Features of Teaching Music Computer Technologies for Students of Non-musical Specialties

Irina B. Gorbunova and Olga L. Yasinskaya

Abstract—Intensive development of music computer technologies has led to their extensive use in various kinds of musical creativity. This direction is actively developed in the system of preparation of the contemporary musician. Contemporary music computer tools allowed to diversify and enrich the options for musicians to perform the material in real time. The article is devoted to the main aspects of the problem, which modern critics, is to find the dependence between the structure of music and its impact on the emotional state of the listener. The article discusses the main aspects of the problem, which is engaged in modern art and musical education - to find the relationship between the structure of the music and its impact on the emotional state of the listener, and to analyze the possibilities of modern music computer technologies in the process of interpenetration and interaction of computer science and musical creative activities.

Keywords— musical creative work, musical computer, electronic musical instruments, music computer technologies, information technology in music.

I. INTRODUCTION

Teaching music computer technologies (MCT) [1; 2; 3] is based on the need for self-expression, aesthetic needs inherent in each person, so the social motivation of the student is of great importance. Often a person who has not received primary musical education at a young age begins to be interested in classes on mastering an instrument precisely because of the need for creative implementation, social prestige, belonging to a particular social musical and artistic environment in which a well-educated person is highly valued.

The deep and thoughtful development of contemporary MCT allows to compensate for the lack of musical education.

Dynamically developing modern information technologies are more interested and offer new opportunities for creativity [4; 5]. On the base of the Education and Methods Laboratory *Music Computer Technologies* of the Herzen State Pedagogical University of Russia classes are given on the subject "Music Computer Technologies in Education" where a special role is given to learning of professional and specialized software [4; 5]

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for creation and processing of musical material regardless of a presence of a musical education.

The discipline involves a series of lectures and practical classes devoted to the development of MCT during which the student learns a complex of MCT-programs for creative work and also theoretical sound architectonics, sound and timbre programming, the basics of music theory, playing music with electronic musical instruments (EMI) [6; 7].

The field of studying MCT is extensive and directly related to the field of sound engineering, so a non-musician student is invited to master a number of topics related to various aspects of the use of MCT, such as modeling the process of musical creative works, sound-timbral programming, creating audio -visual projects, etc. [8-10].

It's psychologically easy for students to develop musical instruments using a MIDI controller and a musical computer (MC) containing many different tones.

It's very important to understand:

- how sound is formed before the study of theoretical knowledge of music;

- the general scheme of a studio sound path and its implementation at home. Formation of a workplace in home conditions, arrangement of studio components, preparation of acoustic space;

- the necessary software to start effective work, the choice of a music program depending on tasks and capabilities. Equivalents of studio equipment and tools in a software environment. Ethics of using software and licensed versions;

-the necessary equipment to start effective work, a musical equipment market review, selection of optimal solutions, interfaces, acoustic control (monitors, headphones), controllers as a way of tactile interaction with a virtual environment, microphones;

- work with audio material: recording, editing, processing wave-files. Use of effects on the example of working in the Cubase software environment;

- analysis of the main functions and work areas of the program, analysis of all types of tracks (audio, MIDI, groups, return, master);

- recording, editing and playback with various sampling rates bit depths;

- full support for several multichannel sound format (surround) up to the 6.0 format;

- primary processing of the recorded audio track, changing the main signal parameters: frequency, dynamic and time;

- loading projects of another Steinberg software product;

- ability to use Cubase together with applications supporting ReWire protocol.

In practical classes students should learn how to record, process and mix audio material, learn the basic components of a modern recording studio mastering the work of audio materials in modern sound processing programs, learn categories and types of audio plug-ins.

For students who do not have musical education, work in programs begins with recording and editing audio material on any of the topics proposed. For example, it can be an audio recording of a recorded vocal part (voice) or editing previously connected to an instrumental composition; tasks of mixing of composition, perception of sound space and ways of its formation, work with space, monitoring, MCT-tools.

The student gradually adapts to the virtual environment and devotes most of the time to creating an artistic image while working with musical instruments and mastering existing virtual musical material. Special attention is paid to the analysis of musical material that affects the success of the work performed, the study of the basics of sound synthesis, sampling on the example of VST instruments, the basics of MIDI.

At this stage, students learn how to work with VST-instruments and, as experience shows, students are more interested in working with timbres than with the harmonic components, as a result they incline various genders of electronic music [11-13]. Complicated timbres of virtual synthesizers are in combination with simple harmonic components and multi private form.

Paradoxical it may seem, the forms of students' work are often multi private as in the process of composing music they can and want to use all the tools that are available in a virtual environment, often it leads to the compositional development of the work.

It also should be mentioned that development of modern MCT is one of the main indispensable means of introducing students with deep visual impairment to music. The methodological development of this problem and its methodical implementations are done by the group of scientists, graduate students, educators and practitioners on the base of the Education and Methods Laboratory *Music Computer Technologies* of the Herzen State Pedagogical University of Russia that is reflected in a number of teaching aids, digital educational resources, and researchers' works [14-17].

Acquaintance with music editors will expand the capabilities of non-musician students. It's much easier to master musical literacy of these programs. But one of the most important results of the classes according to the program we developed is to reveal the enormous potential of the students themselves sometimes not suspecting their creative abilities in the music field.

Thanks to the virtual platform and the capabilities of contemporary MCT-tools, it's becoming much simpler and easier to learn music computer technologies and apply it that is very important for students without musical education.

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