Student Brief

This CREST-accredited project can be put towards achieving a CREST Bronze Award

Brief

Respecting the environment is extremely important at HS2. Whenever we build something new we have to think about the impact on the natural environment, historical environment and the local area. We have to think about how new additions to our built environment look, function, sound (and maybe even smell) inside and out, and make sure that they improve the environment rather than have a negative impact.

In this activity, you will produce:

- A plan to improve the environment in and around your school. Your plan should include a scientific investigation measuring one environmental factor;

- A report of your findings;

- An action plan for improving the school environment;

- An evaluation of your investigation and reflection on your learning.

You could investigate the natural environment, traffic congestion, noise, litter or another area of your choosing. Whichever you choose, it should be measured both qualitatively and quantitively. You must design an appropriate way to collect data, carry out your investigation and analyse your results. You should consult with your teacher about what equipment is available to help you.

The improvements that you suggest must be realistic and informed by your data. You should consider how your improvements might impact other aspects of the environment in and around your school. Solutions could involve new systems for doing things or practical changes to the school environment.

Getting Started

To get started, read both activity hand out sheets and decide in your team which aspects of the environment in or around your school you would like to improve. You could speak to other students, members of staff, friends or family that live close to the school for ideas.

You should then consider what type of data you need and how you might collect this data. For example, if you are trying to find out which canteen foods contribute the most litter, you might want to measure the different types of litter from a sample rather than the overall volume of litter produced in a day.

You should also consider in advance if you need help or permissions from any adults around the school. For example canteen sales data could help to work out if the disproportionate number of burger wrappers in your sample is because of the popularity of burgers, or because of something about the design of the packaging. It may require extra preparation for staff to produce this data, so ask them if this is ok before you start.

You should also identify who you will need to inform about your investigation; for example, you may need permission from your headteacher to work off-site, or the buildings manager who might dispose of litter before you've had a chance to measure it.

Things to Think About

- There are lots of different aspects of your school environment that you could investigate. Think about how you could gather data to measure biodiversity and wildlife in the school grounds, noise levels in classrooms or around the school, air quality or the school carbon footprint.

- If you are choosing something broad like the school's carbon footprint you could look at one aspect, such as the carbon footprint of the school journeys or the food miles of one week's lunches.

- This activity is also about thinking of solutions. You need to make sure that the data you are collecting helps with understanding the problem. This will help to inform your recommendations in the action plan.

- You also need to think about gathering control data:
  - If you were measuring noise across the school day, measure the noise at the same times when the school is closed.
  - If you are measuring biodiversity, you could use a local nature reserve as a control to collect data from, as this could represent what wildlife would be on your school site if the school was not there.

- You might find that you have limitations on what data you can collect based on the equipment available. If you do not have the equipment to measure quantitatively, invent your own scale with descriptors to measure qualitatively instead.

- However you collect the data make sure that your methods are consistent, precise and accurate.

- Make sure that your ambitions are realistic as you only have ten hours to complete this project, including the write-up. Consider how long you think the data will take you to collect and organise yourselves to spread the workload.

- If you are measuring wildlife or biodiversity, be careful not to disrupt or disturb wildlife in the process. Do not disturb nests or hibernating animals.

- Make sure that you explain how your research data has informed your recommendations for improvement.

- You do not have to carry out the improvements that you suggest, but they should still be realistic. Consider the cost implications and other impacts that your suggestions might have.

- Think about how your suggestions could be implemented. For example, if you recommend that students should be quieter during lunch break, think about how you could bring about this behaviour change.

- When evaluating your investigation, think about what went well as well as what you would improve.

- When reflecting on your learning, think about how you improved on your essential skills.

Essential Skills

- To complete the challenge you will use the essential skills of problem solving and teamwork. Speak with your teacher about how you can improve in these areas.

Useful Resources

- Find out how HS2 is protecting and enhancing woodlands, habitats and wildlife at the HS2 website. **https://www.hs2.org.uk/building-hs2/hs2-environment-facts/**

- Handout Sheet 1: Investigation Ideas contains some useful starting points for investigating the environment around your school.

- Handout Sheet 2: Environment Manager shows a day in the life of a HS2 Environment Manager. Read this to find out how HS2 professionals investigate environmental impacts.

Health and safety

To avoid any accidents, make sure you stick to the following health and safety guidelines before getting started:

- Find out if any of the materials, equipment or methods are hazardous using http://science.cleapss. org.uk/Resources/Student-Safety-Sheets/to assess the risks (think about what could go wrong and how serious it might be).

- Decide what you need to do to reduce any risks (such as wearing personal protective equipment, knowing how to deal with emergencies and so on).

- Make sure there is plenty of space to work.

- Clear up slip or trip hazards promptly.

- Make sure your teacher agrees with your plan and risk assessment.

- If you are working outside the grounds of your school, make sure that you inform your teacher and are accompanied by a member of staff.