Models of a Dependence of a Preferred Speed of Utterance of Audio Materials on Individual Indicators of Listeners

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The activity of many people involves the acquisition of a large amount of information through the sound channel of perception. This activity can be attributed to the learning process, which can be both not personified and personified.

In any case, listening to audio information creates a load on the brain, leading to the development of fatigue, loss of concentration. It, in turn, affects the effectiveness of learning and mastering the material. Adverse conditions for the perception of information flows increase work time and reduce the amount of information learned.

Thus, in order to maximize the amount of information assimilation and minimize the negative effect of information flows on the trainee, it is necessary to implement the optimal presentation of information for this trainee. Therefore, the trainees, due to individual psychophysiological characteristics, can perceive the information they provide in different ways. At the same time, in general, the question remains open regarding the ways of personifying the presentation of audio information, i.e. accounting of individual properties and indicators of the trainee in the e-learning system.

The most important parameter of the audio information output (in audiobooks, audio clips, etc.) is the rate of speech. The value of this parameter affects the assimilation of information, the time of listening to the audio, the comfort and convenience of the user.

The aim of the work is to research of a dependence of a preferred speed of utterance of audio materials on individual indicators of listeners.

The experiment is organized based on the fact that preferences are largely determined by the amount of effort spent in the process of solving a particular problem. Those, the more mental effort expended in the process of working with the object, the faster fatigue occurs and the higher the load on the body's systems, the lower will be the assessment of the preferences of the object.

Let's put the hypothesis of the research that the user's preference for the speed of speech of the audio information being monitored is determined by the strength of the nervous system, the dynamics of working capacity over time in carrying out tasks with the load, and the characteristics of the leading channel of information perception (leading perception modality).

This hypothesis is not accidental, since fatigue affects the effectiveness of training. In addition, it is important to take into account the adaptation of audio playback parameters for long-term training and the development of fatigue.

Procedure of research. The participants of the experiment were 41 students. The number of males is 32, female is 9. The average age of participants was 22.8 ± 1.6 years. To conduct the experiment, we used a tepping-test, the letterhead of S. Efremtseva's technique, a 30 second lecture audio tape on the topic "Introduction to the automation of production" with an average speed of utterance $U_0 = 78$ words/min. To play this audio, we used a player that could play it with the following speeds $0.8U_0$, $0.9U_0$, $1.0U_0$, $1.1U_0$, $1.2U_0$, $1.3U_0$, $1.4U_0$. To determine the preferences in listening to audio recordings with one or another rate of speech, a 10-point scale was used. Experiments were conducted in the classroom in the first half of the day in groups of students. After conducting the briefing and explaining the meaning of the experiment, the testees filled in the forms of S.Efremtsev's technique, passed a test tepping-test, and then the basic tepping-test was performed for 30 seconds. To assess the preferences in the speech tempo, the audio was reproduced at each of the speeds, and after listening, the tester evaluated the listening comfort at each of the playback speeds on a 10-point scale.

We will perform the regression analysis and construct a series of regressions describing the dependence of the audio playback speed on the selected indicators. These indicators describe the strength of the nervous system, the characteristics of the dynamics of performance in carrying out tasks with the load and the prevailing channel of perception of information.

As a result of the regression analysis, 3 personalized logistic models have been created, the joint use of which makes it possible to predict the preferred speed of audio playback on the scales: "speed of utterance is low" - "speed of utterance is medium" - "speed of utterance is high" - "speed of utterance is very high". Predictors of models are indicators of the strength of the nervous system and the prevailing channel of information reproduction. Besides, the classification accuracy reaches 80%.

The developed models can be used in e-learning systems for exercise a personalized control over the speed of audio information playback depending on the individual properties and indicators of the learner.