



Collaborate Create Communicate

Introduction

Introduction

About this resource

This resource resulted from a simple idea, but one that is increasingly challenging to deliver in the classroom, and which HS2 Ltd and Transport for London are passionate about working with teachers to realise. Having listened to teachers about the challenges of delivering project-based learning at key stage 4, our idea was to design a resource which would complement required curriculum teaching across multiple GCSE subjects based on the real-world premise of a large-scale transport infrastructure project.

National and local politics, local history, geography, economics and sociology all come together to shape the requirements of major infrastructure investment. Mathematics, physics, chemistry, engineering, computing, design and technology all shape the solutions to these requirements.

Psychology, English language, communications, art and media all combine to ensure local communities are consulted and can shape, refine and accept the new infrastructure, from bridges to train stations, living walls to congestion management, cycle lanes to tunnelling.

Teaching

In addition to the curriculum links, this resource, especially when delivered as a project across multiple subjects, helps all students to understand why the subject they are studying is critical to the real world. They explore this by using realistic information; hear from a wide variety of affected parties; use role-play; balance priorities; design a structure; build a model and present their work.

This resource can be delivered as an off-the-shelf product; however it is flexible and designed to be adapted by teachers to meet the needs of their school, cohort and students as well as their local area. It can also be adapted for use at KS5.

To further enhance the project it is recommended that you utilise volunteers from industry either to enrich subject-specific elements of the resource or to hear from individuals doing these jobs. You can find people via STEMNET or other links to industry such as Inspiring the Future; both Transport for London and HS2 are able to offer volunteers.

Additional outcomes

In addition to the curriculum-based learning outcomes, this resource also enables students to experience a simulation of the world of work, developing team working, communication and research skills as well as understanding the huge variety of jobs and careers involved in delivering major infrastructure projects in the UK.

The project is set up as either a six-part project, or a single stand-alone two-hour workshop.

Contents

- Six-part project
- Stand-alone two-hour workshop
- Project flow chart



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Introduction: Six-part project

This project

A high-speed rail terminus is being built in the fictional city of Smeaton as part of the nationwide high-speed rail network, on the banks of the River Smea. In order to connect communities from across the city with the wider network, a river crossing is going to be built.

Zoom Rail is the name of the high-speed rail network for the purposes of this project. Transport for Smeaton is the name of the organisation which runs the existing urban transport network in Smeaton. By making local metro and bus services access more areas of the city this has already helped to regenerate parts of East Smeaton.

The students will form a team that will develop an in-depth proposal for a river crossing in Smeaton. In the final workshop they will present their proposal at a community consultation.

Students can choose from five types of crossing for their proposal – there is no perfect answer and all types have advantages as well as disadvantages.

This project takes place over six workshops, during which students will:

Workshop 1

- Be introduced to Zoom Rail and Smeaton
- Learn about high-speed rail and local transport connections
- Learn about different crossing types
- Learn through role-play what the local stakeholders think

Workshop 2

- Evaluate the crossing types against the brief
- Choose their crossing type

Workshop 3

- Design their crossing

Workshop 4

- Build a model of their crossing

Workshop 5

- Prepare a presentation

Workshop 6

- Role-play a community consultation

How to use this pack

This pack contains three documents: the introduction; the teaching guide; and the slideshow.

The introduction contains a high-level explanation of the project.

The teaching guide starts with the whole project flow chart that you can also find below, and then gives you workshop-by-workshop information. For each workshop there are 'before you begin', 'activities' and 'resources' sections. In the resources section you will find handouts and solutions for the tasks.

The slideshow runs side-by-side with the project. All of the information in the slides is also in the teaching guide.



Introduction: Stand-alone two-hour Workshop

This project

A high-speed rail terminus is being built in the fictional city of Smeaton as part of the nationwide high-speed rail network, on the banks of the River Smea. In order to connect communities from across the city with the wider network, a river crossing is going to be built.

Zoom Rail is the name of the high-speed rail network for the purposes of this project. Transport for Smeaton is the name of the organisation that runs the existing transport infrastructure in Smeaton.

This project takes place over a two-hour Workshop, during which students will:

- Be introduced to Zoom Rail and Smeaton
- Learn about different crossing types
- Learn through role-play what the local stakeholders think
- Decide which crossing should be built

How to use this pack

This pack contains three documents: the introduction; the teaching guide; and the slideshow.







The introduction contains a high-level explanation of the project.

In the teaching guide you will only be concerned with Workshop 01. You will find 'before you begin', 'activities' and 'resources' sections for Workshop 01. These will explain how to run the workshop as a stand-alone workshop.

The slideshow runs side-by-side with the project. All of the information in the slides is also in the teaching guide.



Project Overview

Workshop	Welcome to Smeaton (1.5 – 2 hours) 	Understanding the environment and the community (1.5 – 2 hours) 	Designing a crossing (1 hour) 	Making the model (1 – 3 hours) 	Creating a presentation (1 – 1.5 hours) 	Talking to the community (1 hour) 
What the students do	<ul style="list-style-type: none"> - Learn context of project and reason for crossing - Research crossing types - Role-play local people's views - Present findings 	<ul style="list-style-type: none"> - Form project teams - Receive brief - Choose a crossing type 	<ul style="list-style-type: none"> - Create design ideas for crossing - Hold a design team meeting - Choose a design 	<ul style="list-style-type: none"> - Build a model of crossing - Use material costs to estimate cost of model 	<ul style="list-style-type: none"> - Discuss what makes a good presentation - Decide on key points - Produce presentation 	<ul style="list-style-type: none"> - Audience role-plays local people - Project team present their crossing design - Class votes on best design
Core subjects	<ul style="list-style-type: none"> - Geography - History - English 	<ul style="list-style-type: none"> - Maths - Science 	<ul style="list-style-type: none"> - Design and Technology - Science 	<ul style="list-style-type: none"> - Design and Technology 	<ul style="list-style-type: none"> - English - Art and Design 	<ul style="list-style-type: none"> - Drama
Extension opportunities	<ul style="list-style-type: none"> - Investigate community issues local to your school 	<ul style="list-style-type: none"> - Investigate what a brief is - Students to develop their own brief 	<ul style="list-style-type: none"> - Investigate the design process - Investigate forces, and strength of structures 	<ul style="list-style-type: none"> - Use CAD. - Use 3D printing 	<ul style="list-style-type: none"> - Explore what makes a good presentation - Produce multimedia for presentation - Discuss what makes good branding 	<ul style="list-style-type: none"> - Invite local council planning/transport professionals to attend



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Finding out more

This resource was developed by Think Up with the support of HS2 Ltd and Transport for London.

Find out more about HS2 Ltd's education programme at:
www.plotr.co.uk/hs2forteachers

Find out more about TfL's support for schools and young people at:
www.tfl.gov.uk/info-for/schools-and-young-people

Contact Think Up at info@thinkup.org

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You can download this document and the associated resources at: www.plotr.co.uk/ccc