



Thomas Mills
High School & Sixth Form

CURRICULUM OVERVIEW: Design and Technology – Resistant Materials

“The best way to predict the future is to design it” - Buckminster Fuller

At Thomas Mills High School and Sixth Form in year 7 and 8 pupils complete a rotation of subject areas including Resistant Materials, Food and Nutrition, Computing and Information Technology, each rotation lasts 8 to 9 weeks.

In Resistant materials we focus in introducing the following concepts of design and technology:

1. Creative Problem Solving - Pupils learn how to come up with ideas and design solutions to real-world problems, thinking about what people need and want.
2. Practical Skills - They get hands-on experience using tools and machines (like saws, drills, and even laser cutters or 3D printers) to build their designs.
3. Understanding Materials - They explore the properties of different types of wood and other materials—learning which are best for different jobs and why.
4. Thinking About the Bigger Picture - Pupils consider how their designs affect the environment, society, and people's lives. They learn to make responsible and sustainable choices.
5. Using Technology - They use computer-aided design (CAD) software to bring their ideas to life digitally before making them physically.
6. Evaluating and Improving - They test their ideas, get feedback, and learn how to improve their designs—just like real designers and engineers do.

In Year 7 our focus the introduction of designing and making skills through the design and manufacture of a wooden puzzle and a metal key fob. Pupils will also start to develop their sketching skills with different 3D drawing styles.



Year 7

Term	Topic	Knowledge and Skills	Useful Links
8 week rotation	Practical work Wooden puzzle Metal key fob Sketching One Point Perspective and Isometric drawing	Knowledge: Pupils will be introduced to a variety of tools and machines through two design and make projects. They will use wood and metal to experience working with different material types. They will learn how to mark out, cut, file and sand and join materials together. Pupils will learn about health and safety in the workshop. We will introduce sketching skills including one point perspective and Isometric drawing. Skills: Manufacturing – Pupils will learn the following skills: Marking out using steel rule Cutting out using coping saw, scroll saw, junior hacksaw and tin snips Sanding/filing using cork block and glasspaper, files and disc sander Joining materials using wood glue Staining timber using wood dye Sketching – Pupils will begin developing their 3D sketching skills with different styles including one point perspective and isometric. Evaluating – Pupils will evaluate their making by looking at what went well and what could be improved in the future.	One point perspective https://www.youtube.com/watch?v=bjhkxFDvD78 https://www.youtube.com/watch?v=0ICyLN6l2cY BBC bitesize – Timbers https://www.bbc.co.uk/bitesize/guides/zjgyb82/revision/3
Assessments	There are three assessments over the 8 week rotation, the first is the design booklet that pupils complete over the 8 weeks and includes homework and examples of sketching and their evaluation. The second assessment come from the puzzle and key fob that they make. The third assessment is an end of unit test that recalls their knowledge from the resistant materials rotation. Assessment 1: Booklet – Pupils will complete sections of the booklet each week. Assessment 2: Practical work – Pupils will be assessed on the puzzle and key fob they have manufactured. Assessment 3: End of unit test – Recall of knowledge assessment		