Information Sheet

Building Bridges with K'NEX (1)

Why build bridges with K'NEX?

There are four reasons to build bridges with K'NEX:

- K'NEX is more than an easy-to-use construction kit – it is a true structural engineering system, which is ideal for building bridges and towers.
- Building and testing K'NEX bridges therefore gives students a valuable educational experience
- There are two K'NEX bridges sets, with comprehensive instruction books that make bridge-building easy for beginners
- Building K'NEX bridges is great fun!

Who might enjoy K'NEX bridge-building?

In our experience, the following will enjoy and benefit from K'NEX bridge-building:

- ✓ ***Primary Schools***
- ✓ ***Secondary Schools***
- ✓ ***Children's clubs***
- ✓ ***Childcare schemes***
- ✓ ***Family Learning programmes***
- ✓ ***Post-16 education***
- ✓ ***Adult Education***

What K'NEX do I need to build bridges?

If you already have a medium-sized K'NEX set, then you probably have enough K'NEX to start building bridges. Our website **www.knexusergroup.org.uk** includes a photo of a simple bridge to build in the "Model to build" section, and a bridge challenge in the "Challenges" section.

If you need more K'NEX, or if you want to build K'NEX bridges from comprehensive instructions, then we would recommend buying one or more of the "Introduction to Structures: Bridges" sets shown opposite.

If your students are already K'Nexperts, and are looking to build really big bridges, we would recommend the Real Bridges set shown overleaf.

Can all ages of student build bridges?

The K'NEX bridge on the "Instructions" page of our website can be built by 5-6 year olds (KS1), with a little help. The bridges in the "Introduction to Structures: Bridges" set are intended for 7 to 14 year-olds (KS2 and KS3), but are also very good for adults, and students post-14. The Real Bridges set builds very large bridges, so is probably best used from age 9 upwards.

What skills will be learned?

The best way to build K'NEX bridges is for students to work in pairs or small groups. The skills they learn will then include:

1. An understanding of Structures - an important part of the KS2 and KS3 Design and Technology curriculum.
2. Engineering skills.
3. Team-working skills.
4. Problem-solving skills.
5. Communication skills.
6. Self-esteem.

Training workshops

It is not essential for teachers and tutors to complete a training workshop before they start building K'NEX bridges with their students. However, if you are planning to use the Introduction to Structures: Bridges set below, there are two training options available:

- Access the distance learning module "Building Bridges with K'NEX" on our website **www.knexusergroup.org.uk**
- Ask for a "Building Bridges with K'NEX" training workshop for your staff.

K'NEX bridges sets and guides

There are two K'NEX Bridges sets and a guide available. These can be purchased via the K'NEX on-line shop on our website **www.knexusergroup.org.uk**

Introduction to Structures: Bridges set

A K'NEX education set with 207 pieces that enables teachers and tutors to help their students understand the principles of bridges and structures.

Builds 14 models from instructions, one at a time, including 7 different bridge types. Ages 7+.

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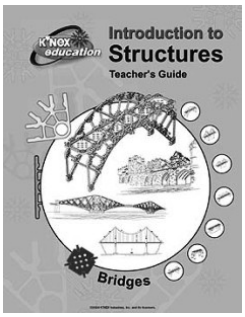
Building Bridges with K'NEX (2)

Bridges Curriculum Guide

The "Introduction to Structures: Bridges set" described on the previous page comes with an excellent free 80-page UK curriculum guide, on CDROM.

The guide contains a wealth of information for teachers on bridges and structures, and 10 comprehensive lesson plans.



Real Bridges set

A large K'NEX education set with 2282 pieces that builds 5' long replicas of seven famous bridges, including Tower Bridge, the Forth of Firth Bridge, the Golden Gate Bridge, and the Sydney Harbour Bridge.

Comprehensive instruction book, both printed and on CDROM. Ages 9+.

Comments on sets from teachers and tutors

The following are some comments on the Introduction to Structures: Bridges set from the many teachers and tutors who have attended our "Building Bridges with K'NEX" training workshop.

"Good – very educational and enjoyable."

"Great – plenty of ideas for the classroom."

"Excellent – the bridges look like real bridges, and behave like real bridges when tested."

"Very useful, simple to use – not too many different pieces."

"Good – surprising how much can be done with a relatively small amount of equipment."

"There are clearly endless possibilities."

"Very good indeed."

"Can't wait to try this out."

If you have any questions about Building Bridges with K'NEX, please email us on: **info@knexusergroup.org.uk**

A typical K'NEX bridge building project

A typical project using the Introduction to Structures: Bridges set might proceed as follows, with students working in pairs to:

1. Look at photos of some real bridges (either printed photos or on the internet), and choose a bridge that they particularly like.
2. Find which of the 14 K'NEX bridges in the instruction book is closest to the real-life bridge they have chosen (eg truss bridge, arch bridge).
3. Build their bridge from the instructions provided.
4. Test their bridge using kilogramme weights or books.
5. Think of ways to strengthen their bridge, by using extra K'NEX rods and connectors.
6. Test their bridge again, to see how much extra weight it can now support.

A K'NEX "Bridge that Gap" challenge

An alternative approach to the bridge project above works very well with students who are already familiar with K'NEX. This is a K'NEX *"Bridge that Gap"* challenge, in which students build a bridge to their own design, without instructions.

You can find full details of the challenge on the "challenges" page of our website **www.knexusergroup.org.uk** There are three levels of difficulty:

Level 1	Make a bridge which will span a 1m gap without supports
Level 2	Make a bridge which will span a 2m gap without supports
Level 3	As level 2, and will also support the weight of a box of K'NEX in the middle

Younger children and less experienced older students will be able to complete level 1 with a little help. More experienced students can then go on to complete levels 2 and 3 if they wish.

K'NEX challenges are particularly good at helping students to develop their problem-solving skills.