Teaching D.T. at KJA

The teaching of Design Technology at Kensington Junior Academy encourages our pupils to become curious and creative problem solvers, both as individuals and as part of a team. Combining practical skills and knowledge with an understanding of aesthetic, social and environmental issues.

The learning at KJA is rooted in the five Learning Behaviours and combines practical skills with greater knowledge, which will prepare pupils for life in a world where understanding, adaptability and transferable skills are critical.

Our core intent is to enable all pupils to:

- Develop imaginative thinking, enabling discussion about preferences, workings and construction.
- Able to draw, plan and model their ideas demonstrating an understanding of materials and resources.
- Select appropriate tools and techniques whilst following safe procedures.
- Use ICT software to assist designing and learning where appropriate
- Critically evaluate both their own and others work, extending and improving their ideas.

DT is taught, where possible, as part of a cross-curricula model with staff following a process model to ensure pupils become adept at '*Thinking like a Designer*'.

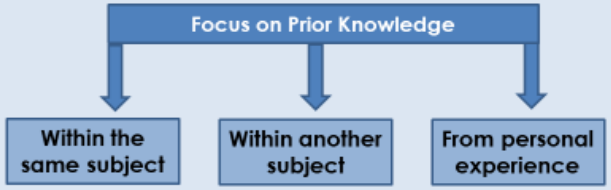
A Process Model for Design Technology

In order to '***Think like a Designer'*** pupils will work through four distinct areas:

Link It

Focus on Prior Knowledge

- Be proactive in helping pupils to **recall prior learning** from previous units of learning within the subject or from other subjects.
  - Give time to, and respect, any **personal experiences** pupils may bring to the learning.
- Ensure **pupils are secure in their prior knowledge** within the subject before starting new unit of learning.
- Where appropriate, use a diagnostic assessment to check on retention and then reteach parts that have not been retained.



Learn It

- **Present new learning to pupils in small chunks** to prevent cognitive overload.
  - Effectively the **composite and component** examples work for this.
- **Provide effective modelling** and plan time for guided and independent practice.
- Ensure there are opportunities for pupils to **develop their substantive knowledge** alongside **disciplinary knowledge**.
- Start with an activity to focus on **being a scientist, historian or a geographer (artist, technologist)**
- Ensure you have **rehearsed any new concepts** and checked understanding.
  - **Use talk for learning** to comprehend new concepts and vocabulary.
    - **New Vocabulary**
- Ensure that there are opportunities for pupils to learn new vocabulary (speaking frames, etc.

Check It

- **Create checkpoints** throughout the lesson to ensure that pupils have understood the current learning.
- **Mark in the moment** and provide instant feedback to pupils. Ensure you **pick up on pupils who are falling behind**.
- When possible, **provide rapid intervention** for those pupils that need it.
- Use retention assessments to help you **gain a picture of any gaps** that may be occurring.

Use the information from above to target intervention through peer support and teacher and TA support.
Identify individuals who need additional challenge.

Show It

- Ensure that there are opportunities for pupils to **showcase** their learning.
- Ensure that this **links the disciplinary with the substantive knowledge**. For example, in history ensure that you link in the impact the period studied had on our lives today. Give pupils time to challenge the quality of the evidence.
- Maximise opportunities to **develop cross curricular activities**, independent writing, knowledge displays, group activities that could be filmed and shared as well as through debate and drama.
- Provide ample opportunity to showcase their new skills and new knowledge in a **variety of ways**.
- In addition, provide **opportunities to use the new vocabulary** they have acquired in other areas of the curriculum.

Outcomes of Learning

#1 Investigate and research

Date: Thursday 14th September 2023

Where do I belong?

What can I learn about my community from exploring more recent history?

LO: To investigate and research electric lighting circuits for fairgrounds.

I can...

- Discuss differences in types of light bulb. ✓
- Understand the impact of the design of fairground lights on daily life. ✓
- Evaluate past and present product design. ✓

Retrieval

What equipment do you need to construct a simple electrical circuit that lights up a bulb?

A battery, 2 wires, a bulb, bulb holder, wires to with crocodile clips on both ends, batteries, a battery case and a small light bulb. ✓


Incandescent bulb


Fluorescent bulb


LED bulb


Solar bulb

1) Incandescent bulb: Electricity is forced through a very thin filament which it makes it very hot. This produces light

2) Fluorescent bulb: A glass tube containing argon gas and mercury is then filled with electrons. The electrons hit the argon and make a plasma, through which the electrons then flow through easily.

3) LED bulb: Electrical energy is transformed into light energy using a semiconductor which produces light ✓

4) Solar bulb: These bulbs store sunlight and then turn it into electrons which light up at night.

The most popular fair light is LED bulbs called 'Caborchon bulbs'.

What is the impact of well-designed fairground lights?

Flashing animation to stand out at night.

Shapes to explain and excite.

Creative designs inspire people.

LED is more ECO friendly and efficient.

These lighting systems were photographed at Ilkeston's Charter Fair.

Evaluate the product design. Do they have a positive impact? Consider how the lighting systems look (aesthetics and desirability), their performance (functionality) and suggest possible improvements.

The use of the different colors is effective because th are so bright and attractive. When the letters are n all lit up it is not effective as you cannot see what it sa in the dark. They could improve by light in all the letters- not just some.

fully lighting lighting up

#2 Design

Date: Monday 18th September 2023

Where do I belong?

What can I learn about my community from exploring more recent history?

LO: To plan and develop an electric circuit to fulfil design criteria.

I can...

Articulate what a prototype is and discuss the positives and negatives around using a prototype.

Create a detailed, annotated sketch of a circuit to fulfil design criteria.

Explore circuits with a switch to control the break.

Retrieval (think, pairs, share)

Tell your learning partner a fact about each of the four bulbs we explored last lesson.


Incandescent bulb


Fluorescent bulb


LED bulb

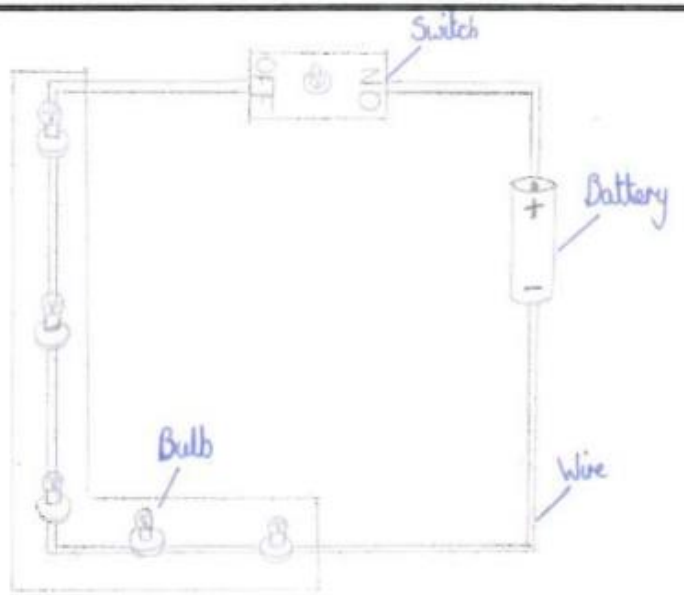

Solar bulb

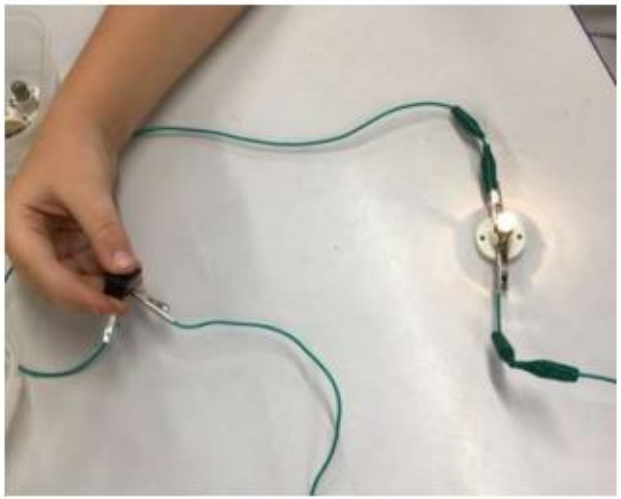
What is a Prototype?

A prototype is a model of a product that designers make to test their idea. It is a 3D item that you can look at from all angles.

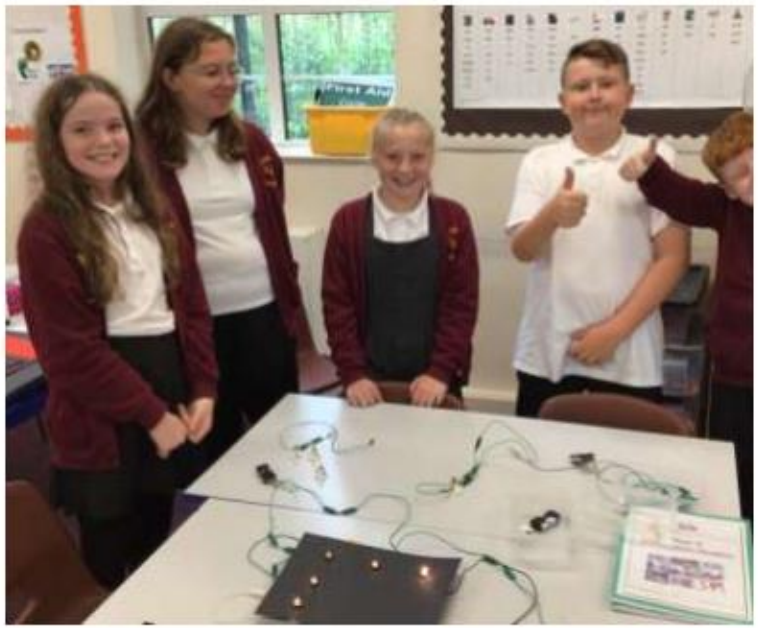
Design criteria	
What are you designing?	A prototype for a bespoke, light up sign for a fairground ride, made from an electric lighting circuit.
Purpose	
What is your product being created for?	To promote our design of a light up sign for the 'Waltzer' fairground ride.
Where and when would you like your final product to be used?	At the Ilkeston Charter Fair in October 2024.
Function	
What will your final product do?	It will light up and display a sign for the 'Waltzer' ride. It will draw attention to the ride and entice customers.
How will you make sure it does what it is meant to?	We will generate, develop, model and communicate our ideas through discussion, annotated sketches, a prototype and rigorous testing.
Target market	
Who will use your product?	Investors for the Ilkeston Charter Fair.
How will you sell it to them?	We will show off the prototype for our innovative, functional and appealing product and articulate our well-planned design procedure.
Form	
What materials will you use for your prototype?	Wires with crocodile clip attachments on both ends, batteries, battery cases, small incandescent bulbs, a switch and black card.
What would your ideal finished product look like?	A colourful, flashing sign depicting the word 'Waltzer', made using Cabochon LED bulbs.

Diagram





#3 Make and modify



Year 4 Shadufs

Design Problem: The school garden needs watering in the summer, but it's hard to move water around.

Design Brief: Make something that helps move water easily from one place to another in the garden.