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LOGIC ELEMENTS IN THE E-LEARNING ENVIRONMENT AND SOME CONSIDERATIONS REGARDING THEIR APPLICATION

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ABSTRACT

In this article, we will discuss some of the important sections of mathematics-the main concepts of the science of mathematical logic-reasoning (true or true value-taking sentences) and the information on their actions, their application in other sciences, logical formulas and language interpretation of laws, the use of the electronics Workbench (EWB) program in the teaching of mathematical logic elements.

KEYWORDS-*reasoning, reasoning disjunction, conjugation, implication, equivalence, reasoning negation, the truth table of the predicate, logical laws, tavtology.*

I. INTRODUCTION

Mathematics is one of the most ancient sciences with a long history of development. Mathematics is the basis of knowledge of the universe, and it is very important in revealing the specific laws of events around us. We all know that mathematics develops a person's worldview, broadens his thinking, teaches him to think correctly, draw the right conclusions, strengthens the mind, develops attention, and nurtures perseverance and will.

Teaching mathematics in close connection with other disciplines allows students to form secular knowledge so that they can work effectively in any field in the future.

Modern, advanced educational technologies and non-traditional methods of teaching are being introduced into the educational process. Based on this, we would like to share some ideas from the methods developed by Mathematics in teaching the elements of mathematical logic.

Today, in the learning process, the teacher must not only impart a certain amount of knowledge, but also teach students to independently acquire new information and process it creatively. In this situation, serious attention should be paid to the problem of formation of mathematical and logical literacy in students of higher educational institutions.

It is no secret that as a result of practical skills, mathematics plays a leading role in all areas. Therefore, higher education, including the humanities, pays special attention to this science.

Humanities students face certain difficulties in mastering mathematics for a number of reasons, including the difficulty of mastering pure mathematical concepts. Therefore, it is very important that students of the humanities understand the information, knowledge, examples and problems that are given in the process of teaching mathematics. It is also important to understand the relationship between the disciplines of mathematics and the humanities and to apply it in practice.

The data presented is one of the attempts to show the relationship between the disciplines of mathematics and the humanities, the considerations of one of the most important concepts in mathematics, the operations on them, the laws of logic and their application in other disciplines.

II. MAIN PART

Selecting a Template (Heading 2)(TNR- 10, Italic,Bold)

Mathematical logic is a branch of mathematics that deals with statements that can be used to determine whether a statement is true or false. Such statements are called considerations. Comments are denoted by the letters A, B, C, ... Comments on ^ (conjunction, "and", "and"), v (disjunction, "or", "or"), $\Rightarrow$ (implication, "if ...., then ..." "if ... then ... "), $\Leftrightarrow$ (equivalent," ... necessary and sufficient to be .... "," ... if and only if ... ") binary logical operations and unar the denial of action $\neg$ (negative, ".... not") is established.

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A, B, C, ... refers to a complex reasoning that is formed by combining considerations in a certain order by means of logical connectors of negation, disjunction, conjunction, implication, and equivalence. Logical formulas are a mathematical model of reasoning in natural language.

In this language, simple words can be used with the help of conjunctions "and", "or", "if ...., then ...", "... necessary and sufficient for ...". It means to make a statement.

For example: 1) A: “Student Boltaev is studying physics”; B: "Student Boltaev is learning mathematics", C: "Student Boltaev is going to study at a prestigious university".

In that case we have:

A ^ B: "Student Boltaev is studying physics and mastering mathematics."

A v B: "Student Boltaev is studying physics or mastering mathematics."

A $\Rightarrow$ B: "If a student Boltaev is studying physics, then he will learn mathematics"

A $\wedge \neg$ B: "Student Boltaev is studying physics and not mastering mathematics."

A $\Rightarrow \neg$ B: "If a student Boltaev is studying physics, then he will not learn mathematics."

A $\wedge$ B $\Rightarrow$ C: "If a student Boltaev is studying physics and mastering mathematics, he will enter a prestigious university."

C $\Rightarrow$ A $\wedge$ B "If a student Boltayev entered a prestigious university, he studied physics and mastered mathematics."

Similarly, "If I graduate from university, I will enter a master's degree or work in my field." This feedback is expressed in the form A B C.

As another example $((A \Rightarrow B) \wedge (B \Rightarrow C)) \Rightarrow (A \Rightarrow C)$ let us explain the law of logic: Let A be B and B be C. In that case it follows from A to C.

The above examples show that the laws of mathematics, especially its branch of mathematical logic, are widely used in all disciplines.

We have also considered examples of the direct application of logical formulas and laws in the field of humanities education. It is also possible to work on a sentence (formula) involving the implication of comments ("if ...., then ..."). $A \Rightarrow B$ Consideration is called a theorem in mathematics. The condition of Theorem A is called the conclusion of Theorem B. Theorem $B \Rightarrow A$ formed by substituting the conditions and conclusions of Theorem is called the inverse theorem. Theorem $\neg A \Rightarrow \neg B$ formed by denying the conditions and conclusions of the theorem is called the opposite theorem to the given theorem, and finally, $\neg B \Rightarrow \neg A$ the theorem is called the inverse theorem. There are many examples of the application of theorems and their types in philology.

A: "The sentence consists of two or more simple sentences" and B: "The sentence is a compound sentence". In that case, comment $A \Rightarrow B$ reads, "If a sentence consists of two or more simple sentences, it is a compound sentence." As you know, this sentence represents the rule of the compound sentence in the native language, and this statement takes on a true value.

Comment $B \Rightarrow A$ reads, "If a sentence is a compound sentence, it consists of two or more simple sentences." This consideration is also true.

A $\neg A \Rightarrow \neg B$ comment reads, "If a sentence does not consist of two or more simple sentences, there is no compound sentence." Obviously, this comment is also true.

The $\neg B \Rightarrow \neg A$ comment reads, "If a sentence is not a compound sentence, it does not consist of two or more simple sentences." This consideration is also true.

An example of this is the rule that words are adjectives.

$A \Rightarrow B$ comment "If the word" how, how? " If he answers the questions, then quality is the word. ” All aspects of this consideration are true.

Let's look at another example. Let's take a look at the true value of "If it rains, the earth gets wet." The comment can also be read as "A comes from B" or "A is, so is B." Comment $B \Rightarrow A$ for the true value “If it rains, the earth will be wet” ($A \Rightarrow B$) “If the ground is wet, it will rain.”appears. This assumption is false because the ground can get wet even when water is sprinkled. Giving this example will give you the impression that not everything that is implicated is true. In determining whether the third view is true or false, there is a need to pay attention to the requirements of correct thinking and correct conclusions. $\neg A \Rightarrow \neg B$ "If it doesn't rain, the ground won't get wet" (lie). Many students make the mistake of estimating the value of this consideration. Finally, $\neg B \Rightarrow \neg A$: "If the ground is not wet, it will not rain" (true).

The following illustrations, given as examples, are sure to arouse students' interest and teach them to think correctly.

In the process of analyzing the “if any person is a student, the university is subject to internal regulations” approach, students give different opinions that contradict each other (try to analyze).

Here is another important rule. Always $A \Rightarrow B$ (theorem) and $\neg B \Rightarrow \neg A$ (theorem opposite to inverse theorem) feedback have the same value, feedback $B \Rightarrow A$ (inverse theorem) and $\neg A \Rightarrow \neg B$ (theorem opposite to the given theorem) students will be able to identify their own mistakes in drawing conclusions if they are informed that they have the same value.

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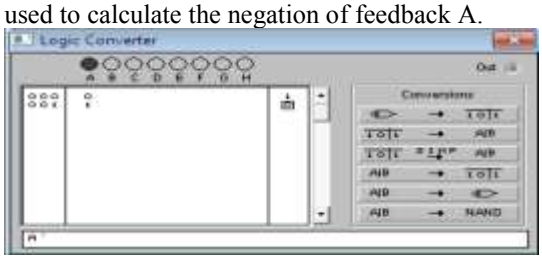
Coverage of modern information and pedagogical educational technologies, the use of advanced foreign experience in the teaching of elements of mathematical logic in the field of "mathematics"; To reveal the content of the section of elements of mathematical logic in the subject "Mathematics" with the help of information and communication technologies; It is important to use programs such as Electronics Workbench (EWB) to teach the elements of mathematical logic in mathematics. When using the Electronics Workbench (EWB) to teach the elements of mathematical logic, the following is done:

- obtain results by directly entering mathematical logic operations;
- compile a truth table of formulas with the given elements of mathematical logic;
- restore the appearance of logical formulas when given by the truth table;
- Check the equality of formulas by creating a table.

For example, Electronics Workbench (EWB) can be used to calculate the negation of feedback A.



CONCLUSION

Highly intelligent, able to think independently, well-educated, enlightened, strong-willed, able to think, to draw conclusions on the basis of logic, to weigh everything he does and says on the scales of reason and logic -Education of perfect people is the most important requirement of today. In such people, thinking, which is the highest form of mental activity, consisting of knowing reality, is strongly formed.

The laws of logic, which are the laws of thinking, ensure the correctness of thinking. They represent the formation and interrelationships of concepts, considerations, and inference, which are forms of thinking. Following the laws of logic allows you to think correctly, clearly, precisely, consistently, without contradictions. Clarity, consistency, and avoidance of contradictions are the hallmarks of right thinking. Since these are the signs that form the basis of logical laws, we have tried to consider each of them separately.

Considerations, which are one of the basic concepts of mathematical logic in the article, and the binary logical operations based on them - disjunction, conjunction, implication, equivalence of considerations; denial of unar practice; information on logical formulas, laws and their application in other sciences, information on their interpretation, examples and problems showing the relationship between mathematics and the humanities.

In short, today's students need to be educated in accordance with modern requirements. After all, in the age of new technologies, boys and girls are born with a number of common qualities. Nowadays, teaching the elements of mathematical logic in an e-learning environment allows students to broaden their horizons and increase their knowledge of the elements of mathematical logic

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