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The Advantages and Importance of Demonstrations Based on Demonstrative Methods of Teaching Chemistry

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ABSTRACT: This article analyzes the advantages of demonstration experiments based on the demonstration-narrative teaching method and their impact on students' knowledge, skills, and abilities. Recommendations for improving the educational effectiveness of the demonstration method are provided.

KEYWORDS: demonstration experiments, chemistry education, educational function, interactive learning, instructions, reagents, software, safety measures.

INTRODUCTION

The most important of the methods of teaching by means of demonstration is the use of a chemical experiment. Demonstration (demonstration) experiments are understood as experiments on the topic performed by the teacher, laboratory assistant, or sometimes one of the students during the lesson. These experiments are shown in the program, but if the teacher does not have the necessary reagents at his disposal, other experiments that are chemically and methodologically equivalent to them can be shown.

Demonstration - a visual and emotional introduction of the listener to various phenomena and events, processes, objects.

The leading task of this method is education. We use the demonstration only to fully explain the dynamics of the phenomena being studied. This method helps to familiarize with the appearance of something and its internal structure or similar things.

The basis of the topic can also be fully explained by drawing a simple and sketchy picture of the demonstrated object on the board or expressing it in the form of diagrams.

The difference between a demonstration and a simple visual aid is that the lively movements in it affect the student's mind more quickly, which is called active movement. As a result, students fully study subjects, processes and phenomena, consciously perform the necessary tasks, and learn about intersubject relationships. This helps them to focus their attention on the important, rather than accidentally noticed, features of phenomena, processes, and objects. As a result, these are fully, more easily and more quickly absorbed by the student's mind.

To increase the effectiveness of the educational function of the demonstration method, it is necessary to pay attention to the following:

- the correct selection of objects;
- directing students' attention to the important aspects of the demonstrated phenomena;
- the demonstration process should be organized in such a way that students can see the objects being demonstrated not only with their eyes, but, if possible, perceive them with all their senses;
- focus students' attention on important aspects of the object;
- create an opportunity to independently learn the properties of the object being studied.

THE MAIN PART

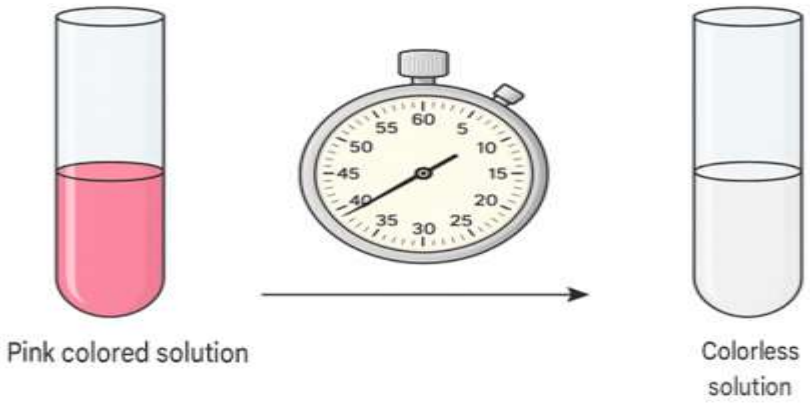
In order to arouse students' interest in science, form lecture knowledge, practical skills, and familiarize them with chemical instruments, containers, and reagents, a chemical experiment is conducted. Safety precautions are strictly observed. For example, the explosion of carbon monoxide, the effect of sodium on water, the dilution of concentrated sulfuric acid, and other experiments are performed only by the teacher. The use of a larger number of reagents and solutions for conducting experiments is considered reactive and methodologically preferable. For example, burning alcohol produces water with carbon (IV) oxide.

Conducting laboratory and practical classes, first of all, serves to consolidate the theoretical knowledge of students in this subject, and experiments with various qualitative and quantitative reactions accompanied by changes in color and quantity, precipitation and gas evolution naturally arouse great interest in science in them. The presence of various chemical containers, chemicals and the teacher's ability to use them rationally are necessary conditions for conducting practical classes and laboratory work. In each lesson, especially during practical classes, the teacher should familiarize students with modern scientific and technical innovations and show them experiments related to these innovations as much as possible. Students should fully master the knowledge given in the chemistry program and acquire the skills to independently conduct laboratory and practical classes.

In practical classes, special importance is attached to the formation of skills and competencies in students. They begin to teach chemistry from the 7th grade.

The formation of chemical skills and competencies is carried out on the basis of a clear system. The instructions describe the details of the experiment or the device for which the experiment will be conducted, which are given in the practical manuals. They contain information about the safety measures for conducting the experiment, but it is not enough to perform the work using the instructions. Therefore, in order to carry out the experiment very accurately, it is shown during the preparation for practical work.

A device for determining the rate of chemical reactions in the assembled state is placed on the experimental table. Students use it to perform practical work experiments.



Tert-butyl chloride + water + phenolphthalein - color change over time

The report of the practical work should be clearly written in the notebook. The topic of the work, the name of the experiment and its implementation are filled in according to the following table:

Purpose of the experiment	Execution procedure	Picture of the tool in use	Reaction equation and conclusion

This table must be filled in on time after the experiment. Students are evaluated based on their reports on practical work.

CONCLUSION

The purpose of experiments performed using the method of demonstration is to teach. Practice is the application of the sum of the knowledge that the teacher has given to students during the lesson. All theoretical knowledge in chemistry is useless without demonstration in practice. Therefore, the laws of chemistry, concepts, properties of substances, and their formation are studied on the basis of experiments. Conducting experiments in chemistry is very important. With the help of experiments, students improve their skills.

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