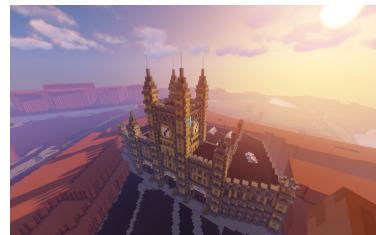
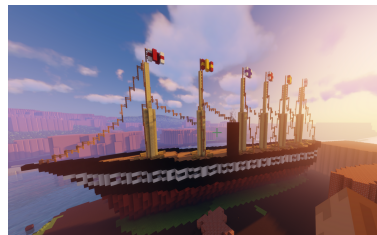
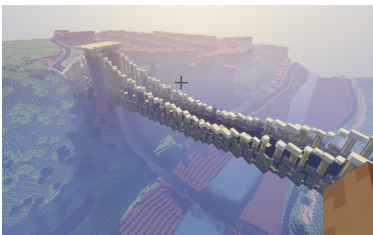


The West in Minecraft - Engineering our Future

A school activity for KS2 and KS3
aiming to explore **engineering**
through gaming.



Minecraft and the Science approach

Introduction

This activity takes a digital play-based approach to support children to develop their own ideas and problem-solving skills, engage with engineering as a diverse subject underpinning several others and see a different side to engineering and engineers to that commonly perceived.

Science Hunters is a long-running programme that aims to engage children from under-represented groups with STEM using Minecraft.

With interactive demonstration and discussion acting as anchors alongside constructive gameplay, their approach has been shown to positively impact subject learning and understanding*, while giving children from under-represented groups opportunities to play together in an accepting space can boost their wellbeing and social-communication skills.

Science Hunters engages children with Engineering topics through the Building to Break Barriers project, funded for 2020-22 by the Royal Academy of Engineering's Ingenious scheme. This activity was conceived and developed collaboratively with Building to Break Barriers and is delivered by DETI, adopting the Science Hunters approach with permission. See below for more information.



Why Minecraft?

Minecraft is the best selling video game of all time. It's a very popular, accessible construction-based computer game that can be an effective tool for engaging children from a wide range of backgrounds with a variety of Science, Technology, Engineering and Maths (STEM) topics, which may otherwise be abstract or difficult to understand.* It contains many analogies for real-world processes and environments, allows unlimited access to resources with a wide range of appearances, functions and properties and permits repeated design, redesign, space to test and explore ideas, and evolution and development of creations and solutions.

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p 15	Engineering Design Spotlight
p 16	The West in Minecraft Worlds
p 17	Setup and Controls
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p 20	Improving - Surprise Journalist
p 21, 22	Collaborations and Sharing Successes



<http://www.arisejournal.com/Science-Hunters-teaching-science-concepts-in-schools-using-Minecraft,112219,0,2.html>

<https://uwe-repository.worktribe.com/output/6771312>

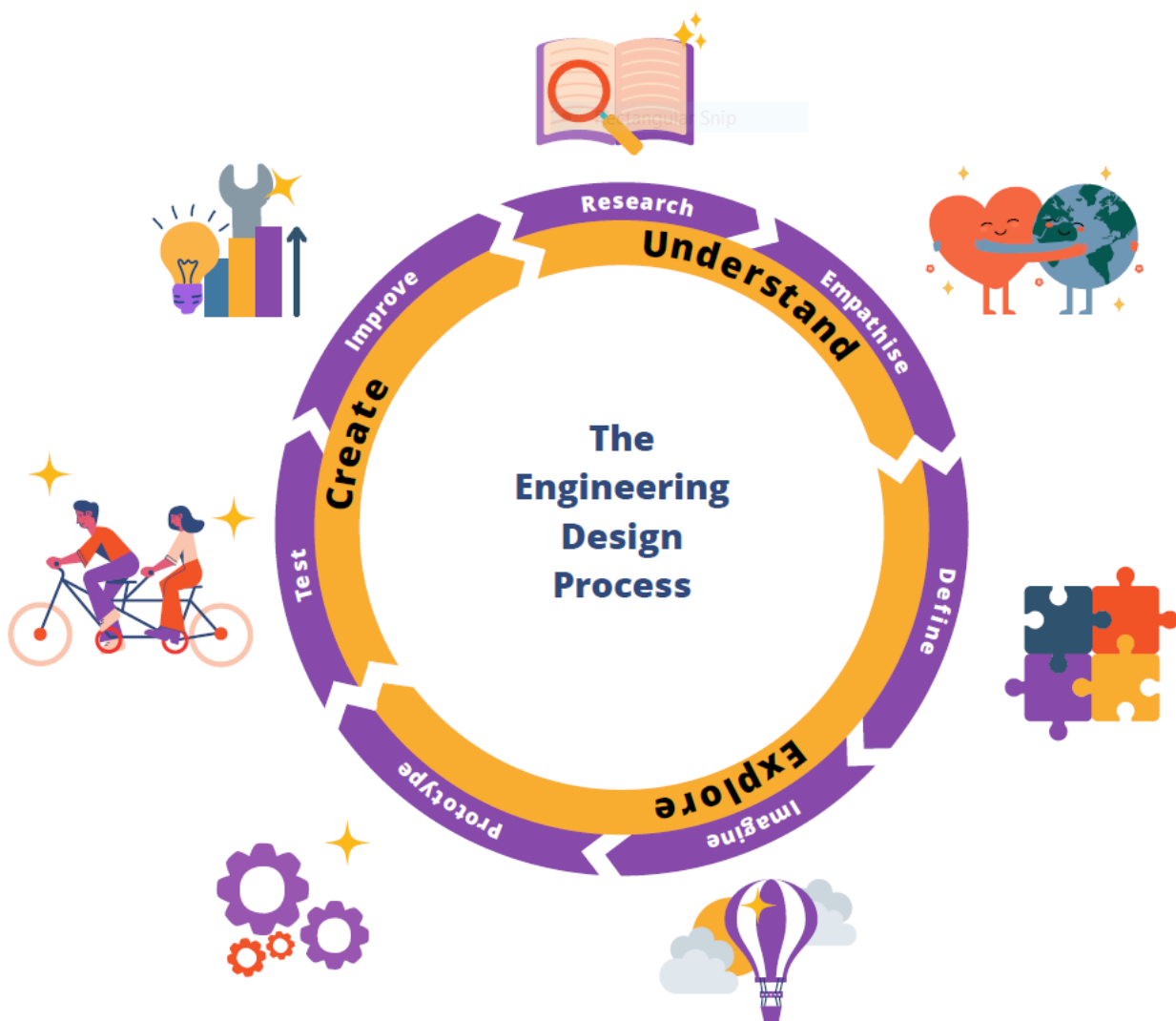
<https://www.scienceopen.com/document?vid=8953b5f1-5923-4f67-a1dc-01a20c69cf45>

*Referenced from the above studies and resources.

The Engineering Design Process

The Engineering Design Process follows the principle that in order to design effective solutions, we must **Understand** the problem (discover what problems people have, and empathise with their situation), **Explore** potential solutions (define and ideate), and then **Implement** a solution, by creating, testing and improving a product.

This Minecraft session draws from this process in a manner that is accessible, engaging and fun. Minecraft provides a platform upon which children can express design creativity within an established brief and framework, based upon the West and its cities.



Curriculum Links

KS2 Design and Technology

- Design
 - use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
 - generate, develop, model and communicate their ideas through discussion, prototypes, and computer-aided design
- Make
 - select from and use a wider range of materials and components, including construction materials, according to their functional properties and aesthetic qualities
- Evaluate
 - evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
 - understand how key events and individuals in design and technology have helped shape the world

KS2 Geography

- name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time
- describe and understand key aspects of physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle
- human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water

KS2 Science

- give reasons for the particular uses of everyday materials
- reporting and presenting results from findings

KS3 Design and Technology

- Design
 - identify and solve their own design problems and understand how to reformulate problems given to them
 - develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
 - use a variety of approaches to generate creative ideas and avoid stereotypical responses
 - develop and communicate design ideas using computer-based tools and 3D modelling
- Make
 - select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties
- Evaluate
 - analyse the work of past and present professionals and others to develop and broaden their understanding
 - investigate new and emerging technologies
 - test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
 - understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
- Technical knowledge
 - understand and use the properties of materials and the performance of structural elements to achieve functioning solutions

KS3 Geography

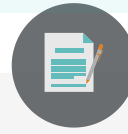
- human geography relating to: population and urbanisation; international development; economic activity in the primary, secondary, tertiary and quaternary sectors; and the use of natural resources
- interpret Ordnance Survey maps in the classroom and the field, including using grid references and scale, topographical and other thematic mapping, and aerial and satellite photographs

KS3 Science

- the properties of metals and non-metals
- Earth as a source of limited resources and the efficacy of recycling
- the production of carbon dioxide by human activity and the impact on climate
- fuels and energy resources
- scientific knowledge required to understand the uses and implications of science, today and for the future

Session Summary

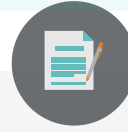
The session summary below describes a 2 hour session, in a simplified and brief format, ideal for printing as a reminder or guide to follow during the session.



Stage	Time	Activity
Set-up	Before session	Setting up, resetting and charging equipment. Making tablets ready for children to use. May require logging on or re-sharing/resetting of the West in Minecraft worlds. DETi will do their best to make sure that tablets are charged and ready for each session.
Settler - The Farmer and the River	10 min 10 of 120	'Entry Challenge' is displayed as session begins. Students engaging with solving the puzzle. Discussion on the importance of engineering and how it can be used to solve a problem, such as crossing the river.
Then and Now in the West	10 min 20 of 120	Display or print the images of areas of Bristol/Bath from the past vs present day. Pupils can be challenged to think why the city has changed in this way, or how they think it will change going forward. Session Leader distributes images of the West's landmarks, and pupils are asked what problem they have helped to solve. Images provide a springboard for themes and discussions; Session Leader can continue to list themes and ideas on a board if desired and can reference back to them throughout the session.
Engineer Design Spotlight	10 min 30 of 120	Session Leader introduces the designs of local engineers/students that have designed an update to the city. Prompting a discussion on challenges/improvements/successes etc.
West in Minecraft Tablet Setup	5 min 35 of 120	Pupils are given a tablet, (1 between 2) and invited to load the West in Minecraft world. See page 17 for setup and control tips.
West in Minecraft Engineering time	75 mins 110 of 120	Pupils are given the remaining time with Minecraft (creative mode) to design and build in the West in Minecraft world. Session Leader later provides questioning and improvement prompts in the form of a surprise journalist. See Journalist page below for a handout of the questions.
Plenary - Design Showcase and Capture	10 mins 120 of 120	Pupils are invited to reveal their designs to the class and capture a screenshot of the design. Session Leader encouraged to ask pupils about their design choices, and the challenges faced in the design. May wish to end with a vote for the best design idea or offer prizes.

Online Session Summary

The session summary below describes the session in an online format. Where the Session Leader is connected to the class via a video link, and the Classroom Teacher assists in supporting the activities and communication between the class and the Session Leader.







Stage	Time	Activity
Set-up	Before session	Establish video link with Session Leader, and prepare tablets/equipment. It is expected that the Classroom Teacher has received the tablets and equipment. Refer to page 17 for tablets setup and controls.
Settler - The Farmer and the River	10 min 10 of 120	'Classroom teacher begins the session by displaying the 'Entry Challenge'. Students settling into session by solving the puzzle. Classroom Teacher then able to introduce class to Session Leader for them to take over control. Session Leader then facilitates discussion on the importance of engineering and how it can be used to solve a problem, like crossing a river.
Then and Now in the West	10 min 20 of 120	Classroom Teacher distributes the images of areas of Bristol/Bath from the past vs present day. Pupils can be challenged by Session Leader to think why the city has changed in this way, or how they think it will change going forward. Classroom Teacher displays images of the West's landmarks, and pupils are asked what problem they have helped to solve. Images provide a springboard for themes and discussions; Session Leader and Classroom Teacher can jointly facilitate discussion whilst Classroom Teacher lists themes and ideas on a board if desired, for potential future reference during session.
Engineer Design Spotlight	10 min 30 of 120	Session Leader introduces the designs of local engineers/students that have designed an update to the city. Prompting a discussion on challenges/improvements/successes etc.
West in Minecraft Tablet Setup	5 min 35 of 120	Pupils are given a tablet, (1 between 2) and invited to load the Mini-Tour Minecraft world. Then can follow through the world in a tour-style, exploring the landmarks and recognising the geography/topography of the area.
West in Minecraft Engineering time	75 mins 110 of 120	Pupils are given the remaining time with Minecraft (creative mode) to design and build in the Future-West Minecraft world. Session Leader later provides questioning and improvement prompts in the form of a surprise journalist. See Journalist page below for a handout of the questions.
Plenary - Design Showcase and Capture	10 mins 120 of 120	Pupils are invited to reveal their designs to the class and capture a screenshot of the design. Session Leader encouraged to ask pupils about their design choices, and the challenges faced in the design. May wish to end with a vote for the best design idea or offer prizes.

Lesson Plan - 2 hours





The Lesson Plan below describes a 2 hour session, with much of the session given to pupil's design time within Minecraft.

If planning a shorter session, such as 1 hour, then feel free to remove sections as required. We suggest prioritising the pupil's design time and using the Then and Now photographs of the West as the anchor for the initial introduction to how cities change over time and engineering solutions can solve a city's problems.





If hosting an online session see the Online Session Considerations page for advice on altering the session to suit.

 Stage	 Time	 Activity Description	 Students
Set-up	Before session	<ul style="list-style-type: none"> • Setting up equipment. • Making tablets ready for children to use. May require logging on or re-sharing of Mini-West world. • Advisable to keep the tablets from view until required to avoid distraction. 	Not present.
Settler - The Farmer and the River	10 min 10 of 120	<p>As pupils enter the room, the 'Entry Challenge' is displayed. Session Leader can also explain the problem and give the pupils two minutes to see if they can find the solution.</p> <ul style="list-style-type: none"> • A farmer has a fox, a chicken and some grain. The farmer wants to transport them all across a river in his boat, but only has room in the boat for one at a time. He can't leave the fox and chicken alone together, nor the chicken and the grain alone together. How does he transport all three across? <ul style="list-style-type: none"> ◦ C first, then F(or G), then bring the C back with him, then the G(or F), then back for the C. <p>Session Leader leads class on to a brief discussion around the importance of engineering.</p> <ul style="list-style-type: none"> • 'How could the farmer solve their transport problem across the river?' • Could they BUILD or DESIGN anything to help? <ul style="list-style-type: none"> ◦ A solution is to build a bridge! • "This is engineering! Designing, inventing or building something that solves a problem!" 	Settling down into session, with puzzle. Then engaging in discussion when appropriate.





Lesson Plan - 2 hours

 Stage	 Time	 Activity Description	 Students
		<p>If discussion with class feels engaged and positive, it can be continued with talking about how transporting goods/services is central to a society.</p> <p>“What does a society need to transport?”</p> <p>“How do we transport goods/services/people across land/rivers/seas?”</p> <p>“How have these solutions changed over time?”</p> <p>“What improvements have been made over time?” E.g. speed/capacity/efficiency?</p>	
<p>Then and Now in the West</p>	<p>10 mins 20 of 120</p>	<p>Display the images of areas of Bristol/Bath from the past vs present day. (See Then and Now pages below for pictures and links to find more)</p> <p>Pupils can be challenged to think why the city has changed in this way.</p> <p>Session Leader can also print out the pictures if desired.</p> <ul style="list-style-type: none"> “Do you think the city will remain in this state, or will it change again?” “Why do you think this?” <p>Session Leader can also distribute/display images of the West's landmarks, and pupils are asked what problem they have been engineered to solve.</p> <ul style="list-style-type: none"> C.S. Bridge – Makes entering and exiting the city easier and quicker by crossing the Avon Gorge. SS GB – Allows Bristol to trade and export goods across seas and oceans. Temple Meads and railways – Makes goods and passenger travel across large land distances and between cities fast and easy. etc Roman Baths and under-floor pillars/cavities - 'Hypocaust' was designed to distribute warm air to sauna and steam rooms through underfloor and wall cavities. An early 'central heating system'. <p>Session Leader may wish to continue to list themes and ideas on a board and can reference back to them throughout the session if desired.</p> <p><i>How have the West's cities changed over time? What will change next and why? Why is it important to think about improving the sustainability?</i></p>	<p>Pupils may enjoy guessing where the old photographs were taken. Or trying to match the old photographs to the present.</p> <p>Pupils can in their pairs discuss their thoughts about the landmarks.</p>

Lesson Plan - 2 hours

 Stage	 Time	 Activity Description	 Students
Engineer Design Spotlight	10 mins 30 of 120	<p>Session Leader introduces the designs of local engineers/pupils that have designed an update to the city. Session Leader opens to comments or criticisms from the pupils. <i>What do you think is good about the design? How could they be improved?</i></p> <p>See page 15 for designs, pictures, and discussion prompts. Session Leaders can ask pupils to choose their favourite of the four designs, and offer an improvement to another. Session leader may wish to focus the discussion on sustainability challenges or successes with the designs. (Designs are from real local pupils, whose names have been changed)</p>	Pupils can in pairs decide whether they think the design can be improved, and how. Or whether there are any challenges for the design.
West in Minecraft Setup	5 mins 35 of 120	Pupils are given a tablet, (may require 1 between 2) and invited to load the West in Minecraft worlds. Refer to page 17 for tablet setup and Minecraft controls.	It's likely that the pupils will be very eager to get started on the tablets.
West in Minecraft Engineering time	75 mins 110 of 120	<p>Pupils are given the remaining time with Minecraft to design and build in the Minecraft-West world. (See Minecraft Basics below for setup, tips and controls.)</p> <ul style="list-style-type: none"> • Students tasked with first identifying a problem within the city that they think can be solved by engineering. EG: Congested roads, Flooding, Energy demands etc • Students can then begin to consider solutions and start testing and building within the world. • See Minecraft challenge task sheet below for additional task prompts/ideas and design briefs for pupils to choose from. 	Pupils can work in pairs and are encouraged to discuss the designs as a team.
Surprise Journalist - Opportunity for reflection and design improvement		<p>Session Leader provides questioning and improvement prompts in the form of a surprise journalist. To be distributed when the build/idea/design is largely formed and students have made good progress towards completion, as an opportunity to reflect back and further refine or refocus an idea. (Can also be used as a tool for 'refocusing' the pupils that may have strayed off-brief.) See Journalist page below for a handout of the questions.</p>	Pupils engage in the 'Improve' part of the engineering design process by considering the questions and challenges posed.

Lesson Plan - 2 Hours

 Stage	 Time	 Activity Description	 Students
Plenary - Design Showcase and Capture	10 mins 120 of 120	<p>Pupils are invited to talk about their engineering design choices to the class.</p> <p>Session Leaders may also wish to take pictures of designs throughout session and display them on the board during plenary through screen pairing applications or similar. Session Leader encouraged to ask pupils about their design choices, and the challenges faced in the design. <i>Why did you choose this material? Did you think about the cost of your design? What was the bit you found most difficult about the process? What do you think the people of Bristol/Bath would say about it? etc.</i></p>	<p>Pupils are invited to reveal their designs to the class.</p> <p>Pupils also asked to capture a screenshot of the design and submit it to a live designs board being displayed.</p>
Closing the Session	At end of session	<p>Pupils to shut down and disconnect tablets. Tablets to be collected and counted before pupils dismissed.</p>	

Entry challenge

This can be displayed for the pupils as they enter to aid settling and engagement.



A farmer needs to get their **fox**, **chicken** and **grain** across a river. But only has room in their boat for one at a time.

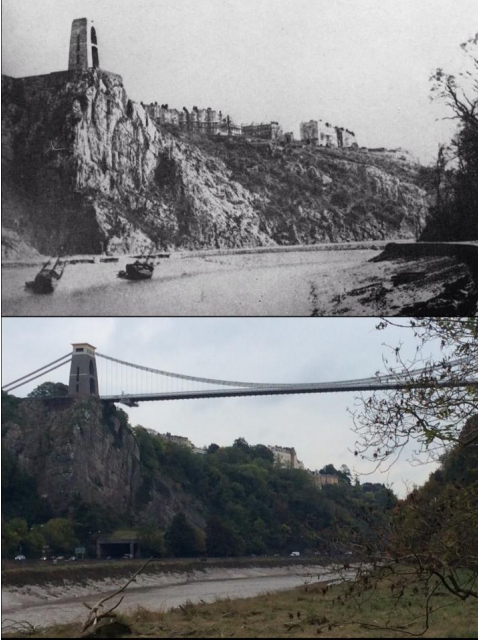
If the **chicken** and the **grain** are left alone, the **chicken** will eat the **grain**.

If the **fox** and the **chicken** are left alone, the **fox** will eat the **chicken**.

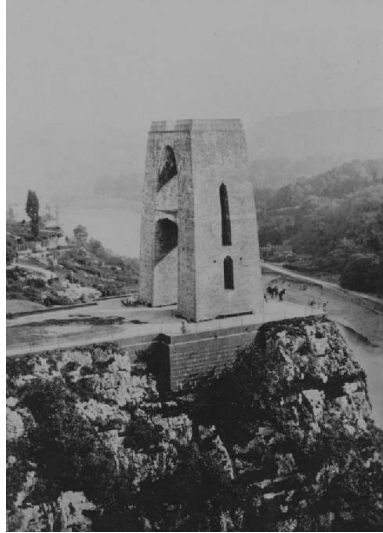
How can the farmer get all three across without any being eaten?

The West - Then and Now

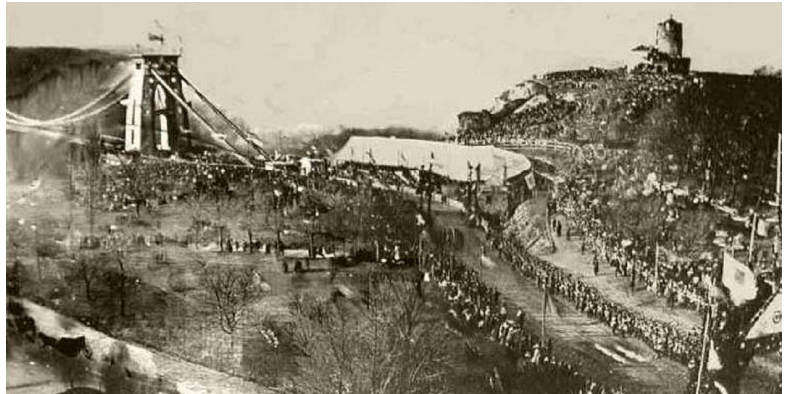
Look at how our cities have changed over time!



A: Clifton Suspension Bridge 1850s-Present
(Adrienne and Bob Heath)



B: Clifton Suspension Bridge - 1860-Present (James Stafford Little)



C: Clifton Suspension Bridge - Opening Ceremony - 1864



D: Park Street during WW2-Present (Sandra Diccott)



E: Harbourside - Anchor Road facing the Hippodrome - Unknown Date

The West - Then and Now



F: Harbourside - Anchor Road facing the Hippodrome - 1925-Present (Fiona Powell)



G: Park Street - WW2-Present (Bruce and Sandra McKenzie)



I: Temple Meads Entrance - 1915-Present (Esme Dutchauser)



J: Temple Meads Entrance - Unknown Date-Present (Rosemarie Hockey)



H: 'Peter Street', Castle Park - 1914-Present (James Stafford Little)

The West - Then and Now



K: The Pump Room beside Bath Abbey - pre 1897-Present (Neil Mattingly)



L: Abbey Green - 1905-Present (Madison Oakley)



M: George St - 1923-Present (Madison Oakley)



N: Looking down Milsom St - 1887 Queen Victoria's Golden Jubilee (Madison Oakley)

<https://www.madisonoakley.co.uk/2018/07/05/old-photos-bath/>
<https://www.facebook.com/groups/bristolthenandnow/media>

<https://www.facebook.com/groups/baththenandnow/media>

The West's four Engineering Landmarks

The four landmarks of the West below have all been engineered for a specific reason, or to solve a problem.

Have you visited any of these landmarks? Why were these landmarks built? Do they still have the same purpose today?



Bristol Temple Meads station

Designed by IK Brunel.
Opened 1840.



Clifton Suspension Bridge

Designed by IK Brunel.
Opened 1864.



The Roman Baths (and Hypocaust system)

Designed by the Romans
Built in 60-70 CE



SS Great Britain

Designed by IK Brunel.
Launched 1843.



Photo by hartbuck; CC License

Engineer Design Spotlight

The following are real screenshots and engineering designs from pupils (and potential future engineers) of the West!

Read each of the descriptions.

Discuss with your partner an advantage and a disadvantage for each of the designs. Which design do you think should be built?

Try to consider sustainability and environmental concerns in your arguments.



Wind Turbines beside the Clifton Suspension Bridge - Katie, Year 6*

Katie considered a new way for the people of Clifton to power their lives. She has engineered a platform sitting high beside the bridge, upon which she has placed some wind turbines.

Do you think Katie's design is a good idea?
Why do you think wind power is important for future cities?



Farmhouse on the Clifton Downs - Joe, Year 5*

Joe has thought about a new way to use the open spaces of Bristol, with a farmhouse and some food production for the local restaurants. He has planted some crops, and has included pig, cow and chicken pens.

Do you think this is a good solution?
Why is animal farming a concern for the environment?



Hotel on the water at the Harbourside - Ellie, Year 6*

Ellie has designed a trendy spot for visitors to Bristol to stay. It's right on the water's edge! Guests would get a great view of the harbour and it looks like there's even a dock for boats to moor up for the night.

What're your thoughts on adding more accommodation to the city? Could this spot have been used in a better way?



Ferry powered by the wind - Aisha, Year 6*

Currently, pedestrians need to walk right around the harbour to one of the bridges in order to cross the water. Aisha has solved this problem by designing a sailboat to carry passengers from one side to the other.

Do you think that this is a good idea?
What might be some of the issues with this design?

*The names of the engineers have been changed.

The West in Minecraft Worlds

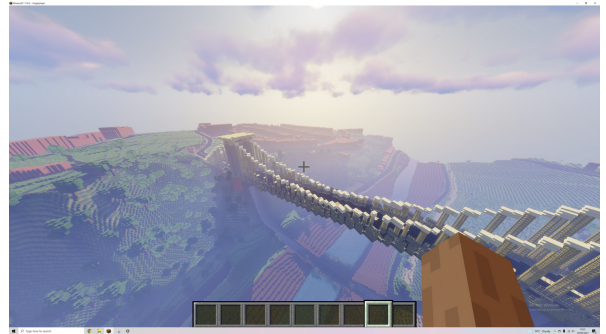


Temple Meads and Redcliffe



In this part of the city is the transport centre, Temple Meads railway station, bringing goods and passengers in and out of the city, and connects Bristol with the rest of the UK.

The roads here are incredibly busy at rush-hour, and have been altered greatly over the years to try to tackle the traffic.



Clifton and the Avon Gorge



The part of Bristol features Brunel's impressive Clifton Suspension Bridge, spanning across the Avon Gorge. It also offers spectacular views of the city and bridge, from atop the hill where the Clifton Observatory also sits. The bridge provides an essential route into the city, whilst Clifton Village serves as a hub for shopping and dining.



Bath, the Roman city



The Romans, led by Julius Caesar, first invaded Britain in 55-54BC. In the first decades of Roman Britain, the natural hot springs under Bath made it a prime location for a settlement, and the city grew around the baths.

Today, the Roman Baths still exist, and the springs bubble up with heated water from the depths of the Earth.



The Harbourside



Bristol's famous Harbourside is now a hub for bars, restaurants and hotels, but was once a bustling trading dock. The most iconic resident of the dock, the SS Great Britain, sits proudly here still.

Perhaps you can re-engineer the famous ship for a new and modern purpose?


The Minecraft West worlds and their landmarks would not have been possible without the kind contributions of **Lewis Mould**, **Sam Collier**, and **Jonathan Kim**. Huge thanks for your efforts and skills in helping bring the worlds together.

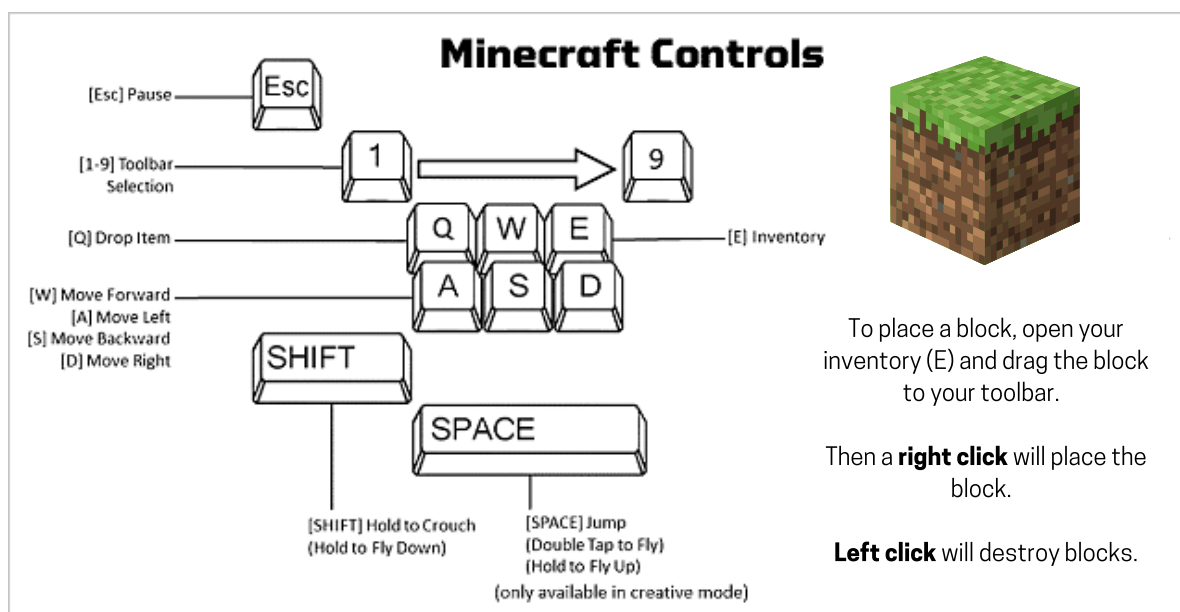
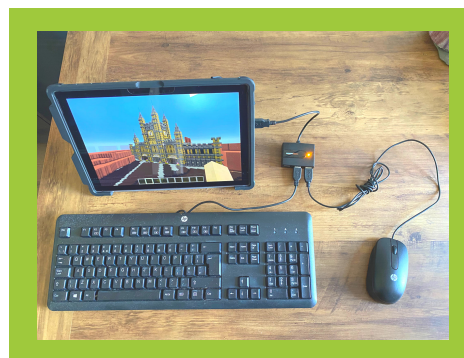
Using Minecraft and the DETI Tablets

Equipment available:

- 20 x Surface Pro 7+ DETI tablets, with case and charger
- 20 x USB port adapters
- 20 x Keyboards and Mice

Setting up the tablets:

1. Lift open the stand on the bottom rear of the tablet.
2. Connect the USB adapter, mouse, and keyboard as shown.
3. Switch on the tablet using the power button. (Top)
4. Log in to the tablet using the password written on the rear. (Tablets are assigned passwords 'surfacea', 'surfaceb', 'surfacec'... and so on.)
5. On the desktop, double click the 'Minecraft Launcher' icon. () When the launcher opens, click the large 'Play' button. (The button may read 'Play Demo'.)
6. When the Minecraft window opens, click 'Single player'. Select one of the West in Minecraft worlds and click 'Play Selected World'.
7. Refer below to controls and typed commands for altering weather/time if required.



To change the world back to **daytime**: Type: **/time set day**

To change the weather back to **sunshine**: Type: **/weather clear**

To remove the green Slimes: Type: **/difficulty peaceful**

To **see further** in the distance:

Press **Esc**. Select **Video Settings**. Increase the '**Render Distance**'.
(Increasing too much can cause the game to slow down)

Crafting our Engineering Future - Challenges

*Pupils are given a tablet, (1 between 2) and invited to load a West in Minecraft world.
Below are additional task prompts/ideas and design briefs for pupils to choose from if they wish.
Session Leader may also wish to limit students to these challenges, or set a specific one.*

A: ENGINEER a new bridge to cross the gorge, for handling the city's future traffic and transport.

Consider these points when designing:

Improving the speed/capacity of goods/passenger crossings.

Adapting to future vehicles/transport methods.

Sustainable, yet functional materials.



Bonus: Can you think of a way of generating energy from the bridge?

B: ENGINEER a ship, (or re-design the SS Great Britain), for transporting the goods of the future.

Consider these points when designing:

How the ship will be powered?

Can you improve speed or capacity without compromising safety and sustainability?

Adapting to carry future goods.

What will the goods of the future be? How would they be stored?

Sustainable yet functional materials.



Bonus: Can you design a ship that uses no fuel at all?

Crafting our Engineering Future - Challenges

C: ENGINEER a transport hub for Bristol that utilises the vehicles of the future.

Consider these points when designing:

What will the future's public transport vehicle be?

Will cars/trains be replaced by something new?

What might people use to get around the city?

Cities are crammed for space, how will your design adapt?

Bonus: How will the transport of the future be powered?

Can your design contribute to powering them sustainably?



D: ENGINEER a new way for Bath to harness the hot springs bubbling up from the Roman baths.

Consider these points when designing:

The main energy source from the spring is heat.

Think about what people in Bath might need heat for and base your design around one of those needs.

Bath is a city with a lot of character, and has lots of beautiful buildings.

People would not be happy if your design does not look good!



Bonus: The Romans were famous for their engineering.

Perhaps your design can be inspired by their amazing inventions.

Research pictures of Roman aqueducts or central heating systems and see if you can include their ideas in your design.

Improving your design:

A surprise journalist has asked you about your build, and has brought you some feedback from the community:

Some of the resources available to use for the build are difficult to make or are damaging to the environment.

Did you consider this in your design? Could your design be changed to use resources that are more sustainable?

The city council are concerned that the build might be expensive.

How could you bring the costs down?



Some people that live near the build are worried that it'll look out of place.

Have you thought about the looks of the design, and whether it fits in with the surroundings?

TASK:

Engineers often **take a step back** and listen to what people say about their designs. They then try to improve the design based on the feedback.

It is normal for an engineer to change and improve the design many times before it is final.

This is part of the **Engineering Design Process**.

Think about what the journalist has said, and think of a way to **improve your design**.

Collaborations and future session ideas



Engineering Curiosity

Available on curiosityconnections.net.

This card-game featuring 48 local engineers and accompanying curriculum linked activities and lesson plans allow children to explore engineering roles in the West of England and challenge stereotypes.



Science Hunters engages children of all ages with science using the popular computer game Minecraft. They learn about scientific concepts and university research and try out some hands-on demonstrations before building their own related creations in the game.

Read more here:

www.lancaster.ac.uk/lec/about-us/engagement/science-hunters/



Building to Break Barriers is an outreach project as part of Science Hunters.

The project co-produces ten new engineering outreach sessions with engineers, children, and young people, and delivers them

around the UK. Engineers receive outreach training and support throughout the project.



The **Royal Academy of Engineering** is a charity that harnesses the power of engineering to build a sustainable society and an inclusive economy that works for everyone. More at www.raeng.org.uk

Skills Miner

An **Enginuity** Product

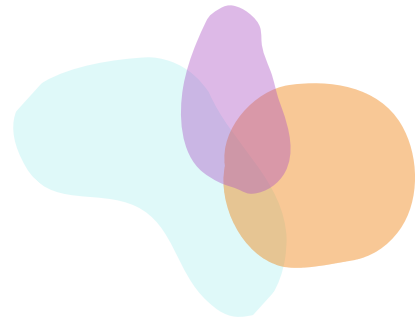
Skills Miner is another immersive world worth exploring! Designed by Enginuity, it allows players to uncover, capture and endorse their gaming expertise against engineering skills. See more at: <https://enginuity.org/innovation-lab/skills-miner>.

Take part in the FIRST Lego League

This challenge, open to children around the world, gives them a real-world engineering problem that they have to try and solve through designing, coding and building. 2021's event will take place fully online. Children sign up in teams. To find out more, and to register your teams, head to:

www.firstlegoleague.org.

Sharing successes



Want to share your engineering solutions? Here are some of the avenues to explore.

Great Science Share for Schools

A campaign that aims to engage whole school communities in raising the profile and engagement of young people in primary and secondary school science. The GSS has shown to lead to more time for science learning in school and at home so that young people can ask, investigate and communicate their own scientific questions with new audiences. www.greatscienceshare.org



The Leaders Award

"If you were an Engineer, what would you do?". This creative, problem solving, literacy and entrepreneurial project, encourages pupils from UK primary and secondary to look at the world around them to find real-world problems an engineer could solve. Children are invited to meet an engineer. They then submit their design ideas and receive feedback from the engineers.

<https://blogs.uwe.ac.uk/engineering/category/leaders-awards/>

IF YOU WERE an
ENGINEER
WHAT WOULD YOU DO?

LEADERS AWARD 

The RSA Pupils Design Awards

An annual, national design competition for pupils aged 11-18, where participants are encouraged to use their creativity and imagination to tackle real challenges facing people and the planet. www.thersa.org/pupil-design-awards.



Inspiring you to inspire others

Engineers make the future



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