Super Engineers

→How do Buildings Feel?
SUPER ENGINEERS

→ How do buildings feel?

1. Be a COLUMN by balancing a pile of books on your head.

Buildings get stressed too! How do you think it feels being a diving board or a bridge? Act out these different parts of a building and feel the forces.

2. Be a CANTILEVER by holding out a pile of books at arm’s length.

Think about what forces you are feeling. Are you in Tension (being stretched) or Compression (being squashed)?

3. Be an ARCH, with two people, by leaning against each other's hands.

Think about what other structures you could make for example: a tunnel, a dome. Can you make a whole building?
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**1.**

**COLUMNS** are under constant compression and need to be made out of materials that can take the strain, such as brick, steel or reinforced concrete.

**Materials:**
What materials can take the stress?

**2.**

**CANTILEVERS** need to be very strong so that they don’t bend or break. When a structure is being bent it is being compressed on one side and is in tension on the other. This means that cantilevers need to be made out of materials such as steel or aluminium that are strong in both tension and compression.

**3.**

**ARCHES** use compression to balance their own weight and the weight piled on top of them. Materials such as concrete or cast iron are great for arches such as bridges.
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**Background Information**
- Explores the concepts of forces and pressure
- Covers curriculum areas:
  - Science K S 1 & 2: Forces and motion
  - DT Key Stage 3: Knowledge and understanding of structures

**Procedure**
1. Distribute the activity cards to students.
2. Split students into teams of at least two teams.
3. Ask each team to try to see if they can pretend to be:
   - **Column** – balance books on their head
   - **Cantilever** – holding books at arms length
   - **Arch** – leaning against each other’s hands
4. Ask the students to think about what forces they are feeling. Refer them to their activity cards 1 on Tensions & Compressions.
5. Discuss with each group about what materials could be used to build structures – refer to Activity Sheet 2 on Materials, Display pictures of bridges, cranes and towers.

**How do buildings Feel?**

**Organiser’s Handy Hints**

**Safety**
- Note: The children will have to push and pull at each other and hold books as weights.