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Computer Means of Visual Control of Pronunciation in the Work of a Special Teacher

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Abstract

The work of a speech therapist of any qualification and direction is a piece–by–piece product, in which the secrets of success depend on a combination of methodological ingenuity and flexibility with rigid thoroughness and exactingness. At the same time, it is believed that the use of technical means in the success of such work cannot be decisive, since the main product of this work is based on the subjective feelings of the patient, the diversity of which cannot be measured by objective means. The production of sound reproduction, the development of the mechanisms of voice formation, propaedeutic exercises and articulatory gymnastics rely mainly on tactile sensations in the speech–forming organs. Optical monitoring of the state of the speech organs is classically carried out in the form of exercises in front of a speech therapy mirror. However, in recent years, the modern rapid development of technology allows the speech therapist to work not at the level of the patient's subjective sensations, but on the basis of more objective computer methods for evaluating the speech produced and corrective exercises.

Keywords: *Speech Therapist; Pronunciation Visualization; Computer Technology; Tactile Sensations*

Introduction

Such characteristics of speech as intelligibility, intelligibility, intelligibility, tempo, intonation, and speed have direct embodiment in physical phenomena. They are amenable to objective measurement, which means they can be visualized. If we consider a personal computer as a universal measuring device and it has all the means for this, then we can talk about the most successful technical solution for speech visualization tasks. Intelligibility, intelligibility, intelligibility of speech is based on a person’s ability to produce and combine phonemic chains of sounds accepted, commonly used in a certain language environment. A phoneme or speech sound in a single isolated variant has at least three objective characteristics directly related to the physics of sound: the amplitude or volume with which the sound is pronounced, the frequency spectrum or timbre that is present in the sound and the duration, i.e. the time for which this sound is pronounced.

All these components, one way or another, have always been the subject of speech therapy practice for various speech disorders, as well as the rest of the above–mentioned characteristics present in speech – tempo, intonation, speed. The latter reflect more global intervals of speech, such as an utterance or phrase. At the same time, they can also be objectively measured for the rate of pronouncing individual words per minute or raising/lowering the intonation series. These are the most significant characteristics of speech as a physical phenomenon.

All these characteristics of speech can be successfully used to create visual support for various developmental exercises and live speech itself. Which is implemented in the above developments in the form of game and educational modules aimed at correcting certain speech problems. However, speech disorders are so diverse, and methodological approaches are so diverse, that it is hardly possible to single out any universal methodology that could be used as the basis for an automated, computer–based approach to correcting speech disorders.

That is why all developments can be considered auxiliary means of speech therapy work, while most of these tools are quite unique and extremely effective. In the hands of a creatively working specialist, they are able to accelerate the formation and correction of the necessary speech components several times.

The main goal of the program "Delfa–142.1" is to correct different aspects of oral and written speech of children. The complex consists of six modules – "Sound", "Letter", "Syllable", "Word", "Sentence", "Text". The work in the program is based on the implementation of multi–level exercises, which is facilitated by the base of general and thematic dictionaries, which provides variability in the use of various language units in exercises, thus implementing an individual approach and multilevelness, the user can form, save and adjust their own dictionaries.

One of the technologies that allows to normalize the functional state and speech at the system level is the technology of biological feedback (BOS), based on the BOS method. The BOS method is the volitional control of the body's functions in order to improve them normally and correct pathology. Electronic devices are used to register and transform information about the state of human organs and systems into visual and auditory signals accessible to consciousness. The BOS interface is a "physiological mirror" for a person, in which his internal processes are reflected.

Based on the BOS method and the RSA–BOS methodology, a technology of normalization and improvement of speech and functional state has been developed, which is implemented in stages: first, a diaphragmatic relaxation type of breathing is formed as a new respiratory stereotype and a new functional state; then new skills of voice formation, articulation, speech and behavior are taught, forming a new speech and new behavioral stereotypes. During the BOS–training, the physiological parameters of the human body are displayed on the monitor screen in the form of digital values (current and for the past minute), in the form of pulse and respiration graphs, an audio recording of the speech is carried out. "Cicero. Logo diacorr 1" is an innovative, health–saving program for conducting objectified diagnostics and targeted correction of non–speech and speech mental functions in preschool and primary school children.

The specialized computer–based speech therapy program "I read, I speak" contributes to the optimal solution of the tasks of correcting speech pathology in older preschool children.

During the development of computer technology, the following principles were implemented:

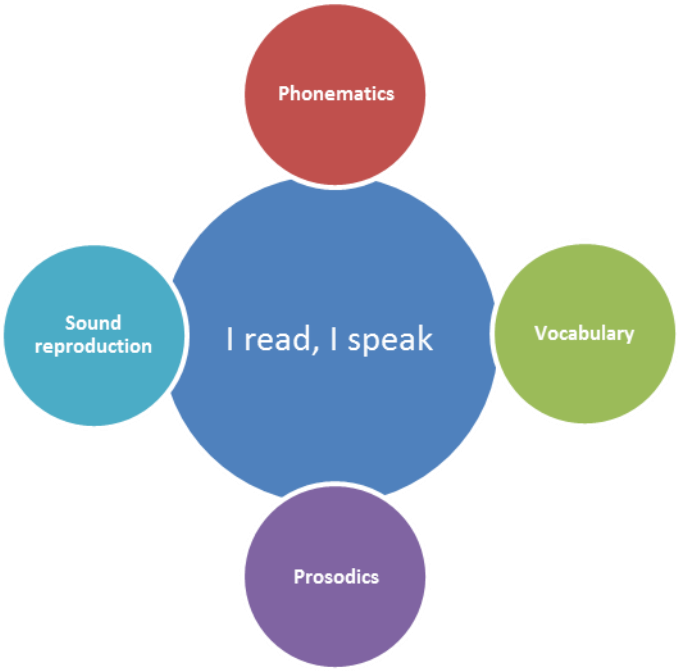
– the principle of the polysensory approach to the correction of speech disorders;

– the principle of a systematic approach to the correction of speech disorders is the principle of developing and differentiated education of children with developmental disabilities;

– the principle of systematic and consistent learning. The principle of accessibility of training;

– the principle of individualization of learning;

– the principle of consciousness and activity of children in the assimilation of knowledge and their implementation.



Using computer applications in correctional work with children with speech disorders, the time of formation of communication skills is significantly reduced, the understanding of speech is restored, reading and writing disorders are overcome. This is confirmed by the results of the examination of the speech of patients at the end of correctional training.

But even the most advanced computer program cannot give as much as a highly qualified specialist can give. Modern computer technologies are just tools, auxiliary training material, new methods of workare just tools, auxiliary training material, new methods of work.

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