

## ABOUT ONE APPROACH: ACQUIRING ADDITIONAL KNOWLEDGE WITH THE HELP OF ERGONOMIC MODELING

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### ABSTRACT

The research work is devoted to determining the quality of the learning process of additional knowledge acquisition using ergonomic modeling.

**Keywords and directions:** qualities, learning process, acquisition of knowledge, ergonomics, ergonomic modeling, technical means of training, intelligent system.

The purpose of this research work is to determine the quality of the learning process in the acquisition of knowledge with the help of ergonomic modeling.

Ergonomics is a science that is designed and created for the study of various fields of science, technology, and education. It is used in: technical developments/solutions, sports, mechanical engineering, medicine, pedagogy, etc.

Ergonomics as a science of research and teaching.

Analysis and synthesis of the teaching process taking into account ergonomics.

Establishment of logical and informational interrelations of pedagogical ergonomics of the learning process in universities.

A systematic approach to conducting research on problems in the field of teaching ergonomics.

Selection of methods used to calculate econometric models of teaching ergonomics.

The solution to this problem is: extraordinary and time-consuming, as well as complex and inadequate, because the studied learning process in the classroom is different from each other in structure and location of trainees, where it is difficult to describe them analytically in order to mathematically model the learning process to calculate its quality.

One of the methods of improving the quality of acquired knowledge in the learning process is the additional connection of various technical means of teaching, intelligent systems, even with the involvement of a second teacher (for example, in deaf pedagogy inclusive), etc.

It should be noted that in the process of modeling the above-mentioned types of additional classes, in order to determine the quality of the process of acquired knowledge, it is necessary to determine:

- physical condition of the trainees before the lesson;
- pedagogy and psychological indicators of students;
- participating indicators for the learning process;
- boundary conditions, in quality management/learning process.

In order to achieve the goal, i.e., the quality of the acquired knowledge, it is necessary to analyze and synthesize the learning process, to determine:

- logical scheme of interconnection of topics, disciplines and courses;
- information interconnection between the levels of the training system;
- boundary conditions for the management of the learning process;

And also, with the help of ergonomic modeling, it is necessary to build:

- structural diagram of the location of trainees in the classroom;
- ergonomic model of the location of trainees in the classroom;
- a mathematical model for calculating the quality of acquired knowledge;
- mathematical method of solving the problem;
- Process the results of the quality calculation;
- Analysis of the results and conclusion.

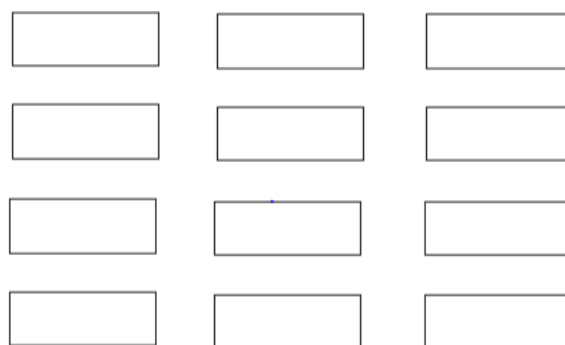


Figure 1. Structural diagram of the location of trainees.

From the above, we need to model the entire learning process according to the principle "from simple to complex", from the point of view of increasing the participating sources of information in the learning process. To do this, it is necessary to build a mathematical model of calculation, each type of audience for the acquired knowledge, and for each it is necessary to build an ergonomic model of research.

Since we have previously defined [4] the function of managing the quality of the learning process in the acquisition of knowledge, which is presented in the following form:

$$K = (\text{Cuch.Percent}, \text{Cexpert.}, \text{Cargon}, \text{Cecology}, \text{Ktest}, \text{Cuch.Met.Obsp.}, \text{Kzn.Inostr.Language}, \text{Qual.Research}, \text{Cobesp.Org.Kult.Kinfor.Obsp.}, \text{IM}, \text{W}_n, \text{IS}, \text{BD}, \text{BZ}), (1)$$

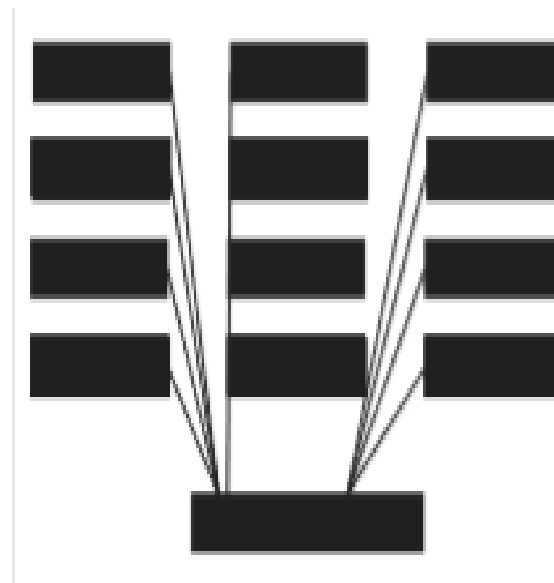


Figure 2. Ergonomic model of the learning process.

If we consider the study of the quality of the learning process, in relation to a group of trainees in a radial type of classroom, we can imagine where the location of trainees is described in the form of a two-dimensional matrix and is presented as in Figure 2.

$$A_{ij} = \begin{vmatrix} a_{11}, & a_{12}, & \dots, & a_{1n} \\ a_{21} & a_{22}, & \dots, & a_{2n} \\ \vdots & \vdots & & \vdots \\ a_{m1}, & a_{m2}, & \dots, & a_{mn} \end{vmatrix}$$

Where the location of the trainees in the classroom is described mathematically by the two-dimensional matrix  $A_{i,j}$  [1,3,4], with the material being studied -  $Z_k$ , **then the acquired knowledge of the trainees after each lesson  $K_{i,j}$  will be summed up in the following form**

$$A_{,j} = A_{i,j} * Z_k \quad (3).$$

Since, in practice, there are no works in the field of ergonomic and mathematical modeling, so far we offer the above methods of research work.

### SUMMARY:

Since, in scientific works in the field of pedagogy, there is no analogue of the use of ergonomic modeling, making an analysis and synthesis of the learning process in the acquisition of knowledge with the help of additional sources of information, we offer the above-mentioned methodology for conducting research in this area to improve the quality of knowledge acquisition.

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