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DIDACTIC POTENTIAL OF INFORMATION TECHNOLOGIES IN THE PROCESS OF CONDUCTING AN ECONOMIC AND MATHEMATICAL EXPERIMENT

***Annotation.** The article describes the specifics of using the visual modeling method and outlines an innovative approach to the implementation of the principle of visualization in teaching economic and mathematical disciplines in higher education institutions. The possibilities of using information technologies in teaching economic and mathematical disciplines that contribute to the development of interest in learning and the formation of visual thinking are illustrated.*

***Key words:** open-ended tasks, economic and mathematical modeling, information technology.*

Computers find their direct application in all spheres of human activity, including in the field of education. There is no longer any doubt that information and communication technologies, in particular economic and mathematical experiments with the use of appropriate software, will improve the traditional teaching methodology. Computer technologies in teaching open up new technological options for teaching [1, 2].

In the context of informatization of education, the method of economic and mathematical modeling, based on the use of information and communication technologies, is gradually becoming one of the methods of cognition in various economic disciplines. To conduct an economic and mathematical experiment, you can use specialized software tools that have a clearly defined focus, however, the most optimal and not time-consuming, in our opinion, is the Microsoft Excel spreadsheet processor.

Modeling of economic processes with the use of computer technologies, due to its visibility and versatility, is advisable to use in the process of teaching economic disciplines.

Computer technologies are very useful in those sections of economic analysis where it is difficult to do without them, where long numerical calculations are required, where it is required to construct a large number of graphs, to clarify the dependence of the obtained solution on a large number of parameters.

The naturalness and clarity of the constructions performed, obtaining accurate results without the need to repeat laborious calculations contribute to the widespread use of information and computer technologies in economic and mathematical modeling.

From our point of view, the integration of economic and mathematical modeling into the learning process in institutions of higher education and in institutions of general secondary education contributes to the improvement of the learning process itself, since the automation of the registration of experimental results and the execution of calculations frees up time for analyzing the research and develops visual thinking in students [3].

Thanks to the modeling of economic processes according to the given parameters in the spreadsheet processor Microsoft Excel, students not only better understand the essence of the processes that are taking place, but they still develop imagination and creative thinking, there is a motivation for learning, there is a cognitive interest in the application of economic and mathematical modeling in their future profession [4].

Visual modeling contributes to the formation of a dialectical materialistic worldview. The introduction of the concepts of model and modeling into the content of teaching significantly changes the attitude of students to the subject, makes educational activities more meaningful and productive. At the same time, it is important that students themselves master the modeling method, learn to build

models and study ready-made models, reflecting various relationships, properties and patterns of simulated objects.

It should be noted that formulations that affect the personality of the student and allow him to create his own, unique educational product will help to increase the motivation for modeling an economic and mathematical problem [5].

The author, within the framework of the discipline «Computer Information Technologies», introduced open-type assignments into the educational process. Here are some examples of such tasks.

Suppose you want to consider buying a home, for which you have to take out a mortgage loan of \$ 200,000 for 30 years, and you need to calculate the monthly payments on this loan for several interest rates.

This information can be provided by a data table (sensitivity table) for one variable (in this case, interest rate).

If you need to calculate the monthly payments on a mortgage loan of \$ 200,000, but this time you need to change not only the interest rate, but also the loan term, then an economic and mathematical model is modeled, depending on two variables.

The above tasks clearly show that the use of the visual modeling method in teaching mathematical disciplines demonstrates to students the inextricable connection of mathematics, computer science and economics, contributes to a deeper understanding of mathematics and better assimilation of knowledge by students.

Open classes are aimed at the development of student’s heuristic qualities, contribute to self-realization of students by completing open assignments; provide an opportunity to create an educational product different from others. As a result of the lesson, students develop a cognitive interest in the application of mathematical modeling in their future profession, and also study methods for constructing and solving mathematical models using various principles of idealization and visualization.

Let’s give an example of a completed task (Fig. 1).

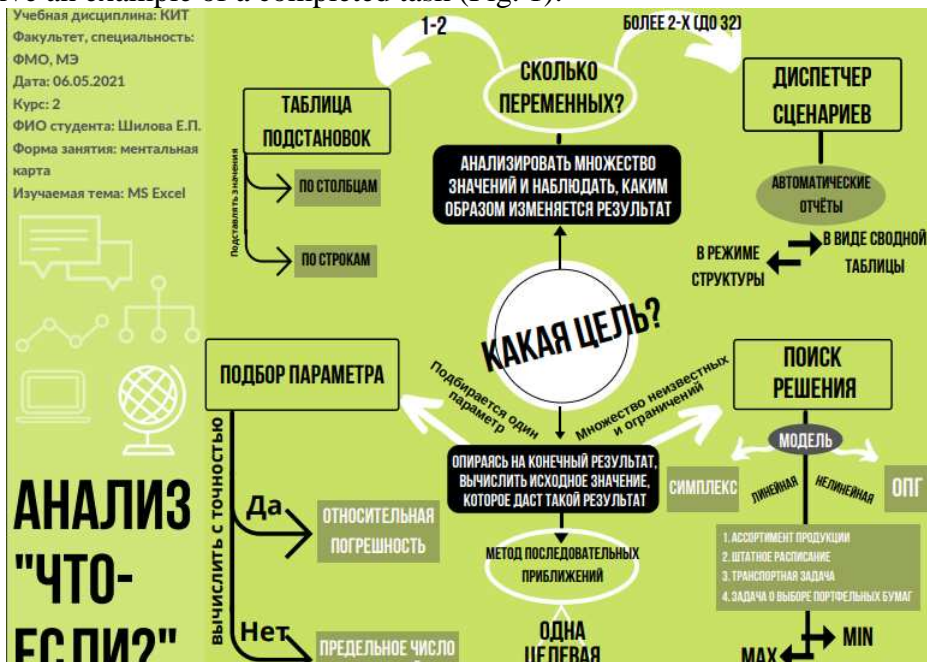


Fig. 1. Completed task of the open type

Open-ended tasks contribute to the development of visual thinking. When visualization is included in the cognitive process, it not only "helps" the student in organizing his analytical and mental activity, especially at the stage of perception and processing of the studied information, but also gives meaningful knowledge, having a significant impact on the depth of awareness of perception and understanding of the presented object [2, 5].

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