



CONSTRUCT: A BRIDGE

Facilitator Instructions

Overview

Ask the class to split into groups of 4-5. The purpose of this exercise is for the group to build a bridge, using the materials provided. Each item has a value (financial and carbon). The aim of this exercise is to ensure they build their bridge in the most effective way.

In this pack there is:

- a set of student instructions
- team response form
- list of materials to be provided and their cost (carbon and financially).

Instructions

Please provide each group with a copy of the instructions, a response sheet and a list of materials available and their costs. You will also need to read the following to them.

“The Construction Industry always seeks to solve challenging engineering projects and to deliver them to a high standard, on time and to budget. The industry is increasingly becoming more aware of the environmental impact of its work and materials used so the industry is working hard towards becoming Net Zero. This means that we are reducing our carbon footprint on the world.

This exercise is designed to measure your team’s ability to design and build a bridge using the materials listed, in a cost-effective manner, within a tight timeframe to a high standard and leaving the lowest carbon footprint possible.

First of all, as a team, use the two A3 sheets of paper to work together to design your bridge.

You need to think about the cost implication of the materials that you are using and must only use the materials listed – all of which have a price, and which will need to be recorded on your response sheet. The price details are shown on the Response Sheet. Each item will also have a carbon value. This needs to be calculated too and the value entered on the Response Sheet.

Please ensure your team has a name and this appears in your final design, complete the response sheet showing your final design, the cost of the materials you have used as part of the session along with the team building the bridge

You have 30 minutes for this exercise, so you will need to think carefully how you manage your time to deliver **ALL** the elements asked of your team.

Any questions?

Your time starts now.”

Materials and costs to be used by the teams

Available to the teams:	Carbon cost per unit	Financial cost
Ten straws (maximum)	100 per straw	50p each straw
Meter of string	90 per meter	40p per meter
Spaghetti stands	50 per length	40p per length
Five sheets of white A4 card (maximum)	20 per sheet	20p each sheet of paper
Two sheets of white A4 paper	30 per sheet	25p per sheet of paper
Two sheets of coloured A4 paper (maximum)	40 per sheet	30p each sheet of paper
One pencil	80 each	10p for the session
One pair of scissors (maximum)	20 each	20p for the session
Blue tack	5 each	5p per portion
Elastic band each	60 each	10p each
Paperclips each	20 each	5p each

*Maximum relates per team

You will also need to take with you:

- plenty of the above items
- stopwatch/clock
- tape measure
- whiteboard markers
- prizes (see below).

Timings

Assuming you will have 60 mins for this session, you need to spend:

- Introduction using supporting editable .ppt (10 mins)
- Briefing of the exercise (5 mins)
- Exercise (30 mins)
- Collection of results (10 mins)
- Close (5 mins)

Obviously, you can adjust the timeframes of each element to suit.

End result

There will be three categories of winner:

- Best design
- Lowest carbon footprint
- Lowest financial cost.

Use a whiteboard to create a table to record the scores at the end of the session and create a bit of drama to the competition. (This table can be created as the students are working on their exercise.)

Team Name	Bridge Name	Carbon total	Financial total

If time permits, at the end ask the group what they would do differently if they had a chance to do the exercise again and what has been their biggest learning outcome.

Prize

You may wish to take some branded marketing goods appropriate for the age group as a way of awarding the winners. (These gifts should not include any latex, food or drink items due to allergy concerns).



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Student Instructions

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Instructions continue on next page.

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Response Sheet for Team: _____

Item:	Carbon cost per unit	Financial cost	Total number of units used	Carbon total	Financial total
Ten straws (maximum)	100 per straw	50p each straw			
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Elastic band each	60 each	10p each			
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Total:					