



John Muir, Earth - Planet, Universe **learning activities**

Ideas and activities for using the graphic novel *John Muir, Earth – Planet, Universe*

Age: 9-14

CFE Second and Third levels

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About *John Muir, Earth – Planet, Universe*

[John Muir, Earth – Planet, Universe](#) is a graphic novel based on the life John Muir developed in partnership with John Muir Trust, Creative Scotland, Education Scotland and Scottish Natural Heritage and in consultation with teachers and school pupils. Use of this graphic novel is designed to develop pupil's learning across the curriculum as well as a greater understanding of key [Learning for sustainability themes](#).

The graphic novel is accessible on [the Scottish Book Trust website](#) for free, and can be downloaded as a PDF. When using the graphic novel with your class, we highly

recommend reading it aloud, assigning different parts to the pupils in your class.

About this resource

This resource has been designed to support classroom use of the John Muir graphic novel. As with all our resources, we **highly recommend reading the text before using it with a class or group.**

We have split the learning activities in this resource into 13 different sections, each of which have different focuses and learning outcomes. You can use the table below to select which section, or activities, you'd like to use or adapt for your class:

Section	Description	Curricular areas
<u>Section 1: Historical activists</u>	Pupils will learn about historical and contemporary environmental activists and how they have caused change	Literacy and English Sciences Social studies Technology
<u>Section 2: Statues and trail names</u>	Pupils will learn about statues and trails dedicated to historical figures, including investigating their local area	Literacy and English Social studies
<u>Section 3: Explore birds</u>	Pupils will explore the different types of birds in your local area	Sciences Social studies
<u>Section 4: Now and then</u>	Pupils will explore the outdoor experiences that they have day-to-day, including thinking about when they were younger	Expressive arts Literacy and English Technology
<u>Section 5: Then and now</u>	Pupils will learn about the Victorian era, comparing it to their life today	Literacy and English Social studies
<u>Section 6: Invent design and make</u>	Pupils will learn about Scottish inventors and consider how technology and engineering can support the environment	Sciences Social studies Technology
<u>Section 7: Wild beauty</u>	Pupils will explore natural artists and create their own artworks and structures inspired by their local area	Expressive arts Health and wellbeing Technology

Section	Description	Curricular areas
Section 8: Indigenous history	Pupils will learn about indigenous people in America, including their culture and how they have been marginalised	Literacy and English Social studies
Section 9: From here to there	Pupils will learn about the John Muir Way and create their own trail by investigating their local area	Health and wellbeing Sciences Social studies
Section 10: Nature detectives	Pupils will learn about nature in their local area, focusing on trees and biodiversity	Literacy and English Sciences
Section 11: Glaciers	Pupils will learn about Scotland's changing landscape including the impact of glaciers on Scotland's natural features	Expressive arts Literacy and English Sciences Social studies Technology
Section 12: Discover national parks	Pupils will learn about the role of national parks in Scotland	Literacy and English Social studies
Section 13: The lungs of the world	Pupils will learn about the importance of plants including their production of oxygen	Expressive arts Sciences Social studies

Updates

This resource was updated in 2022 to reflect and contextualise John Muir's work in relation to how he treated and spoke about indigenous Americans and people of colour. A further update was completed in 2025 to ensure all information was up to date. You can find more information this review [on our website](#).

Access

To listen to the graphic novel using the voice feature, open the PDF in [Adobe Reader](#). Go to the menu bar and click on View > Read Out Loud > Activate Read Out Loud. The audio voice you will hear is dependent on the computer or device that you are using to read the book. To read the text with, for example, a Scottish voice, you need voices on your computer. Schools, pupils and anyone else in the Scottish public sector can download the voices free of charge, for Mac and PC, from [The](#)

Scottish Voice.

If you are using Adobe XI Read Out Loud you can change the voice by going to Edit > Preferences > Reading.

For the iPad, [CALL Scotland](#) suggests buying [ClaroPDF](#) because it has good text-to-speech tools (including Scottish voices, which come at an extra cost). For Android, CALL Scotland suggests buying the [ezPDF Reader](#) with the [CereProc](#) Scottish voices.

Section 1: Historical activists

Activity 1: Historical activists (30 minutes)

SOC 2-02a, SOC 2-03a, SOC 2-06a, SCN 2-20a, SCN 2-20b, TCH 2-02a,
SOC 3-02a, SOC 3-06a, SCN 3-20a, TCH 3-02a

John Muir was an activist and advocate for the protection of nature throughout his life. But he wasn't the only individual campaigning for the protection of nature during 19th century and early 20th century. Other activists and naturalists working at the same time as Muir include:

- [Gavin Maxwell](#)
- [John Edmonstone](#)
- [Mary Rose Hill Burton](#)

Split your class into groups and ask them to research one of these historical figures. Ask the groups to feedback to the class what they've learned.

Activity 2: Contemporary activists (30 minutes)

SOC 2-03a, SOC 2-08a, SCN 2-20b, SOC 3-06a, SOC 3-08a, SCN 3-20b,
SOC 2-08a, SCN 2-20b, LIT 2-09a, LIT 2-15a, SOC 3-08a, SCN 3-20b, LIT 3-09a,
LIT 3-15a

Ask your class if they're familiar with any contemporary activists – e.g. Greta

Thunberg or Dara McNulty. Put them into groups and ask them to discuss what climate activists do and what their key messages are. Allow the groups time to feed back to the class.

Using each group's answers, you could talk about how there's lots of different ways to be a climate activist. For example, you might focus on recycling, renewable energy, fast fashion or protecting endangered animals. Being a climate activist may also be different depending on when and where you live.

Create a display of all the incredible individuals working hard to protect our planet. End on a class discussion of what pupils have learnt from these individuals, and what they can do themselves to protect the planet.

Section 2: Statues and trail names

There are memorials and statues to John Muir across Scotland and North America, as well as [streets, parks, trails and schools all named after Muir](#). Plants, animals, and even a small planet are also named in his honour. However, some of the views expressed by John Muir reflect the historically dominant white supremacy ideologies prevalent in Europe/Western World at that time, and we now recognise such views as deeply harmful and racist.

This learning activity will encourage pupils to consider who we commemorate and why. It will also encourage them to think critically about how we have conversations about individuals from history who we have memorialised.

Activity 1: Local statues (1 hour+)

LIT 2-07a, SOC 2-02a, SOC 2-10a, SOC 2-15a, SOC 2-16b, SOC 3-15a

Share one of the following videos with your class:

- [David Olusoga's video framing the issues around monuments](#) (3 minutes 11 seconds)
- [BBC Social's video about street names in Glasgow](#) (1 minute 47 seconds)

- [BBC Newsround video about how slavery shaped some of the UK's biggest cities](#) (5 minutes 5 seconds)

After sharing one or more of these videos with pupils, ask them to research street names and statues in your local area and ask the question: who is remembered and why? Are there any streets or parks named after John Muir? Pupils could physically visit these sites and locations, taking photos or creating a video similar to that made for BBC Social, or they could research online.

Questions for pupils to consider when looking at streets or monuments are:

- Does this person have a link to their local area? Is this why they were memorialised?
- How well known are they today?
- Was this individual well known in their time? What for?
- Is this the kind of person we would choose to celebrate today?

Section 3: Explore birds

Read *The Wild Boy of Dunbar*, up to page 23. In this activity, you will identify birdlife today and compare your findings to the birdlife John Muir would have experienced when he lived in Dunbar between 1838 and 1849.

Activity 1: Birdwatch (30 minutes)

SCN 2-01a, SOC 2-08a, SCN 3-01a, SOC 3-08a

Begin by looking at the birds that John Muir would have seen in his childhood. Ask your pupils to complete the Explore Birds worksheet which you can download as part of our [John Muir printable resources](#). Discuss the issues are impacting bird population in the UK today including farming practices. This [RSPB article](#) will help support the discussion.

Activity 1: Birdwatching walk (30-50 minutes)

SCN 2-01a, SOC 2-08a, SCN 3-01a, SOC 3-08a

Go on a walk and record how many different birds you can see from the playground or in a local outdoor space – can your pupils identify what they see? If it's spring, take part in the [RSPB Schools' Birdwatch](#), or use the resources to do your own school survey! You could even [learn how to make a bird cake](#) to attract more birds to your playground.

Section 4: Now and then

Activity 1: Your outdoor spaces (50 minutes)

ENG 2-30a, LIT 2-20a, LIT 2-28a, EXA 2-05a, LIT 3-28a, ENG 3-30a, EXA 3-03a

Read pages 24-54 of the graphic novel to discover how John Muir spent his time in Scotland and what his first years in America were like.

Ask your pupils to find examples of what John Muir did as a young boy during his time in Scotland, and compare his experiences to their own. Ask pupils to make notes and drawings in their journals to show what they did when they were the same age, for example:

- Where did they play as a 7-year-old?
- What was their playground like?
- Did they have regular outdoor learning?
- Where were there favourite outdoor places to play outside of school?

There's lots of ways to journal this - they could draw a map of their favourite places and label them or do a comic strip to show where they played.

Next, they should explore their outdoor experiences now.

- Where do they play now – at school and after school?
- Is it the same? If not, why not?

- How do they find special places to explore?

Activity 2: Wild playground (50 minutes)

EXA 2-06a, TCH 2-11a, EXA 3-06a, TCH 3-11a

Once they've finished their journal, challenge learners to design their dream school playground. Ask them to consider how they would encourage wildlife to the area and include exciting areas to explore.

Section 5: Then and now

The aim of this activity is to compare life during the Victorian era with life today.

Read the first part of the *Genius John in a Brave New World* section up to page 53, and talk about how, when John Muir turned twelve, his father said he was '*old enough to work like a man*'.

Activity 1: A day in the life (1 hour+)

SOC 2-01a, SOC 2-03a, SOC 2-04a, LIT 2-04a, LIT 2-05a, LIT 2-23a, SOC 3-01a, LIT 3-05a, LIT 3-23a

Discuss how, in Victorian times, many children had to work from young ages – some even as young as 5! Watch these videos to explore the different jobs children might do and ask pupils to take notes:

- [Brief guide to life for children in Victorian Britain](#) (3 minutes 27 seconds)
- [Work in textile mills](#) (2 minutes)
- [Work in the coal mines](#) (1 minute 54 seconds)

Ask learners to imagine they are living in Victorian Britain and writing a diary after a day at work. Encourage them to use descriptive language to describe the sights, smells and tasted of their workplace and how they feel at the end of a working day.

Discuss the challenging and dangerous conditions that so many children had to endure. Do learners know that child labour still exists in some places around the

world? This [National Geographic report](#) states that: ‘Nearly 1 in 10 children are subjected to child labour worldwide, with some forced into hazardous work through trafficking.’ [Britannica Kids](#) has useful information on child labour which could be used for a conversation around the UNCRC.

Section 6: Invent, design and make

Activity 1: Scottish inventions!

TCH 2-02a, SOC 2-01a, SCN 2-20a, TCH 2-05a, SOC 3-01a, SCN 3-20a, TCH 3-05a

Read the section *Genius John in a Brave New World*, up to page 58, which describes one of John Muir's inventions. In 1860 he displayed some of his inventions at the State Fair in Madison where, newspaper reports tell us, people queued around the block to have a turn.

Ask your pupils to research a Scottish inventor of their choice. They should make notes on the inventions they made and the reasons they made them. You could use these articles for ideas:

- [“Forgotten pioneers” of Scottish science](#)
- [Key figures in Science, Medicine and Engineering in Scotland](#)
- [Scottish inventions that rocked the world](#)

Invite pupils to share their findings with a partner or the class.

Activity 2: Invent your own environmentometer (1 hour +)

TCH 2-07a, TCH 2-09a, TCH 2-12a, TCH 3-07a, TCH 3-09a, TCH 3-12a

Put your pupils into groups and ask pupils them design an invention which will help the environment. Encourage them to experiment with different materials before deciding on the most appropriate ones for their models. Once they have the design and the materials, they should make a prototype model of their invention!

Section 7: Wild beauty

Activity 1: Art in Nature (50 minutes)

EXA 2-07a, EXA 2-02a, EXA 3-07a, EXA 3-02a

Sometimes when we spend time in the same places (like the school playground or local park) we stop seeing the nature all around us. Making art in nature can open our eyes again to the colours, textures, and shapes all around us.

Share some examples of land art from artists such as [Richard Shilling](#), [Andy Goldsworthy](#) and Julia Brooklyn. [Land Art for Kids](#) has instructional how-tos for making specific art such as rainbow arches and insects but also encourage your pupils to come up with their own ideas. No need to design beforehand, head outside to a local space to create your own nature art using leaves, sticks, stones, or sand. Afterwards, ask pupils to reflect on how they “saw” the nature around them. Did they notice the colours of the leaves more, did they notice how smooth or rough the rocks were?

Activity 2: Make a shelter (1 hour +)

TCH 2-12a, TCH 3-12a, HWB 2-14a, HWB 3-14a

John Muir’s temporary blindness sparks his desire to ‘*walk one thousand miles*’ in Chapter Five. Read up to page 71 and talk about how John Muir ran out of money and built a hut out of branches. Does the hut in the graphic novel look like a good shelter?

In groups, challenge your pupils to build their own shelter out of branches. They should work together as a team and build a shelter that at least one person can fit comfortably in! Remind your pupils to take care not to disturb wildlife when gathering natural materials.

Section 8: Indigenous history

Share chapter five (pages 66-73), *I Will Walk One Thousand Miles*, about John Muir’s explorations in America with your class.

Muir journeyed across America and settled in California where he carried out a lot of his conservation work. When exploring, he often used existing trails made by Native Americans to navigate across America. However, some of the views expressed about indigenous people by John Muir were harmful and racist.

Activity 1: Make a fact file (1 hour +)

SOC 2-04a, SOC 2-06a, LIT 2-15a, LIT 2-25a, SOC 3-06a, SOC 3-06b, LIT 3-15a, LIT 3-25a

Research and make notes on the indigenous people who live across America, their traditions and heritage, especially those in California where John Muir settled and whom he came across in what is now Yosemite National Park. Use websites such as [Britannica Kids](#) and [National Geographic Kids](#).

Use these notes to make informative fact files about indigenous Californians. Invite pupils to share their fact files in class, presenting what they have learned about Native American culture and heritage.

Discuss how events like the Californian gold rush in the mid-19th century had a huge impact on Native American communities.

This [BBC bitesize resource](#) provides an overview of the impact of white settlers in the American Plains, culminating in 1885 when the US government made Native American territory available to white settlers. Did pupils find evidence of the lasting impact of European colonisation in their research for the fact files? How are Native American people keeping their traditions alive today?

Section 9: From here to there

The aim of this lesson is for your class to plan and then embark on a journey of discovery in your local area. Before you begin, read the *I Will Walk One Thousand*

Miles section, up to page 69. The John Muir Way is a long-distance path which links Helensburgh in the West with John Muir's birthplace Dunbar, in the East. You can explore [the whole John Muir route here](#).

Activity 1: Plan your trail (50 minutes)

HWB 2-14a, SOC 2-14a, HWB 3-14a, SOC 3-14a

Invite your pupils to share what paths they already use in the local area. Then expand this knowledge using ordnance survey maps, virtual maps and the [Paths for all website](#) to find more walks and trails in your area.

In groups, ask pupils to plan and draw out a trail through the local area. Where possible they should aim to include some or all of the following:

- a local wood
- a local park
- a coastal, lochside or riverside route
- a local path
- a long-distance path

Ask learners to estimate the length of their walk, then build the route on Google maps to calculate the exact length. To decide which trail you will follow as a class, you could take a vote or build a trail collaboratively that incorporates features of each group's path. Discuss what preparations you will need to make before the journey, and what equipment, clothing and snacks you will need to bring.

Activity 2: A journey of discovery (1 hour+)

SCN 2-01a, HWB 2-12a, HWB 2-25a, HWB 3-13a, HWB 3-25a

During the journey, ask pupils to annotate a map of the path they are following and write down, record, photograph or draw symbols to represent what they see on their journey.

Back in the classroom, pupils can add details to their maps using the photographs and drawings they made. They should aim to add information on the [trees](#) they saw, the [insects](#) they found, and the [birds](#) they noticed, and should try and include the names of waterways, roads, and parks.

As an additional challenge, pupils could then develop a podcast for their walk describing what someone listening to their podcast and completing the same journey should look out for along the route.

Section 10: Nature detectives

Activity 1: Tree detectives (1 hour+)

LIT 2-14a, SCN 2-01a, SCN 3-01a, LIT 3-14a

When John Muir was a teenager, he realised that to understand the nature around him it was best to immerse himself in it totally to be able to discover and study plant life (such as trees), and all creatures that depend on it, more fully. In this activity, in the same spirit, encourage your pupils to become Tree Detectives.

Firstly, head outside with [The Woodland Trust Leaf Hunt](#) resources. Collect and identify as many different leaves as you can – how many can you find? Play leaf snap with a friend – shouting “snap” for matching leaves! Next, choose a tree and use this [Learning Through Landscapes](#) resource to try different ways of measuring how tall it is.

Back in the classroom, use your new learning to have a go at the [Woodland Trust's Autumn Leaf Identification Quiz](#). Now create your own nature quiz. You could theme it on leaves, twigs, minibeasts, birds or fungi. Challenge a friend to take your quiz and see how much they know!

Activity 2: Exploring biodiversity (50 minutes)

LIT 2-02a, SCN 2-01a, SCN 3-01a, LIT 3-02a

If you're feeling competitive after your quizzing, take your learning to the next level with this Woodland Trust board game. Created as part of their Nature Detectives

programme of activities, this game teaches you about all the biodiversity and food chains connected to ancient trees. Find the Ancient Tree Game board, counters and instructions in the [John Muir printable resources on our website](#).

Section 11: Glaciers

The aim of this activity is to discover how the Scottish landscape has been shaped. John Muir was one of the first people to conclude that the major landforms in exposed Yosemite Valley, California, were created by glaciers and not a major catastrophic event. During the Ice Age, glaciers and ice sheets covered much of Scotland and carved out deep u-shaped valleys with steep sides containing ribbon lakes. Look through the John Muir graphic novel and read the section *The Wild Man Who Changed the World* up to page 103.

Activity 1: Build a glacier (1 hour+)

SOC 2-07a, SCN 2-05a, TCH 2-09a, SOC 3-07a, TCH 3-09a

Learn about how glaciers have shaped the Scottish landscape with these BBC bitesize resources on [mountain erosion](#) and [valleys](#), and identify the features of glacial mountain erosion. Challenge your pupils to use modelling materials such as clay, papier mâché, salt dough or natural outdoor materials, to create a model of a Scottish mountain that has been shaped by glaciers. They should aim to include pyramidal peaks, arêtes and corries.

Activity 2: Changing glaciers (50 minutes – 1.5 hours)

LIT 2-20a, SCN 2-05a, EXA 2-02a, SCN 3-05b, LIT 3-20a, EXA 3-02a

Did you know there's a glacier named after John Muir? John Muir first made his way to Alaska in 1879 and now there's a valley glacier named after him: [the Muir Glacier](#). This glacier receded over 7 miles in 60 years! Use this as a prompt for a discussion about climate change – explore images of how other Alaskan glaciers have changed using this [resource](#).

After watching this [National Geographic video](#) on climate change and glaciers, ask pupils to respond creatively to one of two prompts:

- Write a poem or paragraph from the perspective of a melting glacier.
- Create a mixed-media artwork using different materials (for example, collage, paint, cut up articles, and pens) that shows the impact on climate change on glaciers and what that means for our future.

Section 12: Discover national parks

Activity 1: Scottish National Parks (50 minutes)

SOC 2-08b, LIT 2-09a, SOC 3-08a, LIT 3-09a

The aim of this lesson is to find out where the National Parks located in Scotland and what the advantages and disadvantages of creating a National Park might be.

Read the section *The Wild Man Who Changed the World*, up to page 108, which shows why John Muir became known as '*the founding father of National Parks*' (although it's important to remember he wasn't the only individual campaigning for the protection of nature).

Do your pupils know how many National Parks there are in Scotland? As of 2025, there are two: [Loch Lomond and the Trossachs National Park](#) and [Cairngorms National Park](#). Give pupils a map of Scotland and ask them to find and mark on where the boundaries of these parks are. The Scottish Government committed to the designation of at least one new National Park by 2026, and this park is proposed in Galloway. There are mixed reactions to this proposal.

Set up a debate to consider whether a new National Park in Scotland is a good idea. Divide your class into groups, tasking them to research either the benefits or the disadvantages of a new national park. Use these [debating resources](#) to help plan their argument. This [BBC bitesize resource](#) has some prompts to spark the research, for example, the impact of tourism on both the economy and wildlife. Challenge your pupils to practice their arguments before launching the debate, encouraging peer feedback on how persuasive and clear they make their points.

Pupils could also use the [National Parks website](#) to find national parks across the world, and research how and why they have been established.

Section 13: The lungs of the world

EXA 2-05a, SCN 2-02a, SOC 2-08a, EXA 3-03a, SCN 3-02a, SOC 3-08a

The aim of this lesson is to find out why plants and trees are the “lungs of the world” and are essential for all creatures’ survival, including humans. Read *The Lungs of the World* section up to page 124. Then show your class this [Second Level video](#) or [Third Level video](#) about photosynthesis and discuss this scientific process. Why is it important? How are plants like lungs?

Now watch a [Woodland Trust video](#) about how trees capture and store carbon.

Woodland Trust are on a mission to grow millions of healthy, native trees across the UK to help protect us from the effects of climate change. How could you get involved in this mission?

You could find out about tree-planting projects in Scotland, make posters to show the importance of planting more trees, or write letters to your headteacher petitioning for more trees in the school playground!

Further resources

- [10 things to do with any book outdoors](#) resource
- [Children's books to save the planet](#) book list
- [Books for outdoor learning](#) book list
- [Climate fiction for future world changers](#) book list
- Learn about [the John Muir Award](#)
- [Woodland Trust](#) have lots of resources to develop your knowledge of nature
- Learn more about [Eco-Schools](#), the sustainable schools programme
- Discover [Learning through Landscapes](#) projects