



KS4 SCIENCE – TEACHER'S NOTES

INNOVATION & THE COSMETICS INDUSTRY

LESSON OVERVIEW

This is a KS4 Science lesson on the topic of smell and odorants, providing a real world context for exploring ideas around the development of scientific thinking in the curriculum. This lesson also intersects with topics from the Biology and Chemistry subject content and could be used in either of these contexts.

WHAT YOU WILL NEED:

- Innovation & The Cosmetics Industry presentation.
- Innovation & The Cosmetics Industry worksheets.
- Suitable devices for students to access The Body Shop Education website, if completing the extension within class time.

LEARNING OBJECTIVES

In this lesson, students will learn:

- How odorants travel from their source to smell receptors in our noses.
- How to compare scientific theories of smell and understand how scientists develop their ideas over time.
- How to apply their understanding by choosing a synthetic scent for a cosmetic company.

CURRICULUM LINKS

This resource was developed to meet curriculum requirements in the following areas of subject content:

KS3 Science

The development of scientific thinking

Students should be taught so that they develop understanding and first-hand experience of:

- The ways in which scientific methods and theories develop over time using a variety of concepts and models to develop scientific explanations.
- Appreciating the power and limitations of science and considering ethical issues which may arise.
- Explaining everyday and technological applications of science; evaluating associated personal, social, economic and environmental implications.
- Making decisions based on the evaluation of evidence and arguments.
- Recognising the importance of peer review of results and of communication of results to a range of audiences.

Biology

- Cell biology
 - cells as the basic structural unit of all organisms; adaptations of cells related to their functions.

Chemistry

- Structure, bonding and the properties of matter.
- Changes of state of matter in terms of particle kinetics, energy transfers and the relative strength of chemical bonds and intermolecular forces.
- Bulk properties of materials related to bonding and intermolecular forces.



BEFORE YOU START

Review the presentation, presenter's notes and worksheets. Whilst this lesson is based on a one-hour period, you may wish to spread the content across two lessons to suit your own lesson length and requirements.

LESSON PLAN

Time (60 mins)	Activity	Presentation Slides
5 mins	Starter: Introduce the starter question from the worksheet. Students describe the smells that they associate with different situations. Review answers.	2
5 mins	Introduce the topic and learning objectives, using the presentation.	2
5 mins	Introduce how particles travel from their source, using the images on the presentation.	3
5 mins	Students complete Activity 1 - The science of scents , using the key words and writing in full sentences. Review answers.	3
5 mins	Introduce Activity 2 - How do I smell? , examining the two theories of smell. Students read aloud the two different theories.	4,5
15 mins	Students answer the questions from Activity 2 How do I Smell? in full sentences. Review answers.	5
5 mins	Introduce Activity 3 - Choosing synthetic scents , where students must apply their preferred theory to choose a suitable synthetic odorant.	6
10 mins	Students to complete Activity 3 - Choosing synthetic scents . Feedback answers.	6
5 mins	Plenary: How Do I Smell? Use questioning to review the process of smell. You may wish to set the extension as homework.	7

DIFFERENTIATION

Easier	Harder
Activity 1: Supply students with completed paragraphs to put in order.	Activity 1: Remove the writing frame. Students write their own sentences for this activity.

EXTENSION 'BUY FOR GOOD - ENRICHING THE FUTURE' INTERACTIVE

Students follow the online interactive '[Buy for Good: Enriching the Future](#)' to explore the sustainable supply chain of The Body Shop Coconut Body Butter and how the decisions of growers, retailers and consumers impact upon the sustainability of the product.

If you wish to complete this activity in your classroom, you will require suitable devices with internet access.