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DESIGNING LEARNING ACTIVITIES ON THE LEARNING GOALS

Abstract: *The article highlights the collected experience in designing educational process in a hierarchy of educational goals, and there are given the project of training session in higher education on the subject of organic chemistry on the topic "Alkenes".*

Key words: *Learning objective, introducing the concept, analysis, determination of values, a new idea, homologous series of alkenes hydrocarbons, isomerism and nomenclature of alkenes, the structure of the alkenes' molecule, the chemical properties of alkenes, methods for their production and application.*

In the effective organization of lessons in higher education institutions, it is important to design the learning process on the basis of learning objectives. Therefore, it is recommended to use a maximum of 7-9 learning objectives in one lesson, ie every 10 - 15 minutes the person receiving the information should be distracted, and only then move on to the next stage of information transfer.

In this scientific article, we set ourselves the task to highlight our experience in designing the teaching process based on learning objectives.

Learners perform the following activities on the learning material or its highlighted parts: read, understand, analyze, calculate, comment, coordinate, use, evaluate, and so on.

If any of the listed activities is told to the student by the teacher as an assignment before it is completed, such assignment will have the status of a learning objective.

Some of these activities require low preparation from the student, while others require high and even very high preparation. Accordingly, the result of

the action performed by the student is also evaluated differently. Hence, the problem of grouping the activities that achieve learning objectives according to their level of complexity becomes cross-cutting. This work was first done in 1956 by Benjamin Blum, a U.S. educator.

According to B.Blum, learning objectives are divided into 6 categories: 1 - cognition, 2 - comprehension, 3 - application, 4 - analysis, 5 - synthesis, 6 - evaluation. According to B.Blum, the achievement of the goal of “Knowledge” is 55 - 62% of the training material, “understanding” 63 - 70%, “application” 71 - 77%, “analysis” 78 - 85%, “acceleration” 86 - 92%, “assessment” means 93 - 100% mastered.

If we take into account that the learner can actively concentrate for only 10-15 minutes, it is advisable to use 7-9 learning objectives in one lesson. At the same time, the design of the lesson process in the order of learning objectives gives good pedagogical results.

At the end of the last century, B. Blum's taxonomy was somewhat criticized by psychologists. At the beginning of the XXI century B. A number of clarifications have been made by Bloom's follower, Lorin Anderson, and her colleagues.

Today, Blum's taxonomy has the following hierarchical form: 1 - acquaintance with new information, 2 - understanding of information, 3 - determination of the importance of information, 4 - analysis of information, 5 - attitude to information, 6 - new idea of information, new idea , to offer a new solution.

In the current semester, we used this project to conduct a lecture on “Alkenes” in organic chemistry at the university, and the details are as follows.

Learning Objective 1 - Prepare the group to explore a new topic. Time spent - 5 minutes. Didactic practice or tool used teacher's word.

The teacher asks the students to remember the topic of the previous lesson and asks questions about it. Students answer questions. The teacher announces

the new topic and writes it on the board. Learning Objective 2 Get acquainted with the initial information on the topic.

Time spent 10 minutes. The didactic action or tool used is a poster or slide with a homologous sequence of alkenes, their names and isomers. The teacher explains the homologous sequence of hydrocarbons on the poster or slide, their naming and isomerism by nomenclature (trivial, systematic and rational).

Students write in their notebooks the information about the homologous sequence of ken alkenes, their names and isomerism. Learning Objective 3 Understand the information on the topic. Time spent 10 minutes. The didactic action or tool used is a poster or slide with a picture of the spatial deposition of the alken (SP2-hybridization of the carbon atom in ethylene).

Lecturer's speech: The production of new substances in the chemical industry and the increase in their productivity depend in many respects on low molecular weight active substances. Increasing the amount of product and reducing the amount of waste is one of the important tasks of the chemical industry. This, in turn, requires a thorough knowledge of the properties of the substances being studied as raw materials. Hence, the teacher encourages students to explore their industrial significance using the chemical properties of alkenes.

Students listen to the teacher's speech, write the equations of process reactions in their notebooks and try to determine their industrial significance using the chemical properties of alkenes.

Poster or slide, as well as video-experimental material with the applied didactic action or means methods of obtaining alkene. Instructor 1) Demonstrates a video-experimental work on obtaining ethylene on the basis of heating with concentrated sulfuric acid in ethyl alcohol and explains what discoloration occurs when the resulting ethylene is passed through a 1% solution of potassium permanganate.

2) The combustion of the resulting ethylene gas is observed in a video

experiment and the equations of partial and complete combustion of ethylene are explained by writing. Students closely follow the process of video experiments demonstrated by the teacher. They write in their notebooks the corresponding chemical equations of the processes of reactions.

Learning Objective 6 To respond to information. Time spent 12 minutes. Applicable didactic materials Students are provided with a diagram or slide with a clear indication of the areas of application of “Ethylene series hydrocarbons”)

Teacher Q1: Where and for what purpose is ethylene glycol oxidized ethylene according to the given scheme? Students argue in search of an answer to the question eng (Expected correct answer: ethylene glycol is widely used on an industrial scale, mainly in the production of antifreeze and motor oils, as well as as a heat carrier in vehicles, as a raw material for polymers).

Instructor Q2: Where is acetic aldehyde and carbonic acid derived from ethylene used according to the given scheme? Students argue to find the answer to the question (The most correct answer is: acetic aldehyde is widely used in the production of acetic acid, acetic anhydride, ethyl alcohol and ethyl acetate. Carboxylic acids are used in the textile, leather, chemical industry, food canning. and widely used in other fields).

Learning Objective 7 To provide new ideas, new ideas, new solutions to information. Time spent 13 minutes. Applicable didactic tools A pre-prepared assignment in the form of a text for oral presentation by the teacher.

The teacher reads the assignment condition: When ethylene is ignited in atmospheric air, it burns to form some smoke. When burned in a stream of oxygen, it burns without smoke, giving a blue flame. Why? In which case does it give high energy when burning?

Students answer the teacher's question in their notebooks and describe the process in a chemical equation. Learning Objective 8 Conclude the process of learning the topic. Time spent 5 minutes. Didactic tools used teacher's word.

The teacher asks students to reinforce the material on the topic based on

the relevant part of the textbook. He says they can ask questions on the topic. Students write the relevant pages of the textbook in their notebooks. They ask questions on the topic covered. The quality of mastery was much higher in educational institutions based on a sequence of learning objectives than in non-educational institutions.

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