Resistant Materials.

# Yr. 08. Design and make a LED light based on a chosen art movement

**Art Nouveau** - 1890 - 1905.
Art Nouveau was born out of a backlash to the increase in industrial style products.
**Key Designers:** Emile Galle.
**Key Features or Patterns:** Flowers, plants, the female form with long flowing hair. Natural imagery.
**Colours:** Sage greens, light violets, medium brown.
**Line Styles:** free flowing curves and lines, floral and plant influences.
**Art Deco** - 1920 - 1936.
Art Deco is said to be influenced by the world at the time, skyscrapers began to spread across Americas skylines, cruise-liners and planes were being built and enabled travel around the world.
**Key Designers:** Eileen Gray.
**Key Features or Patterns:** geometry features heavily, influenced by transport and skyscraper shapes.
**Colours:** Silver, black, chrome, gold and bronze.
**Line Styles:** geometric, circles, arcs and curves, mathematically drawn. Straight lines.
**Bauhaus** - 1919 - 1933.
The Bauhaus Design School was founded by Walter Gropius in Germany, his idea was to move away from student and teacher style teaching and more into communities teaching each other their skills.
**Key Designers:** Marcel Breuer.
**Key Features or Patterns:** tubular steel bent into curves or angles, simple looking designs with quality finishes.
**Colours:** Primary colours which are offset with steel or chrome plated metal.
**Line Styles:** geometric - either very angular or curves that are not free formed.
**Memphis** - 1981 - 1988.
The Memphis Design Movement was a collection of designers and artists that wanted to create something to break the rules of traditional design.
**Key Designers:** Ettore Sottsass.
**Key Features or Patterns:** crazy patterns - some loosely based on animal print, some geometric, pinstripes.
**Colours:** bright, bold and stand out colours that all contrast with each other.
**Line Styles:** very geometric, rectangles, triangles, square and circles, arcs.
**Post Modernism** - 1945 - present day
This movement looks at style over function.
**Key Designers:** Phillippe Stark.
**Key Features or Patterns:** High shine metals and the gloss of plastics.
**Colours:** A lot of steel, chrome with one pure colour.
Line Styles: Often flowing lines but the objects often have a line of symmetry.

**The Design and Make Process:**
**Brief/Concept**
**Research**
**Specification - ACCESSFM**

**A** - Aesthetics
- Why does it look attractive or ugly?
- Does it make good use of colour and texture?
- Does it have a quality finish?
- Where did the designer get their inspiration?

**C** - Cost
- What is the estimated cost of production?
- What is the retail cost? Why does it cost this much?
- What is the relationship between the two?
- Is the product affordable? Is it good value for money?

**C** - Customer
- Who is the product designed for?
- How and where would they use it?
- What impact does it have on the customer's quality of life?
- Does it add value to the client's way of life?

**E** - Environment
- What is the product's impact on the environment?
- THINK batteries, rethink, refuse, reduce, reuse, recycle, life cycle?
- THINK about its manufacture, general use, and disposal?

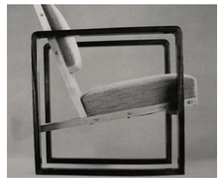
**S** - Size
- What size is it?
- Is the product comfortable to use? THINK ergonomics?
- Are its proportions appropriate for its use?

**S** - Safety
- How has the designer considered safety issues?
- How different parts have been joined together?
- Does the product meet recognised safety standards?

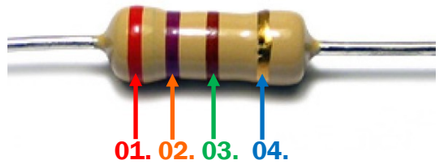
**F** - Function
- How well does the product work?
- Why does it work this way?
- How could it be improved?

**M** - Material and Manufacturing
- What is the product made from?
- Would another type of material work better?
- What impact could your material choice have on the environment?

**LED Light Design Ideas/Concept**
**Chosen LED Light Design Idea/Concept**
**Model Making**
**Manufacturing the LED Light**
**Evaluating the finished LED Light**

**Resistors:**
Resistors are an electrical components that create resistance in a circuit to limit the flow of an electric circuit. The colour - coding on the resistors is a method used to indicate the resistive value, tolerance, and temperature coefficient of resistors with low wattage rating because of their small size. The colour bands are used because they can be easily and cheaply printed on the small resistor.



(Band Number).

| Colour of band | 1st No. | 2nd No. | Multiplier | Tolerance |
|---|---|---|---|---|
| Black | 0 | 0 | x1 Ω | |
| Brown | 1 | 1 | x10Ω | + 1% |
| Red | 2 | 2 | x100Ω | + 2% |
| Orange | 3 | 3 | X 1 KΩ | |
| Yellow | 4 | 4 | X 10 KΩ | |
| Green | 5 | 5 | X100 KΩ | +0.5% |
| Blue | 6 | 6 | X 1MΩ | +0.25% |
| Violet | 7 | 7 | | +0.10% |
| Grey | 8 | 8 | | + 0.05% |
| White | 9 | 9 | | |
| Gold | | | X 0.1 Ω | + 5% |
| Silver | | | 0.01 Ω | + 10% |

**Band 01** — 1st Number.
This gives the first figure of resistance.
**Band 02** — 2nd Number.
Gives the second figure of resistance.
**Band 03** — Multiplier.
Tells us how many 0's to put on.
**Band 04** — Tolerance.
Tells us the accuracy of its value.

*The value of the resistor above is:*
2 7 x 10Ω + 5%
270 + 5% = 283.5

**Terminology to remember!**
Art Nouveau.
Art deco.
Bauhaus.
Memphis.
Post Modernism.
ACCESSFM.
Resistors.
Health and Safety.
Tolerance

**Health and safety:**
Health and Safety is an important aspect of working in the resistant materials room and we are governed by the legislation act:
- **Health and Safety at Work Act 1974**