



## MUSIC AND COMPUTER TECHNOLOGIES AND INTERACTIVE NETWORK TECHNOLOGIES FOR TEACHING MUSIC

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**Abstract:** *The authors consider the music training course developed and implemented in the practice of distance learning as a successful example of using interactive network educational technology. Analysis of the existing experience of teaching young and adult students the basics of using a modern electronic musical instrument; the experience of preparing teachers-musicians to implement the process of such training is taken into account.*

**Key words:** *Musical education, Pedagogy, Teaching methods, pedagogical university.*

New opportunities contained in music and computer technologies (hereinafter referred to as MCT [1–2], etc.) require identification and pedagogical development, which is very important for a number of reasons:

1) the software and hardware part of the MCT, along with the rest of the software (paid / free, necessary / optional, etc.) is presented on the personal mobile devices of our contemporaries;

2) some of the teachers involved in the direct pedagogical process in the direction of "Music" have not yet realized the educational potential of the ICT, which means they have not begun to master it with their students;

3) interactive teaching of music in the direction of the most popular, on the one hand, and, until recently, difficult, on the other hand, when learning to play a musical instrument using a computer program, on the one hand, has significant advantages (over traditional learning), on the other hand, it needs active information representation.

The key characteristics of ICT are interactivity, networking, and the performance of an educational function. Our practical experience and our vision of the methodological aspects of such use of MCT allows, on the one hand, a particular teacher to develop an effective methodology for appropriate teaching, on the other hand, they can become a recommendation for developers of new versions of those software and hardware systems, with the help of which it is much more comfortable (in a convenient mode) and more efficiently (through the most active channel: auditory, visual, kinesthetic - in their simultaneous representation) the process of development is organized.



The development of a methodology for teaching music using MCT can and should be based on the following positions:

A) the irreplaceable educational potential of music (a multifaceted sphere of creativity, a repository of both universal and specific national culture, language and means of communication);

B) new opportunities for human interaction with music (with musical material, with a musical instrument), which have opened up with the advent of the MCT, where the most important subject interacting with the MCT are children (teenagers, youth); it follows from this that, first of all, it is applicable to them (to their age-related abilities, characteristics) that a teaching methodology should be developed, software and hardware should be developed and subjected to adjustment (from the standpoint of natural conformity, optimal educational effect, etc.).

As a fundamental characteristic of MCT, we propose to consider the interactive nature of the student's interaction with music in a networked educational environment. To observe interactivity (a quality that is different from the connotation of another context - [3]) in its most obvious manifestation, we, considering the whole range of various software and hardware systems (including computer programs for smartphones, etc.), focusing on developments designed for playing/learning to play a musical instrument. The interactive nature of the student's interaction with the instrument, with musical material is manifested, for example, in working with musical text, with various sound parameters - loudness, register, timbre, musical texture, etc. Such interactivity as a distinctive feature of teaching music using MCT is manifested in all three levels - at technological, artistic, pedagogical.

The advantages of interactivity are confirmed by the following facts:

a) statistical data of the user market of products representing the ICT (for example, [4] and other materials of this and other sites dedicated to the IT industry);

b) general and particular characteristics of certain versions of software and hardware systems that allow the student to most effectively interact with the educational environment (for example, [5]);

c) the results of previous scientific studies by foreign authors (for example, [6-7] and others);

d) the results of pedagogical observations, among which are those obtained during the development and implementation of methods for mastering MCT instruments by specialists from the educational and methodological laboratory "Music and Computer Technologies" of the Russian State Pedagogical University named after A. I. Herzen and others (program "Soft Way to Mozart", developed by E. Heiner), organization of training for students, students of advanced training courses and professional retraining courses [8], presented at scientific and practical conferences (for example, the International conference "Modern Music Education", annually organized and held by the Russian State Pedagogical University named after A. I.



Herzen and the St. Petersburg State Conservatory named after N. A. Rimsky-Korsakov, etc.).

Thus, our analysis of the practice and theoretical foundations of the use of MCT shows that these technologies can and should be in demand, primarily due to their advantages in organizing a student's interactive interaction with three spatio-temporal elements of music at once: with a musical text (containing 1 / several lines or a full score / transferred to graphics presented on a computer screen / display, from paper sources), with the keyboard of a musical instrument, as well as with its other means: pedal, tone switch, registers, etc., which is carried out through operations, performed both in real time and in pre-preparation mode), with sound, which, on the one hand, is the result of the work of a musician/student and reflects the auditory representations of a specific artistic image (before that - presented only in musical text), on the other. On the other hand, a sound that reflects a certain degree of accumulated skill by a musician/learner in the use of both technical (and, therefore, information technology) means of a particular musical instrument.

It can be added to the above that the principles proposed by us and the developed electronic shell (the idea of E. Heiner) have made it possible for many years to implement a music education program through mastering the piano keyboard - in Russia and abroad: in Australia, Great Britain, Israel, Kazakhstan, Cuba, Mexico, the Netherlands, Peru, Poland, Singapore, Turkey, USA, Chile, etc. - in more than 60 countries of the world). In addition, educational complexes are actively developed and introduced into the educational process by us and our students (the process of teaching music through mastering the piano keyboard). In recent years, digital hardware and software systems have been added that use bayan, saxophone, guitar keyboard systems (Yamaha, Roland, Casio, etc.; for example, [9] and others).

Summing up, it can be especially noted that in all cases of using MCT tools for teaching music / playing a musical instrument in the modern "shell", laboriousness and multitasking are significantly reduced, accommodating the simultaneous execution of three actions at once: a) see and decipher notes into sounds learned on an instrument, b) playing notes on a certain instrument (with the awareness that mastering one does not allow one to apply this experience to another instrument), which previously made musical education either elitist (i.e. provided to those who can pay for many hours classes and with this complexity does not lose passion for the art of music), or - to some extent, flawed (at best, but achievable by only a few cases - the ability to play by ear, and not by notes); c) learn the rules of music, monitor their observance by ear, and more. others

Ultimately, the measure of satisfaction of the student himself (his parents, teachers) with the artistic result of the process of mastering a musical instrument comes in the complex:



A) with overcoming obstacles in the playing technique (development of fine finger, large hand technique / motor skills, absence and / or elimination of tightness of the shoulder and other girdle);

B) with the achievement of a certain level of freedom in reading musical text (including memorizing a piece of music by heart).

The optimal ratio of learning difficulties and successful attempts to overcome them, we are guided by the proportion called the coefficient of A. Losada ([10] - 3: 1), we see and implement, building a learning mode and applying such a learning methodology so that the ratio of successful attempts to difficulties does not go out outside the zone from 3 to 7 to 1, which is much easier when using technological capabilities.

We submit the following conclusions for discussion by the pedagogical community:

1. In the specifics of technological representation and pedagogical support in the sector of mastering a musical instrument (teaching music), ICT is able and should act as an interactive network educational environment;

2. The named environment for the first time in the history of music pedagogy provides an opportunity for the interaction of a teacher / student with computer graphics and with the interactivity of manipulation on a virtual or real computer keyboard;

3. The methodology for teaching to play a musical instrument in an interactive network educational environment and the basics of its development are related to the solution of such issues as:

A) determination of the organizational forms of the educational process (which should be resolved with the issue of intellectual property regulation, the legal status of participants interacting in such a network).

B) individual and general learning objectives that are not implemented in music education outside of a specific repertoire,

C) the development of such software and hardware that are taken into account in the methods of pedagogical assessments and the preparation of forecasts for music teachers (in relation to the measure of the effectiveness of the use of innovative educational technologies).

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