# Construction:
# Electrifying creations

## Year 6

How can we combine electricity and design to create a spooky, Gothic-themed model?

# Construction: Electrifying creations

Skills

## Core skills

- Investigate Gothic architecture and products to identify features that create a dramatic and spooky effect
- Plan and build electrical circuits, selecting components to achieve desired effects
- Create detailed, labelled sketches or CAD plans showing Gothic style, structure and electrical and mechanical components
- Accurately measure, cut, join and assemble materials to build a stable Gothic-themed model with working electrical and mechanical features
- Test and evaluate the model's function and appearance against design criteria, suggesting realistic improvements

## Supporting skills

- Communicate ideas clearly and effectively using precise drawing, CAD, models and technical vocabulary
- Respectfully draw inspiration from Gothic architecture and design, ensuring safe, sustainable material choices
- Develop original Gothic-inspired designs that combine striking aesthetics with functional electrical and mechanical features
- Use accurate measuring, scaling and calculating to ensure precise construction and circuit planning
- Troubleshoot circuit or construction issues by testing, adapting and finding inventive solutions
- Work with others to share tools, exchange ideas and combine strengths during the design and build process

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# Vocabulary

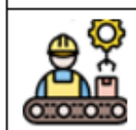
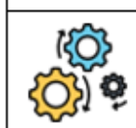
Lesson 1

| | | |
|---|---|---|
|  | atmosphere | The feeling a place or artwork gives you. |
|  | detail | Small parts of a design that add interest or style. |
|  | pattern | Shapes, lines or colours that repeat in a design. |
|  | texture | How a surface feels or looks like it would feel. |

Lesson 2

| | | |
|---|---|---|
|  | circuit | The closed loop that electricity can flow around. |
|  | component | A part or element of a larger whole. |
|  | effect | The result or outcome of an action. |

Lesson 3

| | | |
|---|---|---|
|  | accurate | When something is correct and exact, without mistakes. |
|  | manufacture | To make something, usually in a factory or workshop. |
|  | test | To try something out to see if it works or if it's good enough. |
|  | mechanism | A part that helps something move. |

Lesson 4

| | | |
|---|---|---|
|  | detail | Small parts of a design that add interest or style. |
|  | circuit | The closed loop that electricity can flow around. |
|  | effect | The result or outcome of an action. |
|  | mechanism | A part that helps something move. |

Lesson 5

| | | |
|---|---|---|
|  | functional | Useful for its purpose. |
|  | appealing | Something that looks nice and makes you want to use it or have it. |
|  | improve | To make something better. |
|  | successful | Having achieved a desired aim or result. |

# Construction: Electrifying creations

# I Now Know...

1

- Gargoyles, stained-glass windows, arches, buttresses, carved patterned stone and spires and pinnacles are common features in Gothic architecture.

2

- Component: a part or element of a larger whole.
- Circuit: the closed loop that electricity can flow around.
- Effect: the result or outcome of an action.

3

- Mechanism: a part that helps something move.
- Test: to try something out to see if it works.
- Accurate: when something is correct and exact.
- Manufacture: to make something.

4

- To make my model stronger, I can add an L-brace or used a different fixing method.
- The circuit should be inside or behind parts of the model where it is protected and hidden.

5

- To make special effects like lights or movement work in my model, I need a complete circuit using wires, a power source and components like bulbs or motors.

# Construction: Electrifying creations

Links

| Previous Learning | Future Learning |
| --- | --- |
| **KS1**<br>-Introduce basic construction, explore stability, joining methods and simple wheel and axle mechanisms<br>-Build strong, stable frame structures with cross-bracing and simple mechanisms such as hinges, sliders and pivots<br>**Year 3**<br>-Develop design criteria for a model that uses magnets to create movement, applying joining methods such as folds, slots, tabs, ties, flanges and L-braces.<br>**Year 4**<br>-Construct interactive models with mechanisms such as cams<br>**Year 5**<br>-Develop and apply design criteria to solve problems, creating functional products for specific tasks that incorporate pulleys, levers and linkages. | **KS3**<br>-Pupils deepen their knowledge of materials and technologies, design and make high quality prototypes with greater independence and use specialist tools and CAD to integrate mechanical, electrical and computing systems.<br>-Evaluate past and present designs, considering its impact on society, with an emphasis on creativity, innovation, sustainability and user-centred design. |

# Construction: Electrifying creations Learning Objectives

| **Lesson 1: What makes Gothic design spooky and dramatic?**<br><br>LO: I can describe features of Gothic design using key vocabulary. | Researching |
|---|---|
| I can identify and describe key features of Gothic style | |
| I can record my research by sketching or noting Gothic features that could inspire my own model design | |

| **Lesson 2: How can electrical circuits create effects in a model?**<br><br>LO: I can explain how electrical circuits work. | Technical knowledge |
|---|---|
| I can identify electrical component parts | |
| I can make a working electrical circuit to create a special effect for my model | |
| I can make a record of a circuit using component symbols | |

| **Lesson 3: How can I design a Gothic-themed model with lights, movement or sound?**<br><br>LO: I can create a labelled design showing Gothic style and electrical features. | Designing |
|---|---|
| I can draw a labelled plan for my Gothic model | |
| I can say where the electrical circuits and moving mechanisms will be | |
| I can use CAD to design my model | |

| **Lesson 4: How can I build a working model with dramatic effects?**<br><br>LO: I can build a stable structure and add an electrical feature. | Making |
|---|---|
| I can build a strong, stable Gothic model including electrical circuits and moving mechanisms | |

| **Lesson 5: What makes my Gothic-themed model successful and functional?**<br><br>LO: I can evaluate the success of the model against the design criteria. | Evaluating |
|---|---|
| I can test my Gothic model for Gothic features, stability and special effects | |
| I can listen to peer feedback and act on it | |
| I can evaluate my model against the design criteria | |

# Construction: Electrifying creations

# Post Assessment

**Which architect was famous for his Gothic buildings?**



Gabriel ☐

Pugin ☐

**True or false?**
**In architecture, atmosphere means how large a building is?**



_____

**Label these Gothic features.**





_____ _____



_____

**Match the component to its symbol.**

bulb 

battery 

switch 

**What are the missing words in this sentence?**

Electrical components arranged correctly allow _____ to flow and complete a _____.

**If an electrical circuit isn't working, what could you do to fix it? Tick one.**

put a switch in ☐

use longer wires ☐

try changing the battery ☐

remove the bulb ☐

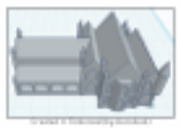
**Explain how CAD (computer-aided design) helps when designing?**

_____

_____

_____

_____



**True or false? During the design stage, you need to think about materials or how your model will work.**



_____

**Finish the sentences.**

a. I could add **lighting** special effects to my model by

_____

b. I could add **movement** special effects to my model

_____

**Match the word with its definition.**

| | |
|---|---|
| perspective | the way you see something |
| mechanism | a path electricity flows around |
| circuit | someone your own age |
| peer | parts that make something move |

**Put these design steps in the correct order.**

a. evaluate your model
b. build your model
c. research ideas
d. plan your design

_____

**Label these joining methods.**





_____ _____

**Why is it important to evaluate our work? Tick all that apply.**

to test if it works well ☐

so we can copy someone else's ideas ☐

to check it matches the design criteria ☐

to think about what could be improved ☐

because the teacher tells us to ☐

**Name two safety rules to follow when making an electrified model.**

1. _____

2. _____