

Glasgow Science Festival Creating Engineers 2021 Glasgow Connects Bridge Building Challenge

The Glasgow Science Festival (GSF) **Creating Engineers** competition has run for nearly two decades. Each year, we welcome over 12,000 primary 5 & 6 pupils from across the West of Scotland and surrounds to take part.

Pupils work in pairs and compete through four rounds (classroom, cluster, area final & grand final) for the chance to become the **Glasgow Science Festival Creating Engineers Champions**. The competition tests the pupils on their teamwork, problem solving, construction skills and creativity through engineering-based challenges.

Due to ongoing restrictions from COVID, we were unable to run the 2021 competition in its usual form. For the same reasons, GSF has moved to a hybrid form, and we delayed delivery from June to Sept. As part of GSF21, we invite you to take part in our **Creating Engineers 2021 Classroom Challenge**, anytime throughout Sept.

The Challenge

The theme for GSF21 is Glasgow Connects. Celebrating Glasgow's role in COP26. Our festival theme and this challenge are a nod to the importance of making connections and building bridges with other countries to achieve COP26's objectives. It's also linked to the building of a new active travel bridge beside the Riverside Museum. Connecting Partick and Govan across the river Clyde.

1) Glasgow Connects Brief: The bridge must

- Span the River Clyde
- Be suitable for active travel (human powered e.g., walking, or cycling, no cars)
- Allow large ships to travel up the river (e.g., bridge pivots, raises)

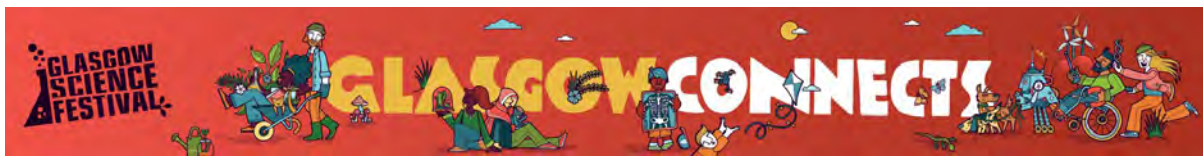
2) Build the Bridge

Unfortunately, we are not able to loan K'Nex boxes currently, so please tackle the challenge through whatever means you have available. For example:

- K'Nex, Lego or other construction materials
- Diagrams or schematics
- Models made from e.g., paper, cardboard, sticks
- Multimedia e.g., poster, video, animation

3) Encourage pupils to consider the following:

- Design and planning are critical. Spend time on this step before beginning your build.
- What challenges did you face?
- How did you change and improve your design?



How to Run the Challenge

Typically, the challenge is run as follows

- Pupils compete as teams of two
- Pupils are given one hour to complete the challenge
- Each team is provided with paper and encouraged to plan out their designs
- Designs are rated using the GSF judging sheet (last page of this document)

This method will work if you are completing the challenge using e.g. construction materials, cardboard or diagrams. We have included the judging sheets used in our competition stages. However, it is entirely up to you if you would like to run it as a competition or a classroom project.

Celebrating Pupils Work

As a thank you and to recognise the pupil's work:

For P5 & P6 Pupils in our Challenge Local Authority Areas*

Complete our online form to receive

- Creating Engineers 2021 class participation certificate
- GSF Creating Engineers badge per pupil (GSF bridge design)

**Dumfries & Galloway, East Ayrshire, North Ayrshire, South Ayrshire, East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, North Lanarkshire, Renfrewshire, South, Lanarkshire, West Dunbartonshire*

For all other areas or age ranges

Complete our online form to receive

- Creating Engineers 2021 class participation certificate

[Glasgow Science Festival Creating Engineers 2021 Online Form](#)

This asks for school name, teacher contact name, email address, postal address, pupil numbers per class. The info will not be used in any other way except to send you the certificates and/or badges.

Share with us on social media:

Twitter: @GlasgowSciFest #GSFCreatingEngineers

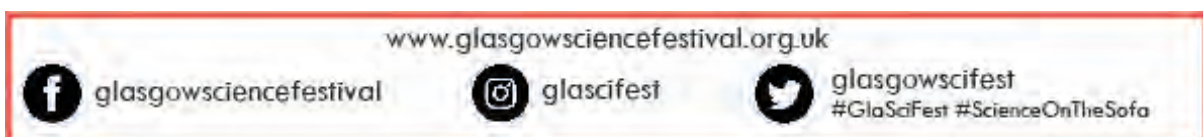
Instagram: @glascifest

Facebook: @glasgowsciencefestival

If you would join our mailing list to be informed when GSF Creating Engineers 2022 is announced, please do so using this online form

[GSF Mailing List](#)

[For more info on Creating Engineers please visit our website](#)





Glasgow Science Festival: Glasgow Connects, 1st to 30th Sept 2021

Glasgow Science Festival returns to the City throughout September with **Glasgow Connects**. Offering a hybrid programme of events with a distinctly green tinge, inspired by the international COP26 climate conference. Showcasing themes such as sustainability, health & wellbeing, and the environment.

Online Content

Our digital programme **Science on the Sofa** features dozens of activities suitable for the classroom. Created with our partners, including the University of Glasgow, Strathclyde, GCU, UWS, Edinburgh, The Open Uni and Manchester. All content is designed to be self-led and readily available for you to engage with at your leisure.

Science on the Sofa is divided into four strands:

1. **Hands-Online:** dozens of experiments, activities, demo's and workshops. Covering a range of subject areas including a COP26 feature. The activities are supported by instructional videos, how-to guides and activity packs. Designed for use at home, in the classroom or community settings. Using readily available and inexpensive materials.
2. **Citizen Science:** introducing **Spot a Bee** and the **Gulls Eye Project**. Two citizen science projects created by University of Glasgow researchers, inviting you to take part and help collect valuable data.
3. **COVID: Glasgow Responds:** informal talks and resources exploring the contribution local research teams have made to the ongoing efforts to tackle the pandemic.
4. **Talking Science:** talks on two themes, COP26 and Health & Wellbeing

In Person Events

Unfortunately, there is no specific schools programme this year due to the ongoing challenges. We are however able to go ahead with some public facing events. Including our programme at the Glasgow Botanic Gardens from the 4th to 12th Sept, 11-2pm. Where we will be running socially distanced activities in outdoor gazebos. This is open to the public and we would be delighted to welcome a school per day as part of this. This would be most suitable for primary school aged pupils.

All events and content are FREE!

Our programme of live events and digital content is available to browse from Sept 1st at www.glasgowsciencefestival.org.uk

GSF Socials & Contact

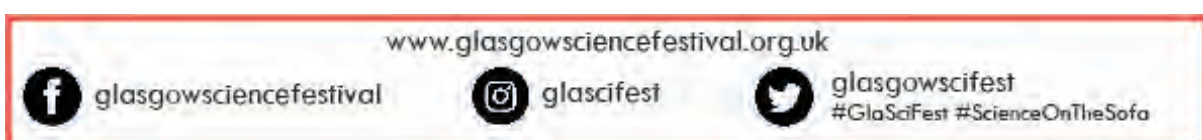
[GSF Facebook](#)

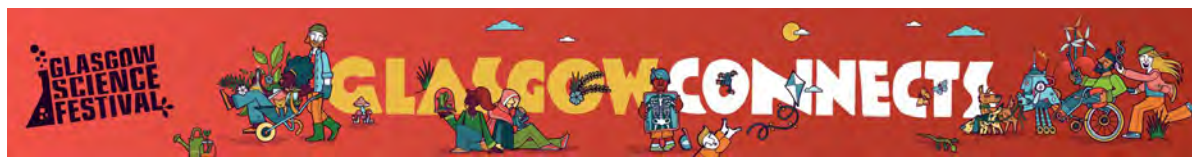
[GSF Twitter](#) #GlaSciFest #ScienceOnTheSofa

[GSF Instagram](#)

[GSF YouTube](#)

Email: sciencefestival@glasgow.ac.uk





Pupil 1		Pupil 2	
Judging Criteria	Consider	Score	Judges Comments:
<p>Presentation, Communication & Teamwork Max Points 25</p> <p>Poor Average Good Excellent</p> <p>1-6 7-15 16-21 22-25</p>	<ul style="list-style-type: none"> • Did the pupils plan the model before building it? • Do they have drawings they can show, were they made before, during or after they started to build? • How well did the team communicate about their design? • Do they play to their individual strengths and use them to make a good team? • Do they work well together? 		
<p>Problem Solving Max Points 25</p> <p>Poor Average Good Excellent</p> <p>1-6 7-15 16-21 22-25</p>	<ul style="list-style-type: none"> • Discuss the problems the pupils encountered during the design & construction stages of the model. • Did they overcome the problems methodically & analytically? • What ideas were tried before the final solution was adopted? • Have they shown a clear understanding of how-to problem solve? • Did they work together on solving them? 		
<p>Operation, Function & Design</p> <p>Max Points 50</p> <p>Poor Average Good Excellent</p> <p>1-10 11-25 26-40 41-50</p>	<ul style="list-style-type: none"> • Have the pupils built an effective model that meets the criteria - interesting, novel and sturdy with moving parts? • Does it perform the intended function competently, could it be improved? • Has safety been considered, is it strong and sturdy? • Review your overall impression of the model, is it visually appealing? 		<p>Operation and Function 30 points</p> <p>Design and Visual Appeal 20 points</p>
<p>Judged by:</p>		<p>Max Score: 100 points</p>	<p>Any other comments:</p>
		<p>TOTAL</p>	