The Design Process	Students are introduced to the design process through a paper based designing tasks. The series of lessons follows the design process and challenges students to use creative, analytical and evaluation skills fundamental to Key Stage 3. The use of a booklet enables students to work in an organised way, whilst also providing the teacher opportunities for assessment of and for learning.

Year 7

Are you ever frustrated with something that you thought you could design better? This short project will show you how to structure your natural creativity to come up with solutions to all kinds of problems, and have fun in the process too!

This project is based on a few simple yet fundamental premises:

●   Designing is fun and should be enjoyed by young and old alike.

●   Designing is a basic human activity which has been around since tools were first developed to help feed, clothe and make our lives better.

●   Designing is much more than a paper based activity and can be undertaken using a wide variety of methods and media.

●   Designing requires a wide range of knowledge and skills drawn from across the traditional curriculum.

●   There is not just one linear design process - there are as many different ways to approach designing as there are people and design contexts.

●   There are many approaches to innovation in product design to stimulate ideas, from models, a critical examination of existing products, real or imagined.

●   There are a wide variety of 'tools' which the designer can use to help identity, clarify, develop and communicate design intentions. Like tools in any tool box, they can be used in a variety of ways.

Research	Product Analysis	Design ideas	The 6 R's
Research before and after the **design brief** can identify any limitations to ideas and help with initial designs. Analysis of research and user feedback can lead to changes being made to the brief, such as a change in timescale or budget. The results of feedback, testing and **product analysis** should give the designer a good starting point to adapt, test, evaluate and improve their product.	Starting with a design brief a designer may come up with a good idea that solves a problem. Using an iterative design process, a model can be made from a design sketch and then tested. The test results may suggest failures and modifications to the design. These changes are evaluated, and then the cycle begins again - until the best solution to the problem is found.	Iterative design: The iterative approach to designing is a flexible way of designing by working through ideas with sketches and notes and developing models when they are needed. It is a journey that could have a number of different starting points and outcomes. The iterative approach gives the designer the freedom to follow an idea in the direction that feels best for that idea. The designer's tools of sketching, modelling, testing and evaluating may be used in any order as long as they support rather than hinder the flow of ideas. These could be different from each other or developments of an original idea.	It is important for designers to minimise the impact their product will have on the environment: **Repair** - Can the product be fixed instead of throwing it away into landfill? **Reuse** - Can the product be passed on or its life extended by using it repeatedly? Reusable carrier bags from the supermarket are a good example. **Recycle** - Can materials such as metal, plastic and glass be collected and converted? Plastic bottles can be shredded into pellets to make new plastic bottles. **Rethink** - Can the design be remade using a different material? Using a quick-growing, renewable material such as cotton or bamboo would be better than a non-renewable plastic-based fabric such as polyester. **Reduce** - Are there products that last longer or can be recharged? Can the miles the product has to travel be cut? **Refuse** - Thinking twice before buying a product with wasteful packaging or a large carbon footprint.

Remember the SSS	Chosen Idea	Go Make (Homework)	Evaluation
Remember that everything you see has been designed for a reason. For a person or group of people. It's the premise of all our design work. We are designing: **S**omething for **S**omeone for a **S**olution	Students will work on developing their own chosen idea, taking on board their peer's feedback and making improvements. Students then present their finished design back to their partners, swapping sheets for comment. They will then draw their final design onto the final Design page within their booklet.	Students will be asked to make a product at home based on the work they have completed in previous lessons. The product is to be made from something that may otherwise end up in landfill. It would be helpful for students to photograph the making process themselves and show photographs and drawings of the finished product	Students will be encouraged to discuss ideas, especially how the designs meet the specification points. Students then present to each other, swap design ideas and write comments on each other's designs. Students will learn how evaluation is an important part of the design process. They will look at how well they managed their own time, the product they created and attention will be drawn back to the specification and how the students consider their design meets the criteria.

Key Terms	Extended Learning & Support
Definitions of key words and phrases are highlighted throughout the powerpoint and printed in their booklet for them to refer too. ● **Function** - The intended use of a product. e.g. The function of a toothbrush is to clean your teeth. ● **Design Process** - design process is a series of steps that engineers follow to come up with a solution to a problem. ● **Modelling / Prototyping** - A quick way to do initial trials with a product. Using an easy to modify material provides a good way of seeing how a product looks and works. ● **Analyse the brief** - Picking out the important information. ● **Modelling / Prototyping** - A quick way to do initial trials with a product. Using an easy to modify material provides a good way of seeing how a product looks and works. ● **Annotate** - add notes to (a text or diagram) giving explanation or comment. ● **Repurposed** - adapt for use in a different purpose. ● **Iterative Design** - *Improving your designs by testing and re-thinking ideas.* ● **Aesthetics** - *What something looks like? Is it visually pleasing?*	Creative things you can do to support your Design and Technology project. ● The black of the booklet contains a fun extension menu that allows students the freedom to select from a wide variety of different tasks, interpret them in their own way and promote the development of design thinking. Some of these can only be completed at home whereas others will act as additional classwork. ● Start an ideas book and doodle in it. Drawing is ideal for making ideas tangible. You don't need to have the best drawing skills either. You can also use it to write down ideas when you think of them. ● Explore the world of STEM through our interactive games: https://new.siemens.com/uk/en/company/education/students/interactives.html ● Watch a number of the videos on the YouTube playlist below and attempt to copy the techniques shown to improve your sketching ability. Start with the video at the bottom of the playlist (the oldest) and work your way towards the top to gradually increase the level of challenge. Continue to practice after watching all the videos by attempting the drawing of everyday objects from around your house using the techniques or designing a new product and sketching your ideas. https://www.youtube.com/playlist?list=PLUmGIca4HGqZKHiBZtL_zHjh2HBoBNerA