



The Crown Estate Sustainability Initiative

Forestry lesson

Teacher guide

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OVERVIEW

Thank you for downloading these resources to use with your students. By equipping your students with the knowledge and skills to understand biodiversity, nature recovery, and sustainability, you are empowering them with the tools to take positive action in their own communities, now and in their futures.

This lesson links to the Woodland Way section in the Conservation Quest at Windsor Great Park.

Pupils will:

- Review their understanding of why trees are important.
- Understand the role of a forestry worker.
- Create a poster on the huge amount of biodiversity supported by an oak tree.

Throughout the lesson, you will find background information on each topic. **There is also a glossary of key terms at the end.**

To find out more about how to use these resources, watch our teacher video on the website.



OUTCOMES

Pupils will know and understand the importance of trees within an ecosystem and create a picture of the biodiversity supported by an oak tree.



SKILLS

Teamwork, communication



VOCATIONS

Forest worker



RESOURCES

- Presentation slides
- Oak tree information worksheet
- Oak tree poster



TIMINGS

We have included activities for your class that develop themes from the Minecraft worlds. They are sequenced to build on each other, but we encourage you to pick and choose the ones that will work best for your class and the time available. We have included approximate timings as a guide, but you may wish to spend longer on certain sections.

CONTENTS	TIME	PAGE
Introduction and gameplay	32 minutes	2
Starter activity - Why are trees important?	5 minutes	3
Careers activity - Forestry worker	10 minutes	4-5
Main activity - Creating oak tree posters	20 minutes	5-6
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Stats quoted in these lesson packs refer to the UK.



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Introduction

 (2 minutes)

- Introduce pupils to the Conservation Quest at Windsor Great Park that they are about to explore. Explain that this world will highlight biodiversity, sustainability and ecology and how our decisions can impact this in the long term.
- In the Woodland Way, students must help Miss Bonnet protect the woodland saplings. When the deer enter the area, students need to fence as many saplings as possible before the deer get them and time runs out.
- The player must then find their way around the Woodland Maze to complete a Biodiversity Inventory.

BACKGROUND INFORMATION

Forests vs woodlands

You might notice that both terms pop up in this lesson. These do have slightly different meanings - 'woodlands' are more natural for people, landscapes and wildlife while 'forests' are more productive for growing sustainable timber. But don't worry about explaining the difference to students - it's fine for them to use either or both interchangeably!

Minecraft gameplay

 (30 minutes)

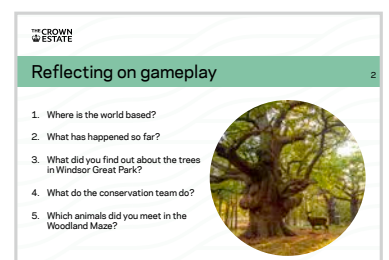
- When they launch the world, students will enter the lobby and meet Dotty the Dragonfly, their helpful guide. To take part in each challenge, students can visit the Windsor School from the estate office. In the school, there are four classrooms - and from each one, students can teleport instantly to a different challenge.
- For the purpose of this lesson, you may wish to direct students to teleport directly to the Woodland Way but they can come back and explore the world in their own time too.
- Consider sharing the reflection questions below with your students before they explore the world, so that they can keep them in mind throughout and ahead of class discussion.



Reflecting on gameplay (Slide 2)

 (5 minutes)

- Facilitate a class discussion about the world, encouraging pupils to reflect on new knowledge gained, anything they found challenging, easy or interesting.
- To steer discussion, you could ask them:
 - Where is the world based?
 - What has happened so far?
 - What did you find out about the trees in Windsor Great Park?
 - What do the conservation team do?





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Starter activity – Why are trees important? (Slide 3)

 (5 minutes)

This starter activity will get your students thinking about why trees are important and why we need to protect them.

- Share the slide with the list of things trees do for us.
- Put students in pairs and assign them the following options: 'producing oxygen', 'providing habitat', and 'materials'.
- Ask your students to come up with some reasons why these things are important. You can use the following prompts if students need help, and record their suggestions using flipchart paper.
 - Which gas do trees give off that we breathe in? (expected answer – oxygen)
 - Which gas do trees take in that we breathe out? (carbon dioxide)
 - Why is the fact that trees take in carbon dioxide important? (carbon dioxide released by human activity is causing climate change)



BACKGROUND INFORMATION

The importance of trees

- **Producing oxygen:** Trees play a crucial role in producing oxygen through the process of photosynthesis. Trees absorb carbon dioxide and other pollutants and release oxygen back into the atmosphere, helping to maintain the balance of gases in the air we breathe.
- **Providing habitat:** Trees provide habitat and food for a wide range of wildlife, from insects to mammals, helping to support biodiversity and ecosystem health.
- **Reducing air pollution:** Trees can help to reduce air pollution by trapping and absorbing pollutants, such as nitrogen oxides, sulphur dioxide, and particulate matter, in their leaves and bark.
- **Preventing soil erosion:** The root systems of trees help to anchor soil in place and prevent erosion, which can help to maintain soil health and prevent landslides.
- **Mitigating climate change:** Trees play a critical role in mitigating climate change by sequestering carbon from the atmosphere and storing it in their biomass and in the soil.
- **Providing shade:** Trees can provide shade and cooling, reducing the amount of energy needed for air conditioning in buildings and helping to mitigate the urban heat island effect.
- **Improving mental health:** Exposure to trees and green spaces has been shown to improve mental health and well-being, reducing stress and promoting relaxation.
- **Materials:** Timber is valued for its strength, durability, and beauty and is used in a wide range of applications, from objects students will recognise in the classroom (in pencils, desks and floors) to massive projects (like shipbuilding and buildings).
- **Returning nutrients to the ecosystem:** dead trees play a vital role in the ecosystem too. Old and dead trees are particularly valuable for lots of wildlife, providing a habitat and returning important nutrients.



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Starter activity - Why are trees important? (Slide 3) Cont'd

 (5 minutes)

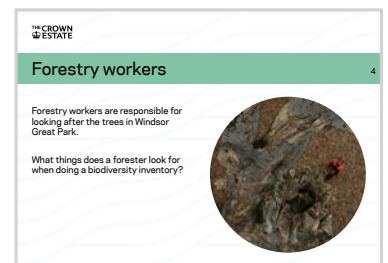
- How can the wood from trees be useful? (timber is used in building and for furniture)?
- Which other living organisms might live in a tree? (birds, insects, mammals, other plants)?
- Tell them about the other options that the pairs did not cover this time.

Careers activity - Forestry worker (Slides 4-5)

 (10 minutes)

In this activity, students will learn about the role of forestry workers and why it's a crucial role for the health of trees.

- Remind students that they will have met Linden, the Forester, in the world. Can they remember the big job Linden does every year to help look after the wise old oaks?
- Put students in pairs and ask them to make a list of things a biodiversity inventory might look for. Think back to the starter activity and what trees do for us.



BACKGROUND INFORMATION

Working in Forestry

Working in forestry involves a range of tasks related to the management and conservation of forested areas. Here are some of the tasks that might be involved in working in forestry:

Planning and managing forested areas: Foresters may work to manage and maintain forests, which involves assessing the health and composition of the forest, developing management plans, and implementing practices such as planting, thinning, and harvesting.

Monitoring and assessing forest health: Foresters may monitor and assess forest health, looking for signs of disease or pests, and implementing management strategies to mitigate damage.

Conducting research: Foresters may conduct research related to forest ecology, management practices, and the impacts of climate change on forested ecosystems.

Collaborating with stakeholders: Foresters may work with a range of stakeholders, including government agencies, industry groups, and local communities, to develop and implement sustainable forest management practices.

Conducting outreach and education: Foresters may conduct outreach and education activities to raise awareness of the importance of sustainable forestry practices and the role of forests in ecosystem health and climate change mitigation.

Administering forest certification programs: Foresters may be involved in administering forest certification programs, which provide assurance that forest management practices meet certain environmental and social standards.



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Careers Activity - Forestry worker (Slides 4-5) Cont'd

(10 minutes)

- Next, ask them what could happen if we didn't have foresters looking after trees. Use the following prompts if needed:

Questions	Answers
Can you think of a way trees get ill or diseased?	They can get old or have infections such a fungus or virus.
Why might a forestry worker decide when trees need to be planted or cut down?	Forestry workers monitor if woodland are supporting wildlife properly and the health of woodland. They may also cut down trees to give more space and light so remaining trees can grow larger and stronger.
Top tip: some pupils might say when trees are old or dead. In fact old and dead trees are particularly valuable for lots of wildlife, providing a habitat and returning important nutrients.	
Do we know everything there is to know about trees?	No, there is lots of scientific research on forests going on.
Fun fact! Trees talking to each other through root systems called mycorrhizal networks is a relatively new discovery. A 'mother tree' can even recognise other trees that grew from her seeds.	
Are the number of trees increasing or decreasing in the UK?	Good news! They are increasing because we need to plant woodland to help reduce climate change. But we need to keep it up!

What would happen if we didn't have foresters?

- What would happen if a tree got ill or diseased?
- What happens if we have too many trees?
- Do we know everything there is to know about trees?
- Are the number of trees increasing or decreasing in the UK?
- Are trees helping other animals?

Fun Fact!
Trees can talk to each other through their root systems. And a 'mother tree' can recognise other trees that grew from her seeds.

Main Activity - Creating oak tree posters (Slide 6-7)

(20 minutes)

By working together, students will better understand how important trees are for a variety of organisms.

- Split the class into pairs and hand each pair an oak tree information worksheet and an oak tree poster.
- Students should use the information worksheet for research and then label the plant and animals an oak tree helps on their poster.
- Students should think about the following:
 - How is the tree important to that plant or animal?
 - What can we do to protect the plants and animals more?

Oak tree

- Why is an oak tree important for high biodiversity (lots of different plants and animals)?
- Create an informative poster using the oak tree information worksheet.



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Main Activity - Creating oak tree posters (Slide 6-7) Cont'd

 (20 minutes)

Now students will practise thinking like a forester and responding to a challenge.

- Stick up all the posters along one wall of the classroom to create a forest.
- Tell the pairs to go and explore the forest they have created and see the biodiversity that the trees support.
- Set them the following challenge:
It has been reported that it's been a big year for deer births.
Think about:
 - How might this affect the forest?
 - What could you do to protect the forest?
 - How can we ensure everyone benefits including the deer?

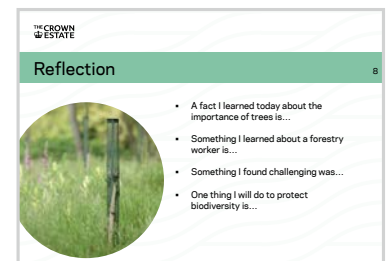


Reflection (Slide 8)

 (5 minutes)

Before finishing the lesson, encourage your students to reflect on their learning.

- Ask your students to use the following sentence starters to reflect:
 - A fact I learned today about the importance of trees is...
 - Something I learned about a forestry worker is...
 - Something I found challenging was...
 - One thing I will do to protect biodiversity is...
- Depending on your class, you may wish to do this one by one or invite volunteers to take turns.



Optional extension activity (Slide 9)

 (15 minutes)

There is so much more of the world to explore so if you have some more time, we'd encourage you to let the students engage in some free play in the world.

Create art using nature

Use this extension activity if you have more time or have students who complete the main activity early.

- To bring real-world context to the importance of trees as supporters of biodiversity, take your pupils outside to see some trees.
- Do an ecology survey and make a list of all the living organism they can see around the tree.
- Ask them to draw their survey - they can collect fallen leaves to create a collage of the tree and draw the animals they see around it.
- Are there differences in the animals they see depending on the type of tree?



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Real world action

Building student agency with real world action

By taking part in this lesson, students have developed their:

- knowledge of a key sustainability topic
- understanding of why it is important
- practical toolkit, and articulation, of their own green skills

These are the ingredients that enhance students' agency and power to take real world action that builds biodiversity and supports nature recovery.

There are a number of ways you can support them to take their learning forward and continue this process beyond the classroom. We have a few starter ideas for you below:

- Take students on a field trip to a local forest, woodland or park to give them an up-close look at trees.
- Invite a local forestry expert or arborist to speak to your class about the importance of trees.
- Engage students in hands-on activities such as planting trees or measuring their growth.
- Conduct science experiments related to trees and forestry, such as measuring the amount of carbon dioxide absorbed by trees or investigating the effects of deforestation.
- There are activities to get students engaging with forestry and trees on the following websites:
 - The Woodland Trust (<https://www.woodlandtrust.org.uk/support-us/act/your-school/resources/>)
 - Chartered Foresters (<https://www.charteredforesters.org/what-we-do/education-careers>)
 - Forestry England (<https://www.forestryengland.uk/learning>)

Lesson 5 in this series - Taking action toolkit

For more ideas on safe and manageable ways to harness the enthusiasm your students may have for this or other biodiversity topics, we have created a **Taking Action Toolkit**.

It features accessible principles to empower students to identify key issues that they care about, affecting their school/local community, and begin creating meaningful solutions for nature recovery with their peers.





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Glossary

- **Lichen:** A composite organism consisting of a fungus and an alga or cyanobacterium living in a symbiotic relationship.
- **Fungi:** A diverse group of organisms that includes yeasts, moulds, and mushrooms, characterised by the absence of chlorophyll and the ability to break down organic matter.
- **Larvae:** The immature form of an insect or other invertebrate, typically undergoing metamorphosis before becoming an adult.
- **Photosynthesis:** The process by which green plants and some other organisms convert light energy into chemical energy in the form of glucose, using carbon dioxide and water.
- **Carbon dioxide:** A colourless, odourless gas that is a natural part of the Earth's atmosphere, produced by the burning of fossil fuels and other processes.
- **Understory:** The layer of vegetation beneath the forest canopy, including shrubs, small trees, and ground cover.

