



THE UNIVERSITY  
of EDINBURGH

# Sustainability of Vanilla

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## Introduction

Vanilla is one of the most common and powerful ingredients found in many sweet treats worldwide, however, the story of its production is anything but vanilla! Being the second most expensive spice in the world after saffron; per kilo vanilla has a value greater than that of silver, which isn't helped by the fact 80% of the world's vanilla supply is grown by one island nation – Madagascar. During this unit of work, pupils will use a variety of interdisciplinary learning to understand the below topics of interest related to the overall sustainability of this fascinating orchid.

## Lesson 1 – Introduction to Vanilla

This lesson will give a brief introduction to the vanilla plant as a whole.

Pupils will discuss key ideas such as:

- What is it?
- How is it grown?
- Why is it so important?
- Where is it grown?

Pupils are given different introductory fact sheets to extract the information and reorganise it for themselves thus promoting literacy across the curriculum.

The key introductory messages for pupils to understand:

- Vanilla is a plant.
- The expensive nature.
- The variety of plants.
- The geographical locations.
- Hand pollination required.
- Fairtrade issues involved.

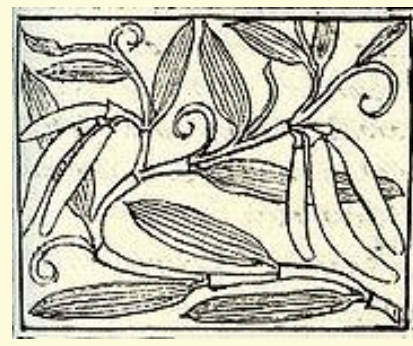
## Lesson 2 – History of Vanilla

For this lesson, pupils will look into the rich history of this plant.

Pupils will research and discuss:

- The first cultivation of vanilla in Mexico by the Totonacs.
- The Aztec influence on Vanilla.
- Introduction to Western Europe.
- Vanilla shipping trades.
- Vanilla introduction to Réunion and Madagascar.
- The influence of Edmond Albius within the vanilla industry.

In groups, pupils will each take one of the research topics from above and create a poster as a group. This promotes cooperative learning across the classroom.



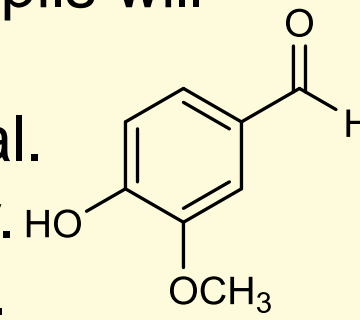
Vanilla (genus *Vanilla*, species *Vanilla planifolia*) is a climbing orchid native to Mexico and Central America. It is one of the most expensive spices in the world, with vanilla beans being the second most expensive spice after saffron. The vanilla plant is a member of the orchid family (Orchidaceae) and is a perennial climber. It is a member of the orchid family (Orchidaceae) and is a perennial climber. It is a member of the orchid family (Orchidaceae) and is a perennial climber.

## Lesson 3 – Chemistry of Vanilla

Most people may be unaware, but an estimated 95% of vanilla products actually contain synthetic vanillin – the primary component of the vanilla bean. Evidently natural vanilla extract contains a mixture of hundreds of different organic compounds.

During this lesson, pupils will discuss the following:

- Synthetic vs Natural.
- Flavouring Industry.
- Fragrance Industry.
- Chemical structure of vanillin.
- Synthesis of vanillin.
- Adverse effects of synthetic vanillin.
- Essential oils.



Pupils will have the chance to make their own vanilla scent using vanilla extract and almond oil.

## Lesson 4 – Vanilla Crime

Due to the ever increasing price which is being placed on vanilla, vanilla crime has become extremely common across the island of Madagascar. Due to this, vanilla farmers have created their own vigilante groups to protect their highly valuable crops.

During this lesson, pupils will read several articles about vanilla thieves as well as analyse the impact this crime has at a community level, as well as economically and politically for those involved and for the people of Madagascar.

Pupils will also look into fraudsters who try to pass synthetic vanillin as natural vanilla extract, as well as some of the chemistry techniques used to distinguish synthetic vs natural.

## Lesson 5 – Sustainability of Vanilla

During this lesson, many subjects are all viewed under one learning banner.

The aim for this lesson is to bring together all the contributing factors discussed in previous lessons to answer the essay question:

'How Sustainable is Vanilla?'

Pupils will research and discuss sub-topics such as:

- The orchid family of plants.
- Nature of hand pollination.
- Growing conditions.
- Environmental issues.
- Countries of growth.
- The impacts of natural disasters.
- Socio-economic impacts.
- Political issues.

Help sheet will be provided but independent research is also expected.

## Lesson 6 – Vanilla in the Kitchen

As the final lesson in this interdisciplinary learning scheme, pupils will have the chance to go to Home Economics and try their hands at making some vanilla cupcakes.

Furthermore, pupils will discover how vanilla extract is produced on an industrial scale to meet the demands of the world as well as look into the multiple forms of vanilla which are found in supermarkets today. Pupils will also look at Fairtrade vanilla and the implications involved.



## Lesson 7 – Outdoor Learning

In the final lesson in this IDL unit, pupils will have the chance to experience some outdoor learning in action by going to a local botanic garden. During this lesson, pupils will be given some worksheets to tackle in groups with questions in which they are expected to find the answers by reading the information provided on the plaques around the gardens. The questions will be related around sustainability and the orchid family as much as possible, whilst also allowing for some data collection and analysis to take place.



## Aims and Wider Implications

The overall aim for this unit of work is to engage pupils with issues of sustainability – something which must be implemented across the curriculum. It is also to make pupils aware of the complex biological, geographical, chemical, political and socio-economic issues which are involved with the growth of vanilla.

This unit of work would have wider implication across young people in Scotland, in which they would think more cautiously about where their food has come from, the Fairtrade issues involved with Vanilla farmers (and thus all 3<sup>rd</sup> world farmers), as well as appreciate the complex journey one simple plant must take to reach Scotland.

## Experiences and Outcomes

Health and Wellbeing (HWB): 3-01a, 3-04a, 3-09a, 3-11a, 3-17a.

Literacy (LIT): 3-02a, 3-04a, 3-05a, 3-06a, 3-09a, 3-15a, 3-21a, 3-28a

Numeracy (MNU): 3-01a, 3-03a, 3-03b, 3-20a.

Science (SCN): 3-02a, 3-03a, 3-15b, 3-20b.

Social (SOC): 3-01a, 3-05a, 3-10a, 3-11a, 3-14a, 3-15a, 3-18a.



## References

<https://naturalpartnersproject.org/>

<https://education.gov.scot/>

<https://sustainablefoodlab.org/initiatives/sustainable-vanilla-initiative/>

[https://www.bbc.co.uk/news/resources/ids-sh/madagascar\\_vanilla](https://www.bbc.co.uk/news/resources/ids-sh/madagascar_vanilla)