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| **Workshop : Building Bridges****National Curriculum Links**KS1 Science: -Everyday materials- Identify everyday materials and describe properties of materials and their suitability for uses.- Working scientifically- ask questions, observe closely, perform simple tests, gather and record data.KS2 Science: Working Scientifically- taking measurements, recording data, making predictions, reporting findingsKS1/2 History: Investigating Local HistoryKS1 DT: * Make- select from and use a range of materials
* Make- Select from and use a range of tools to perform practical tasks
* Evaluate- evaluate their ideas
* Technical Knowledge- build structures and explore how they can be made stronger, stiffer and more stable

KS2 DT: * Make- select from and use a range of materials
* Make- Select from and use a range of tools to perform practical tasks
* Evaluate- evaluate their ideas + consider improvements
* Evaluate- Understand individuals in design that helped shape the world
* Technical Knowledge- apply understanding of how to strengthen structures

KS2 mathematics:* -measure, compare, add and subtract lengths
* - Add and subtract amounts of money
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| **Learning objectives** | **Session structure** | **Assessment for learning** |
| **To investigate old and new bridges built across the River Tyne.****To conduct an experiment to discover which shapes make the strongest bridge.****To construct strong structures using everyday materials.** | **Introduction**We will explore the museum to investigate old and new bridges built across the River Tyne. We will consider the different materials and designs used. **Session activities**Working in small groups the students will perform an experiment to see which bridge shape is the strongest. They will make predictions and consider how we can make it a fair test before collecting and recording their results. We will discuss the results as a class to explore which is the strongest bridge shape and possible reasons behind this. Continuing to work in their small groups students will then work to design and built the strongest bridge possible using everyday materials. KS1 students will choose between a set tray of materials and KS2 students will work with a budget of £100 to buy materials from the shop. The bridges will need to meet a set criterion and will be tested for strength at the end of the session**Plenary**At the end of the session, we will discuss which bridges were the most successful and what we could change to improve our designs if we could have another go. | Children will explore themes through class and group experiments, we will ask questions throughout to check understanding.Children will have opportunities to respond and give feedback throughout the session. There will be opportunities for Q&A at the end of the session.  |
| **Before your visit** | **After your workshop** | **Key vocabulary** |
| Make a free teacher pre visit to familiarise yourself with the site- contact learning@discoverymuseum.org.uk Explore the museum virtually using goggle institute:<https://artsandculture.google.com/partner/discovery-museum>  | * Revisit the bridges on display in the museum to building on learning from the tour using the self-led trail <https://discoverymuseum.org.uk/exploring-discovery-museum-self-led>
* Repeat the bridge building exercise to see if students can improve their designs
* The [Tyne and Wear Archives Flickr](https://www.flickr.com/photos/twm_news/albums) page has a collection of images documenting the building of the Tyne Bridge.
 | Arch, Beam, Suspension, Pier, Deck, Span, Abutment, Stone, Metal, Rivet, Structure, Key Stone |