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THE METHODOLOGICAL SUPPORT OF SOUND ENGINEERING TRAINING OF FUTURE MASTERS OF MUSICAL ART

Abstract. The article is devoted to specifying the basics of methodological support of sound processing training of future masters of musical art of performing specializations in the specialty «Musical Art». The article analyzes the general direction of professional training in the specialty «Musical Art» and defines the main content of sound processing training of future masters of musical art of performing specializations; outlines the conditions for incorporating computer information technology into the content of professional training of future masters of musical art of performing specializations. This article provides few examples of the use of multimedia computer technology and software for content of sound processing training for future masters of musical art in the specialty «Musical Art». The article contains general characteristics of the educational discipline of the cycle of professional training of the future masters of musical art «Sound processing and musical acoustics», as well as few examples of its use in the teaching of various multimedia technologies and computer programs. The article also defines the main stages of the technique of preparation of training session with the future masters of musical arts of performing specializations with the use of information multimedia computer technologies and software, as well as the basic conditions for the inclusion in the content of professional training of masters of musical arts of performing specializations of computer technology. The emphasis is placed on the use in the process of sound processing training of future masters of musical arts of performing specializations in the specialty «Musical Art» of multimedia technologies and software, which is an important component of ensuring the competitiveness of graduates in today's labor market.

Keywords: multimedia; musical art; sound processing; sound processing training; Power Point; Adobe Audition; Steinberg Cubase; professional training; master of musical art

Substantiation of the relevance of the problem. The modern level of development of Ukrainian society, science and technology causes progressive changes in all spheres of public life, in particular, in higher education. The requests of the stakeholders of educational programs to institutions of higher education in the content of professional training of future masters indicate the need to deepen sound production, mastering performers in the process of preparation of modern technologies and means of stage performance, which is the general trend of the modern higher education system, and at the same time it is especially important for the performing specialization of speciality 025 Musical art. The process of education, along with requests for the content of the results of the training of future masters, is intensified by the process of training, and it also stimulates the development of an educational environment in which modern technologies and means of education are used. Dissemination of technical means in the process of training becomes especially relevant for performing specializations of speciality 025 Musical art, since the executing artist, in the course of his professional duties, is directly involved in the use of various technical means, which allow to deepen the artistic, technical and performing level of musical works, which are performed. In today's environment, sound-and-sound production without the use of multimedia, hardware, or software seems impossible. In today's environment, sound-and-sound preparation without the use of multimedia, hardware, or software seems impossible. Accordingly, the methodological substantiation of the sound-and-directing component of the process becomes especially relevant professional training of future masters of musical art of performing specializations in modern educational institutions of higher education.

Analysis of scientific research. The process of using the software of modern information multimedia technologies for educational purposes is sufficiently covered in scientific and specialist literature. The introduction of modern information and communication technologies, provides further improvement of educational process, accessibility and efficiency of education, training of the young generation for further activities in the information society are defined in the legislative documents on education as a priority of development.

The contents of the concept of multimedia in the discourse of education are devoted to the scientific works of P. Agnew, A. Kellerman, J. Meyer (Agnew, Kellerman, Meyer, 1996), the concretisation of multimedia properties is covered in the scientific work of R. Fetterman (Fetterman, 1997), the aspect of multimedia learning is revealed in the scientific works of R. Myer (Myer, 2001), C. Zones, M. Zenios, J. Griffiths (Zones, Zenios, Griffiths, 2004) and others, the use of multimedia technologies in higher education institutions is covered in the scientific works of A. Sife, E. Lwoga, C. Sanga (Sife, Lwoga, Sanga, 2007)., M. Neo, T. Neo (Neo, Neo, 2000) and others. The features of the software, which is used in the process of music education, are reflected in the scientific articles M. Sedláček (Sedláček, 2010) and others.

However, the scientific works, that have been studied, do not adequately cover the aspect of sound directing training of future masters of musical art of performing specializations, as well as the use of information computer technologies in the process of training future artists-performers, the method of using software in the process of mastering the fundamentals of sound engineering, so this problem is actual.

The purpose of the article. Accordingly, the purpose of the study is determined by the concretization of the basis for the methodical provision of sound-directing training of the future masters of musical art of performing specializations. The objectives of the study are determined the substantiation of the features of the content of the sound-directing training of future masters of performing specializations; Concretization of conditions of inclusion to the content of professional training of future masters of musical art of performing specializations of information computer technologies, as well as methodical stages of training using information multimedia computer technologies and software, in particular, with students of speciality 025 Musical art.

Presenting main material. According to the educational and professional program «Musical Art» of the second (master) level of higher education, according to which vocational training is carried out at the Academic and Scientific Institute of Culture and Arts of the Sumy State Pedagogical University named after A.S. Makarenko future masters of performing specializations master the educational discipline «Sound directing and musical acoustics» in accordance with the educational and methodological complexes developed by the author. Since students have already received a bachelor's degree and, as a rule, basic vocational training, the training discipline consists of 4 sections and includes 5 lecture sessions and 10 practical classes.

The existence of educational discipline in the content of the master's educational and professional program «Musical Art» is due to the deepening of the bases of sound-directing training of future artists - performers, in particular: Practical training for future professional activities as performers and artists, deepening knowledge of the nature of sound, musical acoustics, the work of the sound engineer, features of sound engineering in various conditions, the use of various technical means. Now the standard of higher education in speciality 025 Musical art of the second (master) level of higher education is not put into effect, but such a standard for the first (bachelor) level of higher education in Ukraine was put into effect on May 24, 2019.

The standard of higher education of the first (bachelor) level of higher education in speciality 025 Musical art of the field of knowledge 02 Culture and art provides for future bachelors of musical art the foundations of sound production, in particular with regard to professional competencies and training results.

Accordingly, taking into account the standard of higher education of the first (bachelor) level of higher education, as well as the requests of employers and applicants of higher education for the content of the educational and professional program «Musical Art», on which the professional training of future masters is included the course «Sound directing and musical acoustics» designed to provide the basis for sound-directing training to future artists.

To the performing specializations, on which training is currently being carried out at the Educational and Scientific Institute of Culture and Arts include: «Pop vocals», «Academic singing», «Choral conducting», «Fortepiano», «Orchestra instruments». It is important to note that training in the speciality «Sound directing» at the second (master) level of higher education in the educational and scientific institute of culture and arts is not yet carried out. Therefore, mastering the basics of sound production by future artists - performers has significant specificity, since in speciality they are not sound producers at the same time the bases of sound engineering for the content of their professional training are of great importance. Accordingly, it is on the coverage of these features and the methodical support of sound directing training of future masters of musical art of performing specializations will be focus this article. In the modern post-information society, the basis of all segments of education is the use of multimedia technologies, the important advantage of which in the educational process is that they activate several different channels of perception, that is, provide multitouch.

Multimedia technologies are mainly interactive, so it is possible to manage the content of information (Neo, Neo, 2000). In the formation of multi-sensory perception, it implies a combination of visual, auditory and tactile sensations to create complex images, and therefore the components of multi-sensory learning are visual, audio (auditory) and tactile (physical).

The use of multimedia technologies in the system of higher education promotes the development of educated motivation, communicative abilities, interaction between the teacher and the future master, allows to strengthen the effectiveness of the educational process, etc. Accordingly, in comparison with traditional educational technologies, multimedia technologies, which are used in the process of training future masters of musical art, have a large number of advantages. Therefore, in the content of new educational and professional programs, a separate and important component of methodological support is the use of information multimedia technologies in the process of training future masters of musical art. Since the future masters receive precisely performing specializations, the content of their sound production acquires quite certain features:

a) the training is aimed primarily at mastering the competence to safely use the equipment during the preparation and stage performance of concert rooms;

b) the program of sound management training of future masters of performing specializations involves mastering only the basic sound management terminology, the general principles of sound equipment functioning to the extent necessary to carry out their professional duties in the speciality as an artist (and not as a sound engineer);

c) the communicative component of the sound and directing training of future masters of performing specializations consists in mastering the interaction of the artist with the sound engineer and stage technical personnel, first in order to fully realize the artistic design, technical content and performing interpretation of the vocal or instrumental musical composition.

In the process of sound-directing training of future masters of performing specializations, two main interrelated components are combined: Musical – creative and technical. For future artists, the emphasis is on musical and creative, which ensures the implementation of artistic and technical-executive content and performing interpretation by means of sound engineering.

The main conditions for inclusion in the content of the professional training of future masters of musical art of performing specializations of information computer technologies are:

a) an adequate level of teacher's mastery of information computer technologies in the training courses «Sound directing and musical acoustics»;

b) the teacher's ability to use information tools, search and process information to prepare for the training courses «Sound directing and musical acoustics» using information computer technologies, etc.;

c) a high-level teacher's ability to plan the structure and content of activities with a limited list of resources;

d) high level of development of the teacher's ability to describe phenomena and processes by constructing information structures, as well as logical, compressed and unambiguous presentation of various aspects of information in the process of preparing training courses on the academic discipline «Sound directing and musical acoustics»;

e) the adequacy of information and technical conditions for the use of information computer technologies in a training studio or other audience, where classes are held with future masters of musical art;

f) the high level of readiness of future performers to work with software in the environment of information computer technologies in the training course "Sound directing and musical acoustics".

During the preparation for the lecture on the discipline «Sound directing and musical acoustics» using the Power Point program from Microsoft Office (Microsoft Power Point, 2018). Presentations were developed using animated components to facilitate students' understanding of the graphical interpretation of the spread of sound oscillations, the direction of microphones, etc., and also allowed to emphasize key points of the content of lectures.

This made it possible to build a more simple sequence of events and phenomena for understanding and remembering. For example, in the first chapter of the academic discipline there is a lecture «Fundamentals of musical acoustics», in the presentation of which there are such slides: «Perception of sound by man», «Sounds in the plane» «Pressure – frequency» which a person perceives by hearing», «Properties of melic sounds», «Sound power-sound pressure», «Sound level change», «Sound Frequency», «Tember».

The slides contain sound examples that enable both visual and auditory perception of students. The use of the developed presentations is possible only in the appropriate technical conditions, namely: The presence of a multimedia board or projector, which should ensure that future masters of visual presentation of the presentation can be perceived, as well as speakers, which must provide sound perception of the presentation to future masters.

The use of presentations is advisable in the process of developing multimedia lectures in many educational disciplines taught by the future masters of specialty 025 Musical Arts, but the use of special software is advisable only in the process of sound directing training of future masters of performing specializations. These softwares are digital audio workstations (DAW). The course «Sound directing and musical acoustics» presupposes mastering the future masters of musical art the basics of working with two DAW programs: Adobe Audition (Adobe Audition CC, 2017) and Steinberg Cubase (Steinberg Cubase Pro 9.5., 2017). Since students do not receive the profession of a sound engineer, the emphasis in the training

process is on Adobe Audition, primarily because this program has a relatively simple interface and allows for sound recording and processing of sound information, with the help of VST – plug-ins. Using this DAW program, future performers learn to record vocals and various musical instruments, edit sound recordings and use VST plug-ins (in particular, the main software tools for dynamic and frequency processing – compressors and equalizers, respectively).

After mastering the basics of working with Adobe Audition, future masters of musical art get acquainted with Steinberg Cubase in addition, the use of Steinberg Cubase in the teaching environment has been outlined in other scientific papers (Dean, 2009).

After students have mastered the general principles of using the named digital audio workstations, it is advisable to go to the study of individual software applications that are used for editing – Virtual studio technology (VST) – plug-ins.

Since, in the current material and technical environment, the use of a large number of various software tools is often limited, it is suggested that VST- plug-ins which are distributed free be used. These are special software tools such as de-essers, for example, Free Tonmann DeEsser (Free Tonmann DeEsser, 2018).

It would be advisable to specify the concept. De-Esser - a device prize-designed to reduce or eliminate excessively sizzling sounds (sibilants) (primarily on the sounds of "S", "Z", "CH", "SH", "SCH") in the sound of a human voice, which weakens high-frequency peaks and generally smooths the sound of the voice.

When sound engineer working with a vocal part, the justified use of de-esser is important, as often without this instrument, the sizzling sounds are too high and lead to overloading devices in the high-frequency diapason, at the same time, the excessive use of de-esser leads to the disappearance of "transparency" of sound and inadequate "legibility" of the text.

Free VST - plug-in – Free Tonmann DeEsser allows you to process both stereo and mono audio, to work both in broadband and in low-frequency mode, the program has an adjustable central frequency and bandwidth detection range, adjustable threshold detection, a function for sibilants with short and sharp attacks, adjustable time of suppression, two levels of reading for optical tracking of peaks.

Obviously, universal settings for the VST-de-esser (or separate physical device de-esser) cannot be as they are dependent on many factors, in particular the nature of the input signal, the microphone's characteristics, and how the signal was processed «before» and «after» the device.

Realization of the tasks of practical classes on the training course «Sound directing and musical acoustics» allows first of all to realize theoretical knowledge on sound engineering and musical acoustics in direct practical activities, as well as to try themselves as a sound engineer and sound recording engineer, which allows them to better understand the content of his activities. Accordingly, the use of specialized software in the process of mastering the academic discipline «Sound directing and musical acoustics» allows integrating the process of professional performing training, musical-theoretical and musical-technical training. A fundamental technical condition for conducting practical exercises is the presence of a properly equipped audio recording training studio or computer room, in which there is a sufficient number of personal computers with the corresponding system requirements, on which the corresponding license software is installed. The educational discipline «Sound directing and musical acoustics» is the basic component of sound directing preparation and its development does not mean that future masters of performing specializations will be able to perform professional duties of sound producers or sound engineers, but acquired competencies will allow them to carry out for educational purposes sound directing and sound

recording of their own performance, and also use sound engineering tools in the process of performing interpretation. The methods of preparation of the lesson with the future masters of musical art of performing specializations using information multimedia computer technologies and software should contain the following stages:

1. Rationale for the use of specific information technologies and software in the class in accordance with its purpose, tasks, content, form of organization of the educational process. Since the use of information computer technologies and software is one of the important means of sound directing training of future masters of musical art of performing specializations most practical classes should be conducted using multimedia technologies.

2. Improvement of the content and structure of the class, taking into account the use of certain information computer technologies and software in it. In the educational system, multimedia means are usually complemented and deepened by traditional learning technology and are organically linked to other components of the learning process, but in the course of sound production, multimedia in many classes is the basis of content, therefore, means of realization of goals and tasks of classes with future masters of musical art of performing specializations will differ significantly from traditional practical classes.

3. Prepare a multimedia product (such as a presentation) or a task system using specific software and integrate it into the lab structure. It is advisable to alternate various forms of organization of work with future masters of musical art of performing specializations in the class and use various means, for example, using first multimedia presentation on the use of a certain function of the software and then independent work of students with this software for consolidation in practice.

4. Summary of the results expected from the lesson with a functional-didactic goal. It is important to bear in mind that while information computer technologies and multimedia tools enhance the learning effect, the basis of the training process remains the interpersonal interaction of the teacher and students, without which the training system will now be low-productivity, especially in speciality 025 Music. The proposed methodology has a generalized character and adapt in accordance with the peculiarities of the process of professional training in a particular educational institution of higher education, the level of pre-training of future masters of musical art of performing specializations, the individual teaching style of the teacher and the like. At the same time, it may be necessary to deepen the professional training of future teachers working in educational and professional programs in the speciality «Musical Art», with the aim of more detailed mastering of the methodology of using information computer technologies and software in the process of professional activity, development of readiness for use of software, multimedia technologies in the process of realization of tasks of professional training of future masters of musical art of performing specializations.

Based on the analysis of the above, it can be argued that the use of multimedia technologies and software in the process of training is important, therefore the expansion of the use of such technologies in the process of training will positively affect the increase in the competitiveness of the graduate of speciality 025 Musical art of the institution of higher education in the modern labor market. Among the most promising areas for further research is the development of methodological support for the use of other DAWs (for example, Logic Pro X, as some students use Mac OSX rather than Windows), as well as other VST plug-ins.

Conclusions. In modern conditions, the use of software, information computer technologies and multimedia means in all public spheres is a requirement of time, therefore the development of methodical software for the use of software in the process of sound and directing the preparation of future masters of musical art of performing specializations is a topical and important task of scientific research in the field of higher education. The content

of the sound-directing training of future masters of performing specializations has certain features, primarily related to those tasks, the performance of which provides for the position of artist. This requires that in the process of training future masters of musical art, specific conditions for inclusion in the content of the professional training of future masters of musical art of performing specializations of information computer technologies, as well as the methodological stages of training using information multimedia computer technologies and software. Mastering the process of training multimedia technologies and software can significantly increase the competitiveness of graduates in the modern labor market. The use of information computer technologies is a requirement of the present, therefore the problem of sound-directing training of future masters using information computer technology remains actual. The most promising are the directions of development of interactive multimedia manuals on disciplines of the vocational training cycle (especially for correspondence form of reception and for remote education) introduction of informatization to the system of control over students performance of independent work on disciplines of the training cycle; development of educational internet resources in the field of musical art; as well as the development of programs, manuals on information computer technologies for the improvement of the qualification of scientific and pedagogical workers.

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МЕТОДИЧНЕ ЗАБЕЗПЕЧЕННЯ ЗВУКОРЕЖИСЕРСЬКОЇ ПІДГОТОВКИ МАЙБУТНІХ МАГІСТРІВ МУЗИЧНОГО МИСТЕЦТВА

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Анотація. Стаття присвячена конкретизації основ методичного забезпечення звукорежисерської підготовки майбутніх магістрів музичного мистецтва виконавських спеціалізацій за спеціальністю «Музичне мистецтво». У статті аналізується загальний напрям професійної підготовки за спеціальністю «Музичне мистецтво» та визначаються особливості змісту звукорежисерської підготовки майбутніх магістрів музичного мистецтва виконавських спеціалізацій; наводяться умови включення інформаційних комп'ютерних технологій до змісту професійної підготовки майбутніх магістрів музичного мистецтва виконавських спеціалізацій. Стаття містить приклади використання мультимедійних комп'ютерних технологій та програмного забезпечення змісті звукорежисерської підготовки здобувачів вищої освіти за спеціальністю «Музичне мистецтво». У статті містяться загальні характеристики навчальної дисципліни циклу професійної підготовки майбутніх магістрів музичного мистецтва «Звукорежисура та музична акустика», а також наводяться приклади використання в процесі її викладання різних мультимедійних технологій та комп'ютерних програм. Також у статті визначаються етапи методики підготовки заняття з майбутніми магістрами музичного мистецтва виконавських спеціалізацій з використанням інформаційних мультимедійних комп'ютерних технологій та програмного забезпечення, а також основні умови включення до змісту професійної підготовки майбутніх магістрів музичного мистецтва виконавських спеціалізацій інформаційних комп'ютерних технологій. Акцентується велике значення використання в процесі звукорежисерської підготовки майбутніх магістрів музичного мистецтва виконавських спеціалізацій спеціальності «Музичне мистецтво» мультимедійних технологій та програмного забезпечення, що є важливим компонентом забезпечення конкурентоспроможності випускників на сучасному ринку праці.

Ключові слова: мультимедіа; музичне мистецтво; звукорежисура; звукорежисерська підготовка; Power Point; Adobe Audition; Steinberg Cubase; професійна підготовка; магістр музичного мистецтва