Year 3 and 4 Artisan Endeavour

Week	Objectives/Vocabulary	Lesson Activities	Learning Outcomes	Links to other subjects	Characteristics for Success
1	• To research scientific instruments and note how they work. Cuboid, model, scientific instrument, design, components, form, function	**Designing Periscopes** • Look at a range of scientific instruments (existing products) e.g. binoculars, magnifying glass, stethoscope. What is their function? What components do they have? How do they work? • Look at a model of a periscope and note its form, shape and components. What is it used for? Why is it useful? Identify that a cuboid forms the shape and the mirrors give it function. Look at how light travels in a straight line (torch beam with chalk dust patted over it – shows light in a straight line).	• Identify form and function of existing products. • Identify how light travels in a straight line. • Learn the terms components, model, function, form, design. • Try out, design and research.	DT – Designing and researching. Personal Development Science – how light travels, reflection Maths – measuring lengths, cuboid nets.	**Resilience** 1. Bouncing back 2. Staying positive **Organisation** 1. Preparing components. 2. Following instructions. 3. Using time well.
2	• To make the cuboid box of a periscope. • To identify why aesthetics are important to the finish of a product. Product, aesthetics, finish, components, tools, flaps, tabs, joining, attaching, design criteria.	• Discuss aesthetics and why designs must be appealing. Look at a range of toy designs and note colours/patterns. Design own periscope to use bright colours/aesthetics. • Lay out all of the components for the periscope. Card, paper, mirrors. Revise the word component. Lay out the tools and revise the word tools (scissors, glue, tape, cutting boards). Observe a cuboid net and how it is assembled, using flaps to join the sides. • Measure and cut out the cuboid net and score the folds (show children how to do this using a cutting board and one of the scissor blades) for the edges and tabs. Cut out two holes for the viewing holes.	• Identify aesthetics and why they are important in design. • Learn the term components, assemble, flaps, joining, cuboid. • Identify why tabs are important in the design.	DT – Designing for purpose. – Effective structures – Using tools safely and effectively Maths – nets for 3-D shapes Art and Design – pleasing aesthetics to appeal to customers	**Resilience** 3. Bouncing back 4. Staying positive **Organisation** 4. Preparing components. 5. Following instructions. 6. Using time well.
3	• To secure and strengthen the joins so that the cuboid is rigid. Product, strengthen, manufacture, mock-up,	**Making Periscopes** • Secure the joins of the cuboid to ensure that it doesn't fall apart and stays rigid. Experiment with different ways to do this – extra card folds in key weak points of the structure. If necessary, make a paper mock-up to practise and rehearse skills. • Use step-by-step instructions. • Make adjustments during the manufacturing process.	• Experiment with different designs for rigidity. • Identify weak points and strengthen. • Follow instructions and a process. • Make adjustments.	DT – Making; strengthening, mock-ups, design and make process; making modifications. Personal Development	**Confidence** 1. Rising to a challenge 2. Having a go 3. Expecting to succeed **Resilience** 1. Bouncing back 2. Staying positive **Persistence** 1. Keep working hard (repetitive)

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	process, weak points, adjustments, rigid.		• Use the terms structure, rigid, mock-up, process, cuboid.	Maths – cuboids and nets.	2. Enjoy working tough 3. Has high standards
4	• To angle two mirrors, modifying and testing to make your periscope work and evaluate. Evaluate, design criteria, modify, test, tinker	**Evaluating Periscopes** • Place two mirrors inside the periscope, angling them so that they reflect each other and allow light to travel so that the viewer can see without being seen. Test out and modify, changing the angles of the two mirrors until they show a clear view. • Evaluate our designs, considering the opinions of others. What technical knowledge did we need? What would we do differently next time?	• Modify and test to ensure the periscope works. • Test out over a wall, or through a window. • Evaluate designs and compare with initial design criteria. • Learn from mistakes and try again.	DT – modifying and testing designs and products. Science – testing and modifying angle of the mirrors to ensure the light travels from one to the other mirror. Personal Development	**Persistence** 1. Keep working hard (repetitive) 2. Enjoy working tough 3. Has high standards **Resilience** 1. Bouncing back 2. Staying positive **Confidence** 1. Rise to a challenge 2. Having a go 3. Expect to succeed
5	• To research buildings like Big Ben, The Shard and St Paul's Cathedral identifying form and shape. Product, architecture, dimension, 3-D shape names, structure, replica.	**Researching Architectural Structures and Designing Mock-Ups** • Research different buildings from the London skyline. Discuss the names of the different 3-D shapes (square-based pyramid, cone, hemisphere, cuboid, triangular based pyramid). • Give out 3-D shapes and build a replica (to show which shapes make each one). • Look at Big Ben and discuss that the name of the tower is Elizabeth Tower and it is actually the bell that is called 'Big Ben'. Identify a cuboid and a square-based pyramid.	• Research existing structures, identifying 3-D shapes in structures. • Learn the term 'replica'. • Identify 3-D shapes in design e.g. cuboid, square-based pyramid, hemisphere, cone, conical.	DT – architectural structures and their flaws; existing products, design criteria, models, mock-ups. Maths – 3-D nets and shapes. Personal development	**Getting Along** 1. Works well with others. 2. Forming good relationships. **Confidence** 4. Rise to a challenge 5. Having a go 6. Expect to succeed **Persistence** 1. Follow through with ideas. 2. Show patience and work tough (young children). **Organisation** 1. Using time well. 2. Staying focused
6	• To design a mock-up 3-D building model Product, aesthetics, finish, components, tools,	• Apply knowledge of how to build a 3-D model of a building. Discuss that architects often make mock-ups of massive buildings in miniature to check measurements and observe aesthetics and potential problems. • Discuss when things go wrong in the design e.g. Leaning Tower of Pisa, bridges that don't match up, Walkie Talkie	• Identify why it is important to design a mock-up. • Learn from mistakes and try again. • Identify flaws in existing designs.	DT – architectural structures and their flaws; existing products, design criteria, models, mock-ups.	**Getting Along** 3. Works well with others. 4. Forming good relationships. **Confidence** 7. Rise to a challenge 8. Having a go 9. Expect to succeed **Persistence**

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	flaps, tabs, joining, attaching, design criteria.	(sometimes known as Walkie Scorchie). Design a cuboid and a pyramid net.	• Design a cuboid and a pyramid net.	Maths – 3-D nets and shapes. Personal development	3. Follow through with ideas. 4. Show patience and work tough (young children). **Organisation** 3. Using time well. 4. Staying focused
7	• To make a model of Elizabeth Tower. Product, aesthetics, finish, scoring, modifying, adjusting, tinkering, mock-up.	**Making and Evaluating Products** • Make the model of Elizabeth Tower. Before assembling each 3-D shape, decorate the faces with aesthetically pleasing décor. • Practise scoring using a cutting board and one scissor blade. • Modify and adjust in the process of making the tower. Use a mock-up paper version to rehearse skills if necessary.	• Use fine motor skills to fold, score, attach and tuck flaps. • Make aesthetic designs that appeal to the viewer. • Modify and adjust during the process. • Be able to evaluate designs.	DT – Making from design, scoring, using tools; evaluating, modify and test. Personal Development	**Organisation** 5. Using time well. 6. Staying focused **Confidence** 1. Rise to a challenge (reading to younger children) 2. Expect to succeed. **Resilience** 1. Takes part. 2. Has a positive attitude.
8	• To evaluate our designs. Design, product, design flaws, structures, rectify.	• Tell story of the Japanese and American car manufacturers – Americans made to design criteria, having to use a hammer at the end to knock car doors into place. Found they needed to supply manufacturers with a little hammer to do the job. Visited Japan, making same car. Saw that they didn't need the hammer at the end. Japanese manufacturer noticed the issue with the doors at the start, so corrected the design. No need for hammer. • Evaluate designs and suggest improvements. Consider the opinions of others. What technical skills have you learnt (how to score card, how to draw nets accurately). What issues do you think architects come across when building their designs? • Compare with our design criteria from the beginning and comment. • Use a fan to test the rigidity of our designs – Elizabeth Tower will have great wind forces acting on her. Will our towers be rigid enough in high winds? Make predictions by ranking in order.	• Evaluate and suggest improvements. • Identify issues in the design and how they could be rectified. • Learn from flaws and mistakes and make adjustments. • Know how to make modifications to adapt the design. • Refer to a design criteria.	DT – Use design criteria, make, modify, adjust, and test to check. Science – making predictions and testing	**Persistence** 1. Show patience and work tough 2. Keep trying at hard challenges. **Confidence** 1. Rise to a challenge (try to accomplish something hard) 2. Aims for goals **Resilience** 1. Bounce back 2. Takes part 3. Have a positive attitude.