



Science Hunters: Engineering for Sustainable Societies

Using Minecraft to engage children
with engineering and
the Sustainable Development Goals

**Building sustainable communities
resource guide**

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Resources are available from:

<https://go.uwe.ac.uk/EngineeringforSustainableSocieties>

This project was supported by the Royal Academy of Engineering under the *Ingenious Awards* scheme.

Science Hunters: Engineering for Sustainable Societies

[Science Hunters](#) is a programme which **engages and enthuses children about science** using the popular, construction-based computer game **Minecraft**.

It is run by environmental scientists who specialise in communicating science to children and young people, especially those facing barriers to accessing educational opportunities. Previous research has shown the Science Hunters approach to be effective in increasing subject knowledge and understanding, and improving social communications skills; for more information please see the [programme website](#).

Engineering for Sustainable Societies delivers activities and resources to help children from under-represented backgrounds discover the many facets of engineering involved in sustainable development, and provide them with opportunities to apply their newfound knowledge by creating their own model sustainable solutions and communities in Minecraft.

Resources have been made freely available on the [project webpage](#). There you can find 12 Minecraft-based session outlines, each relating to a different element of engineering and the UN's Sustainable Development Goals (SDGs).

These are available individually, and as a 'building sustainable communities' pack aimed at those wishing to use the sessions as a series. This document sits alongside the pack, to provide information on how it might be used.

These 'building sustainable communities' topics are designed to help children learn more about the engineering and the SDGs through Minecraft, by building up elements of a sustainable community of their own design.

The Sustainable Development Goals

The 17 Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as a call to “end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity”.

You can find out more here: <https://www.undp.org/sustainable-development-goals>

Using the resources

The resources deliberately do not specify a particular version of Minecraft that should be used; they are intended to be flexible. While the topic resources are primarily designed to be used with Minecraft, where the game isn't available this element can be replaced by other activities such as building with blocks, drawing designs and junk modelling.

The topics included were designed and delivered during the Engineering for Sustainable Societies project, based at the University of the West of England, using Minecraft's Creative mode.

The following pages give an overview of the topics available, a suggested order to complete them in, and ideas for hands-on activities which can be used within the sessions to support engagement.

Suggested activities include external resources and other activities selected to minimise costs – please be aware that external resources may no longer be available or may have changed. Other safe, suitable activities can be substituted where available.

These are not official Minecraft resources.

The topics

Twelve topics are provided, based around engineering and the SDGs. However, the resources are intended to be flexible and a selection of topics can be used, rather than the full set.

The topics fall into three broad categories: **Planning and systems**, **Society and the environment** and **Resource management**. While activities can be completed in any order, Planning and systems is a cross-cutting category can be used to support the other topics.

Planning and systems

- Engineering Systems Thinking
- Active Design
- The Circular Economy

Society and the environment

- Sustainable housing
- Natural Flood Management
- Wildlife crossings
- Leisure – Entertainment
- Leisure – Sport and exercise

Resource management

- Solar panels
- Water resources
- Waste management and recycling
- Food security

Topic outlines

These outlines show activities and Minecraft challenges for all topics.

Suggested additional activities have been selected to require minimal resources. Please be aware that availability of additional resources may change.

Topic	Overview	Key SDGs	Suggested additional activities	Minecraft challenge
Engineering Systems Thinking (Planning and systems)	Looking at complex systems as a whole to see how parts work together.	Cross-cutting across all SDGs	Video about how engineers can help shape a more sustainable future	Use systems thinking to plan a sustainable town.
Active Design (Planning and systems)	Places are planned so that they encourage active, healthy lifestyles.	3: Good health and well-being 11: Sustainable cities and communities	Sport England video	Build a community resource for staying active. Connect two open spaces. Build an adaptable active space.
The Circular Economy (Planning and systems)	Things are designed to be repaired, reused and recycled, rather than used and thrown away.	11: Sustainable cities and communities 12: Responsible consumption and production 13: Climate action 14: Life below water 15: Life on land	Circularity Foundation 2023 report National Geographic Kids resources This is Engineering: Lucy Ellen MacArthur Foundation video	Design and build a community space or resource that helps towards a circular economy.

Topic	Overview	Key SDGs	Suggested additional activities	Minecraft challenge
Sustainable housing (Society and the environment)	Housing should protect the environment and meet different needs for different people	11: Sustainable cities and communities 7: Affordable and clean energy 13: Climate action	Research more about 'green roofs'	Design and build a mid-rise apartment block that supports sustainable living.
Natural Flood Management (Society and the environment)	Flooding is managed using natural solutions.	6: Clean water and sanitation 9: Industry, innovation and infrastructure 11: Sustainable cities and communities	Stroud District Council video Environment Agency information and animation	Engineer a natural flood management method to protect a house or settlement from flooding.
Wildlife crossings (Society and the environment)	Animals need safe ways to cross infrastructure and access habitats	9: Industry, innovation and infrastructure 11: Sustainable cities and communities 13: Climate action	Our Building to Break Barriers 'Civil Engineering' topic Research more about habitat fragmentation	Design and build a green bridge that connects two areas.

Topic	Overview	Key SDGs	Suggested additional activities	Minecraft challenge
Solar panels (Resource management)	Solar panels capture energy from the Sun and convert it into electricity.	7: Affordable and clean energy 12: Responsible consumption and production	This is Engineering: Harvey	Create solar powered lights, and/or a solar powered train network.
Water resources (Resource management)	Access to clean water is essential for people's health.	6: Clean water and sanitation Plus: 3: Good health and well-being 9: Industry, innovation and infrastructure 11: Sustainable cities and communities	Our engineer Daisy's tutorial video	Design and build a water conservation system. Manage a water source and harness it for energy.
Waste management and recycling (Resource management)	Managing waste properly is important for the environment.	12: Responsible consumption and production 13: Climate action 9: Industry, innovation and infrastructure	Alternatives to microplastics in the oceans video Research more about how waste harms wildlife.	Design and build a recycling centre that processes different types of waste.
Food security (Resource management)	Everyone has enough safe and nutritious food to be healthy, both now and in the future.	2: Zero Hunger Plus: 3: Good Health and Well-being	This is Engineering video This is Engineering: Ben	Plant some seeds. Conduct a growing experiment. Design a space-saving farm.

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