

# Scheme of Learning: User Centred – Tiny House Project: User centred design and Card/CAD modelling

## Topic Sequence: Year 7 Design & Technology Rotation

|                         |                |                 |
|-------------------------|----------------|-----------------|
| 1                       | 2              | 3               |
| User Centred Tiny House | Mechanical Toy | Food Technology |

### Topic Overview:

This project serves as an introduction to user centred design, giving students the opportunity to explore the needs of different users, and design a suitable solution. Students are introduced to the idea of iterative design, developing their ideas through a process of sketching, physical and computer aided design models. This is a critical skill for students in Design & Technology to develop, so they understand the first draft will always need further development and improvement.

Students develop an awareness of drawing to scale, and the requirement to work with accuracy when modelling. Students also learn basic modelling skills using suitable equipment and become familiar with the health and safety of working with these materials.

Developing a knowledge of basic CAD modelling in Year 7, provides another critical skill for future success. Students have the opportunity to deepen their understanding and appreciation of CAD modelling through an immersive virtual reality tour of their designs where time permits.

### Lesson Sequence:

Often the first stage of a design process is to gain a deep understanding of the “what” students need to design. To structure this aspect of the design process, we can use the acronym “ACCESSFM” to ensure students have a rubric to support their initial thinking. For this project, students consider customer, function, materials and manufacturing (SCALE).

Another important aspect of gaining a detailed understanding of a design task can be to consider in depth the existing solutions to a problem. Doing this well requires students to consider “similar” products, from which to find applicable solutions that can be applied to their design problem. Summarising this research into a user specification ensures students are clear about what their design needs to be/dd to be successful.

The next sequence of lessons requires students to design on paper (to scale) a viable interior layout for a tiny home, this is then modelled using card in 3D to evaluate their own success and identify areas for further develop,

From this point in the project, students are introduced to the 3D CAD modelling software – Sketchup for Web. Students learn to build basic shapes, use a component library and personalise their designs to suit their chosen user.

Using the snipping tool, students export “snips” of their design, to emulate those images used by estate agents, to sell homes. Once they have a library of images, these are incorporated into a sales pitch on a page, to “sell” their design to the intended user.

| Sequence of Lessons: |                                             |
|----------------------|---------------------------------------------|
| <b>1</b>             | Exploring a design context                  |
| <b>2</b>             | Researching and analysing existing products |
| <b>3</b>             | User requirements (Design Specification)    |
| <b>4</b>             | 2D Block modelling                          |
| <b>5</b>             | Card Modelling Introduction                 |
| <b>6</b>             | Card modelling complete                     |
| <b>7</b>             | Evaluation and development of design        |
| <b>8</b>             | Sketchup - introduction                     |
| <b>9</b>             | Sketchup – component libraries              |
| <b>10</b>            | Forms Assessment                            |
| <b>11</b>            | Sketchup – Application of finishes/textures |
| <b>12</b>            | Sketchup – Outputting final design images   |
| <b>13</b>            | Design promotion/VR experience              |

| Topic Resources:                             |                                                                           |                            |      |
|----------------------------------------------|---------------------------------------------------------------------------|----------------------------|------|
| <b>Knowledge Map:</b>                        | Tiny House                                                                | <b>Prescribed Sources:</b> | None |
| Assessment:                                  |                                                                           |                            |      |
| <b>Knowledge:</b>                            | Microsoft Forms Assessment                                                |                            |      |
| <b>Application of Knowledge:</b>             | Production of card models and promotional product using final CAD designs |                            |      |
| Supportive Reading:                          |                                                                           |                            |      |
| <b>Technology Student</b>                    | technologystudent.com                                                     |                            |      |
| <b>Focus Education - Focus on Mechanisms</b> | Via the Design & Technology Curriculum Zone on the school website.        |                            |      |