

Instructional Lesson Plan

Content Area:
7th grade Science

Unit:
Introduction to Laboratory Science: Safety and Equipment

Lesson Topic:
Science Lab Equipment

Date:
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Teacher:
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School:
Arkansas Arts Academy

Next Generation Science Standards:

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
Performance Expectation

Objectives:

After the completion of the lesson, students will be able to:

- Recognize, provide the definition and explain the role of laboratory equipment frequently used in the science classroom
- Analyze how laboratory equipment is used to carry out the different steps of the scientific method
- Apply their knowledge of laboratory equipment by executing a laboratory experiment

Context for Learning

This is the first lesson of the Introductory to Laboratory Science unit, which focuses on laboratory safety, equipment and applying to scientific method to carrying out an experiment. The lesson is usually taught during the first week of classes, in order to provide a foundation for 7th grade students on how to approach and conduct experiments safely.

Instructional Delivery

1. Teacher begins with showing a cartoon that depicts individuals breaking a multitude of lab safety rules while using lab equipment. Students will work in pairs to discuss and find as many broken rules as possible.
2. Students then proceed to compiling a list of lab equipment they recognize in the cartoon and their definitions.
3. The teacher explains basic lab safety rules (no backpacks, no food, no jewelry, no experiments without supervision) and the main laboratory equipment that will be used in the lab.
4. Students watch a short YouTube video that reviews safety rules and discuss what safety issues are missing from it.
5. Students review and sign a Lab Safety Contract
6. Together with the teacher, students read various scenarios in which lab equipment is used incorrectly and suggest safer alternatives
7. Concluding activity: the teacher will place four identical large posters with pictures in the front of the classroom. Students form four teams and participate in a relay race to recognize as many lab equipment items (by labeling them with post it notes). The first team to identify all lab equipment correctly wins the race.

Assessment

1. Students will apply their knowledge of the scientific method and laboratory equipment by hypothesizing what liquids will dissolve an Alka Seltzer tablet quicker than water. They will be graded on the ability to formulate a hypothesis, use the laboratory equipment correctly and write a conclusion.
2. Students will be assessed on their theoretical knowledge of laboratory equipment through a word search that includes the twenty pieces of equipment every student needs to recognize.
The word search will serve as a word bank: students will locate the words, and then provide a definition for each concept

Modifications for students with specific learning needs: the teacher may reduce the assignment by either requiring the students to find the words within the word search without providing a list on the side, or by requiring students to find the words and draw a picture of the equipment instead of providing the definition.

Modifications for academically proficient students: the teacher may use the mywordsearch.com Website to transform the word search into a crossword that requires students to identify laboratory equipment based on clues.

Materials

Cartoon featuring lab equipment
PowerPoint presentation of lab equipment
YouTube lab safety video (https://www.youtube.com/watch?v=tYrvn65a_A8)
Safety scenarios
Posters with pictures of lab equipment
Copies of lab equipment word search (<https://mywordsearch.com/298499>)