

LESSON PLANS 3-4

Aim: To perform an experiment: making an indicator out of red cabbage leaves and testing it on different everyday substances

Teaching objectives

Content

- Indicators in some brightly coloured parts of plants

Communication

- Laboratory vocabulary
- Following instructions
- Writing a laboratory report

Cognition

- Setting up an experimental device
- Analysing data from an experiment

Culture

- Acids and alkalis in everyday life

Outcomes

At the end of the lesson, students will be able to

- know that indicators can be easily obtained
- set up an experiment to obtain an indicator
- test their indicator on everyday substances
- know that most of detergents are alkalis
- draw a sketch of an experimental device
- know how to write an experimental report
- recognise the importance of working in a laboratory to test substances
- organise the tasks among the different members of the team
- be aware that everyday products can contain powerful chemicals

Tasks planned and timing

First day

- The teacher will begin the class with three beakers containing what apparently seems the same substance. He will explain that in fact each beaker contains different substances: an acid, an alkali and water. He will ask what would the students do to know what substance is in each beaker, and what wouldn't they do. Finally he will add a few drops of red cabbage juice to the beakers to show that this is a good indicator (10 min)

- Students will be asked to obtain red cabbage juice. First they will be given a [handout](#) to match the instruments with their pictures, and to put in order the steps of the experiment (10 min)
- They will be asked to organise their work and to distribute the tasks between the members of the group (5 min)
- They will perform the experiment to obtain red cabbage juice(35 min)

Second day

- Different substances will be distributed to be tested with the previously obtained red cabbage juice. But first students will be asked to guess if the substances are acids, neutral or alkalis and to give reasons (10 min)
- A [handout](#) will be given with the instructions. Students will have to order them, then they will have to perform the experiment and to fill a grid with the results (20 min)
- Students will be provided with a handout with instructions of how to write their [lab reports](#). Again, they will be asked to distribute their tasks (30 min)

Resources

- For the experiment: pestles and mortars, droppers, beakers, test tubes, funnels, support stands, test tube racks, support rings, clamp holders, clamps, filter papers, red cabbage leaves, methylated spirit (or water)
- For the substances to be tested: lemon juice, Sprite, vinegar, laundry detergent powder, baking soda, bleach, peroxide water, salt, Cillit bang, washing-up liquid, Ajax, ammonia, aspirin, antacid tablets, ...
- For the writing activities: handouts for each student

Assessment

- During the experiments, students who talk in English will be given extra marks

Evaluation