ABOUT ONE APPROACH TO DETERMINING AUDIENCE VOICED IN THE PROCESS OF LEARNING WITH THE HELP OF ERGONOMICS

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One of the parameters of education quality management in the acquisition of knowledge is the soundness of the audience in the learning process.

In previous studies, we have identified:

- types of classes (lectures, practical, laboratory and independent) [4,5];

- the location of trainees in the classroom with the help of ergonomic models [1-3];

- ergonomic models using different types of TSS [6];

- ergonomic models using specialized elements and artificial intelligence devices in the process of acquiring knowledge;

- problem-oriented packages of applied programs and robots in the specialty and specializations [7-9].

But such research works and directions were not considered by scientists of the CIS and abroad.

To complete the study of the ergonomics of learning in the acquisition of knowledge, we propose a study - soundness in the classroom.
Ergonomics is a science that is being developed and created to study various areas 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 of the results of research and proposals.
Analysis and synthesis of the teaching process taking into account ergonomics.
Establishment of logical and informational interconnections of pedagogical ergonomics in universities.

A systematic approach to conducting research tasks in the field of teaching ergonomics.
The choice of methods for calculating econometric models of teaching ergonomics.
Analysis of the obtained research results and proposal.
The purpose of this research work is to create an ergonomic model of the learning process, taking into account the soundness in the acquisition of knowledge of the audience of existing types in the quality management of educational systems of higher educational institutions (УКОС ВОУ) [3-4].

- Studies show that the use and implementation of ergonomic models in the teaching/learning process in the educational process depends on:
- • from the distance of the teacher and the student in the audience;
- • from the location of the teacher and student in the classroom;
- • from the soundness of the audience in the learning process;
- • on the student's perception coefficient during the lesson.

The above types of research are determined [1] by conducting a "survey" of acquired knowledge using the Brainstorming method, and the Insert table is filled in (conditionally, "weights of acquired knowledge" can be equal: if it is in points, 0, 0.25, 0.5, 0.75 and 1.0 or in the form ratings, then 1, 2, 3, 4 and 5).

The basis of the study is to determine the types of location of trainees in classrooms (Figure 1), and on the basis of what / on which ergonomic models of the learning process are built, these are: - radial, ring and mixed arrangement of trainees in the classroom.
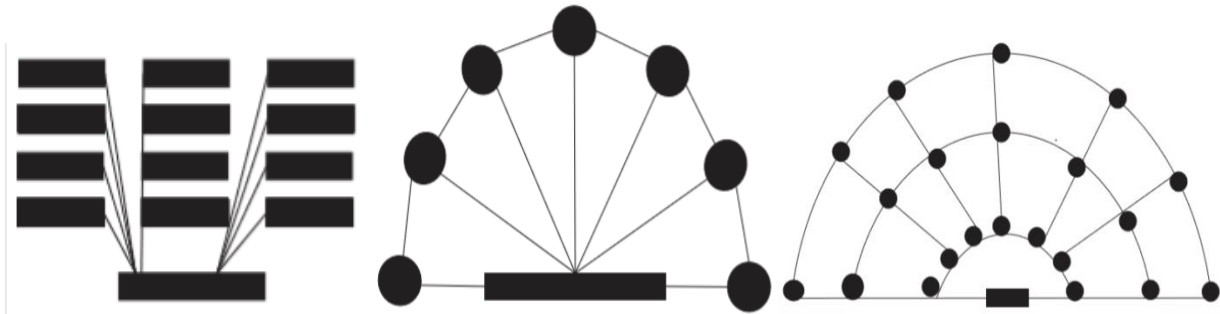
Figure 1. Types of location of trainees in classrooms.

We present the function of managing the quality of training/education in the following form [2,3]:

$$K = (K_{scien.process.}, K_{expert.}, K_{ergonom.}, K_{эколог}, K_{test}, K_{scien.meth.secur.}, K_{know.foreign.lang.}, K_{resea.qualif.}, K_{ens.org.cult.}, K_{inf.sec.}, ИМ, W_n), \quad (1)$$

where:

$K_{scien.proc.}$ — a subsystem that determines the quality of the educational process;

$K_{expert.}$ — a subsystem that determines the examination of the ongoing educational process;

$K_{ergonom.}$ — a subsystem that determines the quality of acquired knowledge using an ergonomic model;

$K_{эколог.}$ - a subsystem that determines the quality of ecology in education;

K_{test} — a subsystem that determines the quality of the tests;

$K_{scien.meth.secur.}$ — a subsystem that determines the quality of educational and methodological developments;

$K_{know.foreign.lang.}$ — a subsystem that determines the quality of foreign language knowledge of students and teachers, taking into account the specification of graduates;

$K_{resea.qualif.}$ — a subsystem that determines the quality of the acquired knowledge by the method of qualimetry;

$K_{ens.org.cult.}$ — a subsystem that determines the quality of the provision of organizational and cultural events;

$K_{inf.sec.}$ - a subsystem that determines the quality of information support for the education process;

AI — a subsystem that determines the quality of innovative management, which is improved through new methods, approaches, pedagogical technology, technical equipment and security of the educational process;

W_n — matrices that participate in subsystems, logically and informationally interconnected in the education system, which organize regular tables with regular acquired data in the acquisition of knowledge.

Based on the learning quality management function from formula (1), we write the subsystem $K_{ergonom.}$ to determine and study the soundness of the audience of the learning process.

From function (1) subsystem $K_{ergonom.}$ define and write in the following form

$$K_{ergonom} = (K_{type\ aud.}, K_{viewTTA}, K_{ai}, K_{voi.aud.}) \quad (2)$$

where:

$K_{type\ aud.}$ - radial, annular, mixed;

$K_{viewTTA}$ - types of TTA involved in knowledge acquisition;

K_{ai} – artificial intelligence used in knowledge acquisition;

$K_{voi.aud.}$ - $K_{1lev.}$, $K_{2lev.}$, $K_{3lev.}$, $K_{4lev.}$, ..., $K_{n\ lev.}$ - audience voicing by levels.

From the above formula, one can guess that, the subsystem $K_{ergonom}$ also consists of many subsystems that need to be identified and investigated in order to calculate the values of quality management of the education system in the acquisition of knowledge of the learning process.

One of the indicators of knowledge acquisition is soundness, which is little studied and unexplored in education, depending on the type of audience: lecture, practical or laboratory.

In managing the quality of education, in addition to the location of students in the classroom, it is also necessary to study the ergonomics of sonority in determining the degree of perception of students in the learning process, as well as determining its coefficient, taking into account the degree of perception of students in the learning process.
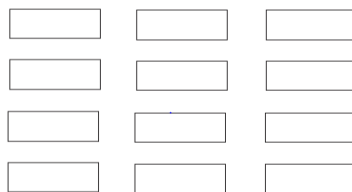
Figure 2. The location of trainees in the auditorium of a radial view.

In the course of the study, we chose, for example, the radial type of learning (Figure 2), and on its basis an ergonomic model of the soundness of the education process (Figure 3) was built

Figure 3. Ergonomic arrangement of trainees in a radial auditorium.

Since the types of audience are different, and considering the use of additional learning tools in the study of the learning process in the acquisition of knowledge to determine the quality of education, we still have to continue the study.

SUMMARY: To achieve the goal of the study, it is necessary to identify the following works:
- to analyze and synthesize the educational process in building an ergonomic model of the learning process in the acquisition of knowledge;
- based on the ergonomic model, develop a mathematical model of the learning process for all types of learning;
- on the basis of the developed mathematical model to create a simulation model of its study;
- in the decision to use different mathematical methods or standard software packages.

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