

PLANTS IN OUR LIVES

THIS TOPIC IS IN EIGHT PARTS

Part 1 **EVERYTHING DEPENDS ON PLANTS**

A brief introduction to how our lives are intricately dependent on plants. Students identify plants used in activities such as eating, drinking or building and keeping healthy. Students investigate how plant use has changed over time within their community.

Part 2 **FROM COFFEE BEANS TO BLUE JEANS... PLANTS AND TRADE**

Students explore the economic uses of plants and consider the 'supply chain' for plant products. The concept of sustainable development is introduced and students use the Development Compass to ask questions and explore issues relating to the natural environment, economic and society.

Part 3 **LOCAL PLANTS**

The main useful plants grown locally are identified and their growing seasons, harvest times and uses are described. Students find out about the general good growing conditions in their local area. Local myths and folklore relating to plants are collected and examined.

Part 4 **PROTECTING PLANTS**

A brief introduction to plant biodiversity. Students investigate plant protection laws in their country and explore how the laws were made, how effective they are and how they are perceived by the local community. Students consider how pressures in their community might affect its plants and biodiversity?

Part 5 **ACTIONS FOR PLANTS**

Students choose an area of land in their school or local community and design a real or imaginary 'garden'. The garden design may include plants for survival throughout the year (e.g. food, building materials, medicines etc.), plants and habitats that are under threat in the local area, or plants that are important in the history and folklore of the local area.

Part 6 **EXCHANGING INFORMATION**

Providing information and results from experiments in the exchange form.

Part 7 **COMPARING INFORMATION FROM OTHER COUNTRIES**

Comparisons and discussions of responses from different countries.

Part 8 **INFORMATION SECTION**

In Part 1 students explore how our lives depend on plants and how their use has changed over time.

In Part 2 students look at the economic use of plants and explore the concepts of sustainable development and fair trade.

In Part 3 students learn about local plants, their growing conditions and associated folklore.

In Part 4 students investigate biodiversity and plant protection laws in their local environment.

In Part 5 students choose an area of land and create real or imaginary 'garden design'.

In Parts 6 and 7 Students exchange their findings with students in other countries. They explore which countries make the most of local plants and what are the longest distances traveled by food. Then they discuss similarities and differences in the way habitats and plant species are being protected in different countries, and which action plans offer the most practical solutions to the issues.

The issues

This topic explores the vital and extensive role that plants play in our lives. Students investigate how plant use has changed over time in their local community and explore the cultivated and non-cultivated plants in their region today. The concepts of a global supply chain, sustainable development and fair trade are introduced, as students consider the social, economic and environmental issues raised by global trade. Students investigate the laws that protect their local plant biodiversity. The final activity draws the concepts together as students design a real, or imaginary garden, choosing plants that will grow in their local conditions and that would be important for human survival, environmental and cultural significance.

The Aims of this topic are to:

- Explore and understand the following concepts:
We all depend on plants in our every-day lives, whoever we are and wherever we live. Our use of plants links us to people and places all over the world.
- Understand the environmental, social and economic significance of plants grown in the local region.
- Introduce the concept of sustainable development and explore positive ways of looking after plants, people and environments.

Age range

In most countries this topic suitable for students aged 12 to 16 years old.

Curriculum links

This topic will fit into the biology curriculum. It links closely with Design and Technology geography, global citizenship and sustainable development. It provides an excellent opportunity for cross-curricular study and for addressing the global dimension and sustainable development within science.

PART 1 EVERYTHING DEPENDS ON PLANTS

Aims:

- To explore how we depend on plants in our every day lives and to consider how plants affect the quality of our environment and lives.
- To explore how use and cultural significance of plants have changed over time in the local area.
- To investigate how our use of plants links us to people and places around the world.

As a starter activity to this topic, figure 1 may be used to prompt discussion about how our lives are intricately dependent on plants. If possible photocopy larger versions of the illustration, or project it onto a whiteboard.

Additional Resources: See <http://www.edenproject.com> for plant photographs. A list of the main countries where these are grown can be found in the Information Section of the Students Notes.

If you are able to download and print the plant photographs, you could hand out a range of manufactured products that you know contain plants. In groups, ask your students to try and link the products with the correct plants. Teachers should select a number of items that are relevant to the students.

Ideas of plant to product links are:

Cotton	Cotton shirt, jeans, nappies, toothpaste
Coffee	Coffee
Tea	Tea bags, loose tea
Cocoa	Chocolate
Banana	Banana ice-cream, milkshake, beer
Sugar	Fizzy drinks, confectionary and cakes...
Maize	Popcorn, maize meal.
Wheat	Bread, biscuits, cake
Oil Palm	Soap, candles, margarine, ice cream and many packaged food items. The highest oil producing tree.
Citrus	Cleaning products, air freshener,
Rubber	Bicycle/car tyres, classroom eraser, rubber boots, shoe soles, fan belts, condoms.
Rice	Cereals, rice flour, rice, baby food.

Discuss the results of the activity. Are students surprised at the array of 'hidden' plants in their lives? How else do students use plants every day?

In **activity 1**, students create a table outlining their activities through a typical day in their lives, and explore their personal use of plants. In addition to plant products, they should be encouraged to think about how plants might affect their quality of life and quality of their local environment. Students work as a group to summarise their findings into a poster. They could choose to dramatise this by creating song, poems, raps or performance.

Quote from a teacher in India – “Students become aware about the use of plants in their daily life and also how they can change their habits to control the misuse of these plants.”

In **activity 3**, students interview older members of their community to investigate how plant use has changed over time. In groups, students should be encouraged to prepare and agree questions before conducting surveys or interviews.

Quote from a teacher in India – “Students became aware about the importance of plants in their close vicinity. They also became aware of their property and their use in religious functions and their medicinal properties.”

Finally, students identify a local ‘multiple use’ plant and are challenged to make at least 4 different products out of it. The challenge can be made harder, and more fun, if students are not allowed to use any non-plant ingredients in making their product (except water) – for example twigs can be used to pin sides together instead of staples or tape.

Quote from a teacher in India – “Activity had lots of fun involved. Wonderful activity for students and can be carried out in all standards by changing the level of difficulty.”

PART 2 FROM COFFEE BEANS TO BLUE JEANS...PLANTS AND TRADE

Aims:

- To consider economic uses of plants and how the supply chain for products may include different groups of people and span across the globe.
- To explore the concept of sustainable development and positive ways of looking after plants, people and environments.
- To introduce the Development Compass as a tool.

In the introductory paragraph, students are introduced to economic uses of plants and the concept of a 'supply chain'. *Activity 5* asks students to choose one product to research in depth and guidance questions have been given. They are invited to present their findings as a cartoon strip to demonstrate the process and supply chain of your product. There are many websites available that can help with this research (see sources of information). Excellent sources are:

- Dubble Agents. The Day Chocolate Company Primary and Secondary resources about chocolate and fair trade. www.dubble.co.uk
- Oxfam. Fair Trade and specific information about coffee. http://www.oxfam.org.uk/what_we_do/fairtrade/index.htm.
- Papapaa, Divine Chocolate. Primary and Secondary resources about chocolate and fair trade. www.divinechocolate.com/edu

Quote from a teacher in India – "Students found it easy to relate the making of any product to that of environmental concerns."

Before moving on to **activity 6** read and discuss the information boxes that explain the concepts of Sustainable Development and Fair Trade. Have students found any examples of issues that they think are relevant to their product?

Students use the Development Compass as a tool to explore the issues relating to the production of their product.

PART 3 LOCAL PLANTS

Aims:

- To learn about cultivated plants growing in the local area.
- To understand the environmental, social and economic significance of plants grown in the local region.

Read the text boxes and information before asking students to explore the main useful plants grown locally and to find out about growing seasons, harvest times and uses. In rural areas, observational surveys can be made in the local area and if possible, interviews with gardeners and farmers. In urban areas, students may investigate local gardens, allotments, and city farms; alternatively, farmers markets or shops selling local produce may be a useful resource.

Some students may not recognise fodder crops as being 'useful plants' (e.g. grass, root crops). This could encourage useful discussion about food chains.

Students find out about and describe the general good growing conditions in their local area.

Teachers could choose to conduct a classroom demonstration experiment to investigate how light and temperature can affect the growth of plants.

Activity 9 provides an interesting homework activity, with students finding out about local myths and folklore. To find out whether these myths and folklore have any scientific basis, students could use the internet, contact local botanical gardens or plant research centres.

Quotes from teachers in India – "Students enjoyed this activity learning about mythological stories, importance of traditional values, the religion and their customs etc."

"Students became aware of the importance of plants in their close vicinity. They also became aware of their property and their use in religious functions or their medicinal properties."

PART 4 PROTECTING PLANTS

Aims:

- To introduce the concept of plant biodiversity.
- To consider human pressure and threats to biodiversity and explore laws that protect biodiversity (locally, nationally and globally).

This part of the topic provides a good opportunity for discussion and debate, either as small groups or as a whole class. First read the information boxes and study the illustrations. Students then discuss the main pressures on plant biodiversity in their region. They investigate plant protection laws in their country and explore how the laws were made, how effective they are and how they are perceived by the local community. Students consider how pressures in their community might affect its plants and biodiversity.

Teachers could choose to set up a class debate setting a scenario that puts pressure on a local area of natural beauty, for example a proposal for a new development (such as a new tourist hotel). State that a community meeting will be called to discuss this proposal. The class should be divided into groups of local community members (e.g. taxi drivers, local wildlife conservation group, the tourist board, local unemployed people, young families). Give the students some time for preparation. The debate should consider the views and opinions of each group before making a final decision on whether the development should be allowed to go ahead. A debate could encourage students to think about the balance between social, economic and environmental factors when making a decision.

PART 5 ACTIONS FOR PLANTS

Aim:

- To combine the themes of this topic into a creative, practical task.

Students choose an area of land in their school or local community and design a real or imaginary 'garden'. The garden design may include plants for survival throughout the year (e.g. food, building materials, medicines etc.), plants and habitats that are under threat in the local area, or plants that are important in the history and folklore of the local area.

A plan of this design can be submitted with the Exchange Form.

PART 6 EXCHANGING INFORMATION

Students need a [copy of the Exchange Form](#) which they can download for themselves or you can provide on paper or in an electronic format.

The Exchange Form for this topic has been designed so that students can complete each activity on the form as they work through the topic. It is suggested that they first work on their own forms individually or in small groups. They can then agree on amalgamating ideas so that one Exchange Form is completed for each class or group.

Students can complete the Exchange Form as a paper copy or on-screen, and then send it to other schools as an email attachment, by fax or post.

Establishing communication links with other schools before starting detailed work on the topic helps with more immediate feedback. Some schools enjoy exchanging ideas and progress reports by email while they are working on the topic.

PART 7 COMPARING INFORMATION WITH OTHER COUNTRIES

When you have received the Exchange Forms from other schools, copy these and your own Exchange Forms for comparison and analysis. Compare and discuss the responses with the help of some of the questions in the Students notes.

FURTHER ACTIVITIES

- Students could work individually, or a part of a group to explore one of the following topics further:
 - plants and medicine
 - plants and fashion
 - plants and construction.

Students can create presentations for the class on how plants are used in this industry. Students may be set a challenge for the presentation style they must use such as a TV documentary, radio broadcast, drama, comedy.

- Students investigate their local situation to find if traditional products and methods are still known and used.

**Quote from Roshan Kokane, VIIth M.L.R.T.Gala
Pioneer English School, India**

"Students made paper bags for sale in the market to replace the use of polythene bags."

SOURCES OF INFORMATION

The American Society of Plant Physiologists. An international organisation for people who are interested in plants (including students, teachers, plant biologists, horticulturalists, agriculturalists). They have information, publications and brochures on plant science.
www.aspp.org (email askapp@aspp.org)

Dubble Agents. The Day Chocolate Company Primary and Secondary resources about chocolate and fair trade.
www.dubble.co.uk

The Eden Project. The 'Living Theatre of People and Plants' explores the relationships between people and plants, and how communities and environments are linked across the globe.
www.edenproject.com

The Henry Doubleday Research Association is a UK organic association, with a schools education section and an international research department.
www.hdra.org.uk

Oxfam's Cool Planet for teachers.

Includes information about Fair Trade and other educational resources and publications. Also look at the Cotton Chain.
www.oxfam.org.uk

Papapaa, Divine Chocolate. Primary and Secondary resources about chocolate and fair trade.
www.divinechocolate.com/edu

Rescue Mission Planet Earth. A children's edition of Agenda 21. Peace Child International, 2002. Written, illustrated and edited by young people of the world. ISBN 2468 109 7531
www.peacechild.org.uk

The Royal Botanical Gardens, Kew. The role of education at the Royal Botanic Gardens, Kew is to increase knowledge and understanding of the value and vital importance of plants. Their website includes teaching and learning resources.
www.rbgkew.org.uk/education

The Royal Horticultural Society, UK's leading horticultural charity.
www.rhs.org.uk

SAPS (Science and Plants for Schools) - educational resources to promote exciting teaching of plant science and molecular biology in schools.
www.saps.org.uk

World Learning, BBC World Service, Bush House, Strand, London WC2B 4PH
World.learning@bbc.co.uk

World Wildlife Fund. The conservation organisation with education fact sheets, environmental debates and publications.
www.wwf.org

ACKNOWLEDGEMENTS

■ References

- **The American Society of Plant Physiologists** www.aspp.org
For inspiration for some of the plant facts boxes in the Pupil Pages.
- **Biodiversity**, An introduction by Gaston and Spicer, 1998.
- **The Development Education Centre**, Birmingham. www.tidec.org
The Development Compass 1995.
- **The Eden Project**, Cornwall, UK. www.edenproject.com
For inspiration, plant facts and photographs and Anna Murphy's poem "My grandmother said..."
- **The Food and Agriculture Organisation of the United Nations.**
www.fao.org
Statistical information table in the Pupils' notes information section.
- **Geneflow Junior**, by IPGRI (International Plant Genetic Resources Institute) 2001.

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Gardens for Life

This is a resource of 'Gardens for Life' which is funded by the UK Department for International Development, Creative Partnerships, Syngenta Foundation, DfES, Cisco Foundation and Future Harvest.

'Gardens for Life' is managed by the Eden Project in collaboration with Science Across the World, Association for Science Education; Centre for Development Education, Pune; Creative Partnerships, Cornwall; Global Dimension Trust; Kenya Youth Education and Community Development Programme; Royal Botanic Gardens, Kew; Royal Horticultural Society.

The views expressed are not necessarily those of the donors or partners.