# Manufacturing Processes and Techniques : Prototyping

| Calendar | Big Question/Theme | Small Questions | Assessment Opportunities & Criteria. Teacher Feedback point (TFP) | Homework |
|---|---|---|---|---|
| September to October Half Term | 1. How can materials and processes be used to make iterative models?<br>2. How can materials be manipulated and joined in different ways in a workshop environment when making final prototypes<br>3. How do designers and manufacturers ensure accuracy when making prototypes and products? | 1. What materials are commonly used by professionals when making models?<br>2. How can modelling materials be cut to size?<br>3. How can modelling materials be manipulated?<br>4. What adhesives can be used to join similar and dissimilar modelling materials?<br>5. What is the difference between a model and a prototype?<br>6. What is meant by rapid prototyping?<br>7. How do you use image creation and manipulation software to communicate your ideas?<br>8. What methods of digital manufacturing do professionals use when making modelling and prototyping?<br>9. What is CAD, CAM and CAE?<br>10. Why is the study of anthropometrics and ergonomics important when modelling and prototyping? | | |

# Manufacturing Processes and Techniques : Design Communication

| Calendar | Big Question/Theme | Small Questions | Assessment Opportunities & Criteria. Teacher Feedback point (TFP) | Homework |
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| October Half term to Christmas | • How are design solutions communicated to demonstrate their suitability?<br>• How is CAD used to communicate design intentions?<br>• What forms of graphical communication diagrams can be used to communicate manufacturing processes | • What is the difference between 2d and 3d sketching?<br>• What is meant by the word perspective?<br>• What is a vanishing point?<br>• What is oblique?<br>• What is isometric?<br>• What is thick and thin line technique and how can it enhance a drawing?<br>• What is single and two point perspective?<br>• How are technical drawing board used correctly?<br>• What geometry equipment is used when developing technical styled drawings?<br>• What are circles and ellipses?<br>• What is an orthographic drawing?<br>• What is an exploded drawing?<br>• What is a flowchart and how can they be designed to achieve quality control?<br>• What is an open loop and closed loop system?<br>• What 2d and 3d CAD software is available and how can it be used to communicate ideas? | | |

# Manufacturing Processes and Techniques : Design Communication

| Calendar | Big Question/Theme | Small Questions | Assessment Opportunities & Criteria. Teacher Feedback point (TFP) | Homework |
|---|---|---|---|---|
| January to February Half term | The **big questions** that you should be able to answer are:<br>1. Why is usability an important consideration when designing prototypes?<br>2. How do developments in Design and Technology influence design decisions and practice?<br>3. What are the main categories of materials available to designers when developing design solutions?<br>4. Why is it important to understand the sources or origins of materials?<br>5. How can materials be manipulated and joined in different ways in a workshop environment when making final prototypes?<br>6. How can materials and products be finished for different purposes? | 1. What is the impact of packaging on a users lifestyle?<br>2. Why should packaging consider ease of use and inclusivity?<br>3. What aesthetic considerations should you make as a designer and why?<br>4. How do emerging technologies inform design decisions?<br>5. What materials are useful in packaging manufacturing? (bleached, carton, corrugated)<br>6. What are the main characteristics of these materials?<br>7. What are the commonly available forms of packaging materials?<br>8. What are the processes involved in extracting and forming packaging materials?<br>9. How can you deform and reform packaging materials?<br>10. How do you minimise wastage?<br>11. How can you combine graphic products in the workshop?<br>12. What are the processes involved for finishing and adding surface treatments to materials and products for specific purposes, including:<br>i. Function<br>ii. Aesthetics. | | |