

## What do we require?

- A ground floor school hall with enough space to construct the 13m long bridge. The school hall must also have sufficient access for the bridge components to fit through (double door onto outside area with nearby parking).
- A classroom with projector to give presentations and run K'NEX activity.
- Teachers must be present to supervise the two class halves.

## What do we provide?

- At least six enthusiastic and experienced Civil Engineers from both a Design Consultancy and Main Contractor.
- All materials and equipment required to undertake the activities.
- Loan of suitably sized Personal Protective Equipment (PPE) to wear.
- Fun and interactive learning to engage and hopefully inspire the next generation.
- Certificates for all pupils on completion.

## What do others say?

*"It's genuinely one of the best school projects we've been involved with. The children absolutely loved it and got so much from it! It was great to see them working so well as a team and developing their problem solving skills."*

Claremont Primary School

*"All the children and staff loved the fantastic learning and the exciting opportunity to undertake some practical learning. Everyone gained a great deal from this wonderful learning experience."*

Forestdale Primary School

## Who are Mott MacDonald?

Mott MacDonald is a global engineering, management and development consultancy focused on guiding our clients through many of the planet's most intricate challenges

[www.mottmac.com](http://www.mottmac.com)

## Who are BAM Nuttall?

BAM Nuttall is a leading edge supplier of civil engineering services and is fully focused on delivering quality infrastructure projects on behalf of all our customers

[www.bamnuttall.co.uk](http://www.bamnuttall.co.uk)



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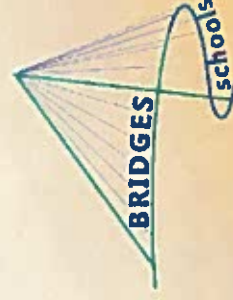
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## Bridges 4 Schools





## Learning Outcomes

- Pupils will have the opportunity to:
- Construct a substantial structure using simple methods.
  - Learn about Health & Safety issues.
  - Take responsibility for their actions.
  - Develop team building skills.
  - Grow confidence and self-esteem by taking part.
  - Enhance their learning in a range of National Curriculum subjects.
  - Learn what engineering is and how engineers contribute to society

## Links to Curriculum

- Mathematics: counting, calculating, estimating.
- Design & Technology: planning, manual dexterity.
- Science: properties of materials, understanding of forces.
- Language: new words, listening skills.
- History: the role & development of bridges and science/engineering through history.
- Geography: why build bridges and where?
- Art: exploring ideas, shapes, spaces.
- Personal, Social and Health Education: taking care for self and others, develop confidence through success.

## Activities

### The Cable Stayed Bridge Activity

Our flagship activity is the 'flat-pack' 13m long cable-stayed bridge that pupils construct, walk across and deconstruct. The activity is run as follows:

- Before the activity the Bridges 4 Schools Team will have set up the two frames.
- The activity begins with a short presentation discussing different types of bridges with simple explanations of how they work.
- 'On-site' pupils are provided with personal protection equipment and a briefing explaining how the bridge is constructed and the importance of teamwork and health and safety in construction.
- The pupils are split into two teams and project roles assigned.
- Each team will construct the bridge from each end, meeting in the middle.
- Pupils can then walk across the bridge providing fantastic photo opportunities!
- Pupils deconstruct the bridge.
- The Bridges 4 Schools Team oversees the construction and deconstruction explaining how the bridge works as the pupils work.
- The activity has been fully risk assessed, with the students closely monitored by the Bridges 4 Schools Team.



### The K'NEX Bridge Challenge

Whilst one class is constructing the cable-stayed bridge the other is undertaking the K'NEX Bridge Challenge which challenges pupils to construct a bridge out of K'NEX that will span 30cm supporting the heaviest weight possible. The activity is run as follows:

- Before the activity the Bridges 4 Schools Team will distribute packs of K'NEX pieces.
- The activity begins with a brief introduction to the task and explanation on how the K'NEX pieces fit together.
- Bridges 4 Schools Team members and teachers are on hand throughout to provide guidance and ideas on designs. The students will also be encouraged to work together in their teams – a requirement for any successful engineering project.
- Completed bridge designs are tested at the front of the class.
- The session ends with a round-up of why some designs were successful and others not.
- The activity has been fully risk assessed, with the students closely monitored by the Bridges 4 Schools Team.

### Typical Schedule for the day

Timetable	Activity
09:05 – 09:30	Civil Engineering Introduction (Class 1)
09:30 – 10:30	Session 1A (Bridge/K'Nex)
10:30 – 11:30	Session 1B (K'Nex/Bridge)
11:30 – 11:45	Summary Presentation and Q&A Session
12:30 – 12:55	Civil Engineering Introduction (Class 2)
12:55 – 13:55	Session 2A (Bridge/K'Nex)
13:55 – 14:55	Session 2B (K'Nex/Bridge)
14:55 – 15:10	Summary Presentation and Q&A Session

The activities are aimed at Year 5 and Year 6 students. Class sizes of maximum 30 pupils are recommended, with one class undertaking the activities in the morning and another in the afternoon.