HF). In it, the technology of open high-frequency magnetization was first used by Weber. In 1942, AEG conducted experiments on recording sound in Stereo format. The first electroacoustic work was written in 1944 year by the student Halim El Dabh from Cairo, the capital of Egypt. This disambiguation page lists articles associated with the title Halim El Dabh. Taking part in the famous ancient mystical ceremony(“the ceremony of the mysterious purification”) under the name Zaar (Zaar), he recorded the sounds of the instruments and the singing sounds on a magnetic tape with the help of a large magnifying glass.

Electronic music. Electronic music (nem. elektronische Musik, visual effects electronic music) means music that is the acoustic result of the production, modification and reproduction of music in partial or complete electronic form. In this process, the internal organization of the voice takes the first place. The sound source can be natural or artificial (acoustic and electronic).

Until the last third of the twentieth century, electronic music was mainly associated with experiments in academic music (both in the former Union dalatlarıdaa and abroad). But this situation changed in 1970 year with the organization of mass production of sound synthesizers. Synthesizers were presented to the general public due to their reasonable price. This situation changed the appearance of the famous musical tradition - led to the widespread use of synthesizers by many jazz, rock and pop musicians. At the beginning of the XI century, electronic music included a wide range of styles and genres. From the unique experiences of avant-garde musicians to widely reproduced practical music.

Japanese electronic music. First work on the creation of the NHK studio and electronic music. Wataru Wenami is co-founder and director of the electronic music studio HNK. NHK studio Germany

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Technische Hausmitteilungendes NWDRs studio in 1955 year-Sonderheft liber elektronische Musik (1954 N. ^) the statement on internal regulations was translated into Japanese by a team of NHK engineers and published in the form of a booklet.

Robert Bayer's two articles also spread among Japanese composers, officially published in the magazine Melos: Zur Geschichte der Elektronischen Musik (1953) and Elektronische Musik (1954). The first studies on electronic sound and experimental music were initiated by members of the NHK technical staff in 1954 year, and the first musical composition was the work of the Toshiro Mayo.

Three works of mayuzumi were dedicated to 1955 year. These are:" music for sine Waves by proportion of Prime Numbers "("Music for Sine Waves by Proportion of Prime Numbers"),", music for modulated Waves by proportion of prime numbers "("Music for Modulated Waves by Proportion of Prime Numbers") and" invention for square Waves and Sawtooth Waves "("Invention for Square Waves and Sawtooth Waves"). These three etiologies formed a transition from a simple composition to a more complex composition.

The first study, consisting of the first, complete sine waves, is based on the work of Karlheinz Stochausen (1953) "Studi I" and is based on The Theory of Furye's analysis. However, it was noticed that the Japanese composer is officially using Western ideas, simply placing different sinusoidal signals on top of each other.

In the second work, meiosis uses modulation to enrich the spectrum, but does not even try to synthesize anything, but rather works with an elementary spectral unit - a sine wave. Despite the obvious influence of stokhauzen, it has always been almost completely ignored by Japanese colleagues, which is important theoretically - for German composers - researchers, and given importance only to its sound and acoustic effect.

In the third work, a keyboard controller is used for a monochord - saw gear signal generator. His task was to "add melodic parts" very simply. Simple tones, glissandos and impressionist effects give this work a distinctive "classic" character in the style of Western classical structures, and it is not surprising that this study was devoted to Bah because the title: "invention" was "Invention".

Here Comes the question of whether electronic music was not in Japan before the NHK studio. At the time of the establishment of the electronic music studio NHK in 1955 year, the equipment was as follows: meloxord (six-channel sinusoidal signal generator), monoxord (chainsaw gear signal generator controlled by the keyboard), various oscillators, 32 band filter, ring modulator and tape recorder.

The studio moved in 1968 year. At the same time, new devices have appeared. A photoformator (developed by the NHK technical team) and a six-channel tape recorder were used as its one-channel control for sampling from the ouvuzlu graph.

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