THE TECHNOLOGY OF PRODUCTIVE PROBLEMS FROM MATH – IN PHARMACY

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Abstract. *A productive issue is one in which the steps to solve are not given in the textbook. An example of an independent change of information to a productive issue, the connection of a life situation with mathematical rules and laws. This work discusses the components of productive problem-solving technology in mathematics and the solution of problems in the field of pharmacy based on this technology.*

Key words. *Math, teach, problem, issue, situation, medicine, solve, productive.*

The technology of teaching mathematics by teaching problem solving - R.Khazankin also calls it "the technology of productive problems from mathematics".

A productive problem is a problem whose solution steps are not given in the textbook [1].

Let's consider the concept of mathematical expectation using the example of a problem applied to the field of Pharmacy. This is often used when calculating the effectiveness of a drug or the percentage of suitability in production.

Example. Effectiveness of the drug-pharmaceutical company has developed a new drug. Clinical trials found that: in 60% (0.6) of patients, the

drug gives a good result. The drug is effective in 30% (0.3) of patients. The drug is ineffective in 10% (0.1) of patients. The effectiveness score is calculated as follows:

Good: 100 points

Average: 50 points

Ineffective: 0 points

Problem: Find the expected average effectiveness score (mathematical expectation) for a single patient.

Examples of a productive issue are such issues as the independent transformation of information, the connection of a life situation with mathematical rules and laws.

There are different manifestations of productive issues, such as:

search for patterns [2];

Example. A research pharmacist analyzed the dissolution rate of the active ingredient in a tablet formulation of a new type of drug in water over time in the laboratory. Every 5 minutes, the amount of substance released from the drug capsule (in milligrams) was measured, and the following table of numbers was formed:

Time	5	10	15	20	25	30
Separated substance	12	20	32	48	68	?

Question: determine the Hidden Law between the numbers in the table and determine how many milligrams of the drug will dissolve in Region 30 (?).

classification of mathematical objects (expressions, geometric shapes);

Example. A pharmacist is investigating the rate of elimination of four new analgesics from the human body. For each drug, a function of the

dependence of the concentration of a substance in the blood on time is obtained [3].

1.	The drug A	$C(t) = 50 - 4t$
2.	The drug B	$C(t) = \frac{80}{t+2}$
3.	The drug C	$C(t) = 30 \cdot 0{,}5^t$
4.	The drug D	$C(t) = 45 - 1{,}5t$

Task:

1. Classify these mathematical expressions by function types (linear, fractional-rational, exponential).

2. Group the drugs based on their type of elimination. Which medicine has a unique elimination pattern and is not suitable for the rest?

transforming a mathematical object into a new one (for example, transforming simple arithmetic problems into complex ones);

problems with insufficient or excessive information;

solving a problem in different ways, finding the optimal solution method;

independent searching problems, mathematical expressions, equations etc;

non-standard and research issues [1].

Example. The probability that one person out of 1000 will have a rare disease is $p = 0.002$. Find the probability that exactly 3 people will have the disease [4].

Example. If bacteria live in a favorable environment, then the rate of bacterial growth is proportional to the population size. This situation is expressed by the differential equation:

$$\frac{dx}{dt} = kx,$$

where x - is the number of bacteria; k - is the proportionality coefficient.

R.G. Khazankin emphasizes that the effectiveness of this technology depends on taking into account the following requirements for organizing the process of teaching mathematics [5]:

1. To try to make theoretical information as deep as possible.

2. Linking the teaching of mathematics with other academic disciplines.

3. The use of theoretical knowledge in problem solving, a systematic study of general methods and methods of proof of problem solving.

4. Management of thoughts, general methods of replenishment, systematization, research in different situations.

5. Learning to guess.

6. Continue working on the solved problem.

7. Learn to see the beauty of mathematics in the process of solving problems and analyzing the results.

8. Independent compilation of issues.

9. Work with educational, popular and scientific literature.

10. Organization of "mathematical" conversations in the lesson and after the lesson.

Form of extracurricular activities from discipline - R.G. Khazankin's main part of the technology. In addition to individual forms, the following are also used: mathematical olympiads, mathematical evenings, summer mathematical school [1].

REFERENCES:

1. Юнусова Д.И., Артикова Г.А. Олий таълимда математика математика фанларини ўқитиш методикаси модули бўйича ўқув-услубий мажмуа. - Т.: ТДПУ, 2019. - 240 б.

2.Пойа Д. Как рещать задачу. – Москва: Учпедгиз. 1961, 208 с.

3.Yunusova G. MONITORING THE RESULTS OF STUDENTS'COLLABORATIVE LEARNING //Science and innovation. – 2023. – T. 2. – №. B1. – C. 294-297.

4.Yunusova G. A. Monitoring the quality of knowledge in the person-oriented education system //Int. Conf. – 2023. – T. 1. – №. 2. – C. 641-643.

5.https://www.google.com/search?q=Mahsuldor+masalalarning+turli+ko%E2%80%98rinishlari+mavjud%2C+masalan%3A+qonuniyatlarni+izlash