



Purple Mash Computing Scheme

3D Modelling

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Overview

This unit explores 3D Modelling design using the CAD software, 2Design and Make, on Purple Mash. It guides children to create, refine and evaluate models with creativity and purpose.

Key Learning

- To explore and develop simple 3D models using CAD software.
- To explore the effect of moving points when designing.
- To plan, design and begin creating packaging to meet a design brief.
- To refine, assemble and evaluate the finished packaging prototype.

Knowledge Organiser and Learning Mat

These resources can be used to support learning across the unit.

- [Knowledge Organiser](#)
- [Learning Mat](#)

Concept Map and Quiz

Use these resources to gauge children's understanding before or after the unit has been taught.

- [Concept Map](#)
- [Quiz](#)

Lesson 1: Introducing Computer Aided Design

Aim

- To explore and develop simple 3D models using CAD software.

Success Criteria

- I can explain what CAD is and why it is useful.
- I can explore the 2Design and Make tools to create a basic model.
- I can view my model from different perspectives.

Preparation

- Set **2Design and Make** as a 2Do.
- (Optional Extension) Set **Eiffel Tower** as a 2Do.

Please find all lesson resources below.

Resources

- [Slideshow - Lesson 1](#)
- [2Design and Make](#)
- [Eiffel Tower Model](#)

Lesson 2: Moving Points

Aim

- To explore the effect of moving points when designing.

Success Criteria

- I can identify and move points on a CAD shape.
- I can design a 3D vehicle by adapting and reshaping parts with points.
- I can explain how CAD helps in designing real-world vehicles.

Preparation

- Set **2Design and Make** as a 2Do.

Please find all lesson resources below.

Resources

- [Slideshow - Lesson 2](#)
- [2Design and Make](#)

Lesson 3: Designing for a Purpose

Aim

- To plan, design and begin creating packaging to meet a design brief.

Success Criteria

- I can explain the purpose of packaging.
- I can follow a design brief and decide on the size and shape of the packaging.
- I can create an initial net that suits my product.

Preparation

- Set **2Design and Make** as a 2Do. (Set the end date for the 2Do for after the next lesson as they will be working on the same file in the next lesson.)
- Print off **Planning Design Document** for each child.
- Gather some examples of different packaging. There are some examples in the slideshow however, due to copyright, the images shown are limited.

Please find all lesson resources below.

Resources

- [Slideshow - Lesson 3](#)
- [2Design and Make](#)
- [Planning Design](#)

Lesson 4: Refining and Assembling a Design

Aim

- To refine, assemble and evaluate the finished packaging prototype.

Success Criteria

- I can improve my packaging design with logo, colours and images.
- I can print and assemble my packaging as a prototype.
- I can evaluate how well my design protects and promotes the product.

Preparation

- Set **Packaging Self-Evaluation** as a 2Do.

Please find all lesson resources and additional teaching notes below.

Resources

- [Slideshow - Lesson 4](#)
- [Packaging Self-Evaluation](#)

Teaching Notes

You may choose to split this lesson into two to allow time for printing and assembling the 3D nets.

If possible, printing the nets onto thin card rather than paper will help with stability when assembling the models.

Remember to check the external link to the YouTube video on 3D printing before sharing the contents with the class.

Assessment

The following information is an exemplar of what a child at an expected level would be able to demonstrate when completing this unit with additional exemplars to demonstrate how this would vary for a child with emerging or exceeding achievements.

Emerging

- Children can identify what Computer-Aided Design is and name some benefits of using CAD. They can explore some basic tools in 2Design and Make. Children can create a simple model and view it from different perspectives but may need guidance to move points or apply nets accurately. Their prototypes show developing awareness of packaging purpose, though designs may not fully meet the design brief. When evaluating, they can give simple comments, such as what they like about their model, but may need support to explain how it protects or promotes a product.

Expected

- Children can confidently use CAD tools to design and adapt 3D models. They can move points, add detail, and create prototypes that reflect the design brief. Their packaging demonstrates clear understanding of protection, information, and promotion, showing thought for the target customer. They can refine their nets and assemble prototypes successfully, using colour, logos, and images appropriately. In evaluations, they describe how their design meets the brief and explain improvements they made, recognising how CAD and prototyping support real-world design.

Exceeding

- Children show creativity and precision in their CAD designs. They independently manipulate points, shapes, and widths to produce imaginative prototypes that meet and often extend the design brief. Their packaging includes innovative features that consider both function and strong visual appeal, showing clear awareness of audience and marketability. They can assemble accurate prototypes and even suggest how 3D printing could be used in real-world production. Evaluations are reflective and critical, considering strengths, limitations and next steps. They can link their work to how professional designers use CAD.