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The Importance of Using Applied Mathematics in Teaching Process

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Annotation: The article highlights the importance of training competitive personnel in higher education institutions based on the needs of economic sectors and industries on the example of mathematics. For this purpose, reiterated the importance of promotion of vocational training, development of the student's independent learning skills, as well as organization of development of student competence in the field.

Keywords: personnel training, vocational training, student's ability to learn independently, innovative factors, projects of educational activities, mathematical model, interactive and modern educational methods.

Since higher education institutions are considered the most esteemed and pretigeous institutions of the nation, the work carried out in these institutions determines the development of the country and its socio-economic, national-cultural position and development prospects. For this reason, functioning of higher education institutions in harmony with the modern ternds is considered one of the most pressing challenges of the day.

It is important to note that, if we analyze the situation of personnel training in higher education institutions of foreign countries, it can be observed that science, techniques and technology cannot fully meet the needs of production, which is similar in the case of our country. One of the solutions to this problem is the timely training of competitive personnel in the necessary specialties based on the needs of economic sectors and networks. For this purpose, we should keep in mind the priority of vocational training in higher educational institutions, development of the student's ability to learn independently, development of students' competence in the field.

Based on this, achievements in the higher education system can be attributed to a number of innovative factors::
— high scientific and material potential;
— implementation of pedagogical and information technologies in the education and training system in conformity with modern trends;
— available formulated self-financing system;
— relationship between the teacher and the learner;
— coherence between personnel training and production;
— sufficiency of the material and technical base for conducting and organizing trainings;
— guaranteeing that the trained personnel can work independently in the production;
— availability of material support, incentive system, etc. for the professors and teachers in the educational institution based on the their work and scientific potential.

The relationship between the teaching of higher mathematics (using economic, technical and technological concepts) and the productive work of students, taking into account systematic and sequential learning of mathematics, first and foremost, provide the opportunity for the students to use work as a means of understanding mathematical patterns. Second, it fosters in students the ability to use their mathematical knowledge in production work and demonstrates the value of math knowledge in defining the scientific basis of production.

Taking into account the characteristics of the higher education institution, professors and instructors who teach higher mathematics should conduct their lessons in a way that maximizes the educational work of students in every way, using all opportunities. One of the most effective methods

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of working with students of higher education institutions in economic, technical and technological directions is to organize training in production enterprises, which is integrally linked with work practice.

Accordingly, as an important condition for improving the quality of knowledge and general professional training of students in higher educational institutions, it is important to develop the skills of self-learning and the development of competencies oriented towards the profession.

The key objective today is to develop a methodology for setting up an independent education in the higher education system and to build a mechanism for its complete implementation in the educational process.

To achieve this goal, it is necessary to perform the following tasks:
— to determine the main essence and content, as well as effectiveness of introduction of modern pedagogical and information technologies in the organization of independent education;
— to determine the main directions and develop the principles in determining the essence and content of modern pedagogical technology in the organization of independent education;
— in the organization of education, to develop the theoretical and methodical basis of teaching on the basis of modern pedagogical technology and conduct its experimental testing;
— in the organization of vocational education, to draw up projects of educational activities (pedagogical technology and its components), with placing a strong emphasis on independent learning;
— to create a set of mechanisms that help build an individual trajectory in independent study, while supporting instillation in the future specialist the ability to improve their qualifications and pursuit of competitiveness;
— to create an operational educational infrastructure, including organizational, psychological-pedagogical, teaching-methodical, informational, material-technical and other supplies;
— to create methodological developments related to the implementation of pedagogical technology in educational subjects taught in educational institutions and teaching-methodical support for educational subjects.

In this context, it is necessary to solve practical issues taking into account the characteristics of the students and the field of education, organize them in different ways based on the content of the types of work, initiate students' interest in comprehensive study of subjects and objects of activity, conduct extensive discussion and evaluation of the results, ensure their rational use in further educational work.

In this sense, in the process of explaining linear algebra modules to students of economic education, it is desirable to convey the following concepts in depth such as linear balance model, technological matrix, gross product vector, final product vector, as well as the importance of the system of linear equations in solving economic problems.

Model problem. The enterprise produces three types of products using three types of raw materials. Production characteristics are given in this table:

Type of raw material	Raw material costs by product types			Raw material reserve/stock
	1	2	3	
1	5	12	7	2000
2	10	6	8	1660
3	9	11	4	2070

Using the given stock of raw materials, determine the production volume by product type.

Solution: The volume of products to be produced is marked with x_1, x_2, x_3, respectively.

Since the use (cost) of type 1 of raw material for type 1 of product is 5 units, $5x_1$ - type 1 means use (cost) of 1 type of raw material used for production of goods. Similarly, the costs of raw materials of type 1 used for the production of type 2 and 3 are 12, 7 units, respectively, for which the following

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equation is appropriate:

$5x_1 + 12x_2 + 7x_3 = 2000$.

Similar to the above, for type 2, 3 raw materials we have the following equations:

$10x_1 + 6x_2 + 8x_3 = 1660$,

$9x_1 + 11x_2 + 4x_3 = 2070$

Thus, under the conditions of the problem, we create the following system of three linear equations with three unknown figures:

$$\begin{cases} 5x_1 + 12x_2 + 7x_3 = 2000, \\ 10x_1 + 6x_2 + 8x_3 = 1660, \\ 9x_1 + 11x_2 + 4x_3 = 2070 \end{cases}$$

The mathematical model of this problem consisted of a system of three linear equations with three unknown figures (system of linear equations). By finding the solution of system of linear equations, the problem is solved.

Teaching students to apply mathematical tools in solving profession-related problems is one of the key tasks in the process of professional teaching of higher mathematics. Therefore, a new generation science program for higher mathematics should be developed in such a model that in the course of teaching, it should include components necessary for students to learn other subjects in the curriculum during the teaching process, the components that will be necessary for them to be able to use them in the future in performing public functions, the components necessary for them to be able to use mathematics in solving various practical tasks and problems.

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