



Christ the King Catholic Primary School Design & Technology Medium Term Plans

YEAR 1 AUTUMN TERM: CREATING MOVING PICTURES				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduction to moving pictures	Look at a variety of books with moving parts. Discussing different types of moving pictures and how they work. Looking at books with moving parts.	Creating a simple moving picture using the tools and techniques demonstrated	Reviewing and discussing the different moving pictures
2	Planning and designing the moving picture	Demonstrating how to create a basic sketch of the moving picture, including the placement of levers, sliders, and other mechanisms, discussing the importance of considering the size and shape of the picture, as well as the materials and tools that will be needed. Which parts do you want to move? Which mechanism will you choose?	Creating their own sketches and plans for their moving picture	Reviewing and discussing the different plans
3	Gather and prepare materials	Demonstrating how to measure and cut the paper and other materials to the correct size and shape, demonstrating the use of scissors, glue, and other basic crafting tools to create the different parts of the picture	Practising measuring and cutting materials and using tools to create the different parts	Reviewing progress and discussing challenges/successes
4	Assembling the moving picture	Demonstrating how to attach the different parts of the picture using glue, tape, and other adhesives, demonstrating how to attach levers, sliders, and other mechanisms using paper clips, split pins, or other fasteners	Assembling their own moving pictures	Reviewing progress and discussing challenges/successes
5	Finishing the moving picture	Demonstrating how to add any final touches, such as colouring or decorating the picture, demonstrating how to test the movement of the levers, sliders, and other mechanisms to ensure that they are working properly	Adding final touches and testing the movement of their own moving pictures	Reviewing progress and discussing challenges/successes
6	Evaluating the moving picture	Discussing the design and construction process, identifying	Evaluating their own moving picture	Presenting their moving picture to the class and discussing their evaluations



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		strengths and areas for improvement		
RESOURCES:				
Glue, scissors, cardboard, paper, paper clips, split pins				

YEAR 1 SPRING TERM: LIGHTHOUSES				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduce the concept of lighthouses and their purpose. Show pictures of different lighthouses and discuss their features. Link to Grace Darling.	Discuss the materials that will be used to build the model lighthouse (e.g. cardboard, paper cups, glue, paint). Demonstrate how to cut out basic shapes (e.g. circles, squares) from cardboard using scissors.	Have the children practice cutting out basic shapes from cardboard.	Review the different materials that will be used to build the model lighthouse and the basic shapes that have been learned.
2	Review the purpose of lighthouses and discuss the different elements that make up a lighthouse (e.g. tower, light, base).	Introduce the concept of a simple design process (e.g. brainstorming, sketching, prototyping). Demonstrate how to brainstorm ideas for a model lighthouse and sketch a basic design.	Have the children brainstorm and sketch their own designs for a model lighthouse.	Review the different designs that the children have created and discuss the key features of each design.
3	Review the design of the model lighthouse and discuss the importance of having a sturdy base.	Demonstrate how to measure and cut cardboard to create the base of the model lighthouse. Show how to use glue to attach the pieces together.	Have the children measure and cut cardboard to create the base of their model lighthouse and glue the pieces together.	Review the different base designs that the children have created and discuss any challenges they faced while building.
4	Review the design of the model lighthouse and discuss the importance of the tower in a lighthouse.	Demonstrate how to measure and cut cardboard to create the tower of the model lighthouse. Show how to use glue to attach the pieces together and reinforce the	Have the children measure and cut cardboard to create the tower of their model lighthouse, and	Review the different tower designs that the children have created and discuss any challenges they faced while building.



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		structure with additional support (e.g. Lolly sticks).	glue and reinforce the pieces together.	
5	Review the design of the model lighthouse and discuss the importance of the light in a lighthouse.	Demonstrate how to incorporate a battery-operated light into the model lighthouse (e.g. using a paper cup as a reflector). Show how to attach the light to the top of the tower using glue or tape.	Have the children incorporate a battery-operated light into their model lighthouse and attach it to the top of the tower.	Review the different light designs that the children have created and discuss any challenges they faced while adding the light.
6	Review the design of the model lighthouse and discuss the final touches that can be added to make it more realistic (e.g. painting, adding windows and doors).	Demonstrate how to paint the model lighthouse and add any final details (e.g. windows, doors).	Have the children paint their model lighthouse and add any final details.	Review the finished model lighthouses and have the children evaluate their designs based on the criteria established in the introduction (e.g. stability, realism).

RESOURCES:

- Cardboard
- Paper cups
- Glue
- Paint
- Scissors
- Lolly sticks
- Battery-operated light
- Tape or glue
- Markers or other materials for adding details (optional)



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YEAR 1 SUMMER TERM: SANDWICH MAKING				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduction to designing and creating a healthy sandwich. Discuss what makes a sandwich healthy.	Show the students how to use a template to plan out their sandwich design. Demonstrate how to choose appropriate ingredients and consider their nutritional value.	Have the students practice using the template to design their own healthy sandwiches.	Discuss as a class what the students have learned about designing a healthy sandwich.
2	Review the importance of choosing healthy ingredients for a sandwich.	Demonstrate how to prepare different types of vegetables (e.g. slicing, grating) and how to select and store ingredients safely.	Have the students practice preparing vegetables and selecting ingredients for their sandwiches.	Discuss as a class the different types of ingredients that can be used in a sandwich and their nutritional value.
3	Review the steps for assembling a healthy sandwich using the template created in Lesson 1.	Demonstrate how to properly assemble the sandwich, including spreading condiments and layering the ingredients.	Have the students practice assembling their own sandwiches.	Discuss as a class the different ways to assemble a sandwich and the importance of proper layering.
4	Discuss the importance of presentation in making a sandwich appealing.	Demonstrate how to add decorative touches to a sandwich, such as using cookie cutters to cut shapes out of the bread or vegetables.	Have the students practice adding finishing touches to their sandwiches.	Discuss as a class the different ways to make a sandwich visually appealing.
5	Discuss the different cooking methods that can be used to prepare sandwiches (e.g. grilling, pan frying).	Demonstrate how to properly use a stove or grill to cook a sandwich.	Have the students practice cooking their sandwiches using a stove or grill.	Discuss as a class the different cooking methods that can be used for sandwiches and their impact on taste and texture.
6	Review the process of designing and creating a healthy sandwich.	Demonstrate how to evaluate a sandwich using a set of criteria (e.g. taste, nutrition, appearance).	Have the students evaluate their own sandwiches using the set of criteria.	Discuss as a class the different ways to evaluate a sandwich and the importance of considering taste, nutrition, and appearance.



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RESOURCES:

- Template for planning sandwich design
- Slicing knife
- Grater
- Spreading knife
- Cookie cutters
- Stove or grill
- Various ingredients for sandwich making (e.g. bread, vegetables, condiments)



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YEAR 2 AUTUMN TERM: HEALTHY SEASIDE SNACKS				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the theme of the seaside and discuss the importance of eating healthy snacks. Talk about the different food groups and how to include a balance of these in a snack.	Show the children examples of healthy snack ideas and discuss the different ingredients that can be used. Introduce the concept of making a plan for their snack, including a list of ingredients and a step-by-step guide for preparing the snack.	Encourage the children to brainstorm ideas for healthy seaside-themed snacks and make a list of ingredients for their chosen snack.	Discuss the children's ideas and give feedback on the balance of food groups in their chosen snacks.
Lesson 2	Review the importance of choosing healthy ingredients for snacks.	Demonstrate how to read and understand measurements on packaging, as well as how to use measuring cups and spoons to measure out ingredients.	Have the children practice measuring out ingredients for their chosen snack.	Review the importance of accurate measurements in cooking and baking.
Lesson 3	Discuss the importance of washing hands and surfaces before handling food, as well as the importance of storing food safely.	Demonstrate how to properly wash hands and prepare surfaces for cooking. Show the children how to safely handle and prepare ingredients for their snack, such as peeling and chopping fruit.	Have the children practice washing their hands and preparing surfaces, then assist them as they handle and prepare ingredients for their snack.	Review the importance of following safety guidelines when handling and preparing food.
Lesson 4	Review the importance of using cooking equipment safely.	Demonstrate how to safely use common kitchen equipment such as a knife, oven, and microwave.	Have the children practice using the equipment needed for their snack, with supervision and guidance as needed.	Review the importance of following safety guidelines when using cooking equipment.
Lesson 5	Review the steps for making the chosen snack and the importance of following a recipe.	Assist the children in following the recipe and preparing their snack.	Have the children work in small groups to prepare their snack, with supervision and guidance as needed.	Review the steps taken to prepare the snack and discuss any challenges or successes.



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Lesson 6	Discuss the importance of evaluating the taste, appearance, and nutritional value of a snack.	Taste and evaluate the snack as a group, using a checklist to rate its taste, appearance, and nutritional value.	Have the children taste and evaluate their own snack, using the checklist to rate it.	Review the results of the evaluations and discuss any changes that could be made to improve the snack.
RESOURCES:				
<ul style="list-style-type: none">• Ingredient list for chosen snack• Measuring cups and spoons• Common kitchen equipment (knife, oven, microwave)• Washable markers or stickers for labelling containers• Checklist for evaluating the snack				



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YEAR 2 SPRING TERM: BOATS THAT FLOAT				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a model boat that can float. Link to Titanic topic. Discuss the different materials that can be used to make a model boat and the properties of these materials (e.g. waterproof, buoyant).	Show the children examples of different types of model boats and discuss the features that help them float (e.g. shape, size). Introduce the concept of making a plan for their model boat, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their model boat and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a model boat and the properties of these materials.	Demonstrate how to handle and cut different materials (e.g. cardboard, plastic) using appropriate tools (e.g. scissors, ruler, pencil).	Have the children practice handling and cutting the materials they will use for their model boat, with supervision and guidance as needed.	Review the importance of using the appropriate tools and handling materials safely.
Lesson 3	Review the steps for assembling the model boat and the importance of following a plan.	Demonstrate how to glue or tape the materials together to create the shape of the boat.	Have the children work in small groups to assemble their model boat, with supervision and guidance as needed.	Review the steps taken to assemble the model boat and discuss any challenges or successes.
Lesson 4	Discuss the importance of adding details to a model boat to make it look more realistic.	Demonstrate how to add details to the boat using materials such as paint, stickers, or small objects.	Have the children add details to their model boat, with supervision and guidance as needed.	Review the added details and discuss the children's creative choices.
Lesson 5	Review the aim of the project and the importance of testing the model boat to see if it floats.	Demonstrate how to test the boat in a container of water, paying attention to its stability and how much of the boat is above water.	Have the children test their model boat in a container of water, with supervision and guidance as needed.	Review the results of the tests and discuss any necessary changes to the boat to improve its ability to float.



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Lesson 6	Discuss the importance of evaluating the appearance, stability, and ability to float of a model boat.	Evaluate the boat as a group, using a checklist to rate its appearance, stability, and ability to float.	Have the children evaluate their own model boat, using the checklist to rate it.	Review the results of the evaluations and discuss any changes that could be made to improve the boat.
RESOURCES:				
<ul style="list-style-type: none">• Materials for the model boat (e.g. cardboard, plastic, paint, stickers)• Appropriate tools (e.g. scissors, ruler, pencil, glue, tape)• Container of water for testing• Checklist for evaluating the model boat				



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YEAR 2 SUMMER TERM: CREATING PUPPETS				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a puppet inspired by a story from class. Discuss the different materials and techniques that can be used to make a puppet (e.g. paper, fabric, buttons, glue).	Show the children examples of different types of puppets and discuss the features that make them effective (e.g. movable parts, expressive face). Introduce the concept of making a plan for their puppet, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their puppet and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a puppet and the techniques that can be used to attach these materials (e.g. glue, sewing).	Demonstrate how to handle and cut different materials using appropriate tools (e.g. scissors, ruler, pencil). Show the children how to attach materials using techniques such as gluing or sewing.	Have the children practice handling and cutting the materials they will use for their puppet, as well as attaching these materials using the chosen technique.	Review the importance of using the appropriate tools and handling materials safely.
Lesson 3	Review the steps for assembling the puppet and the importance of following a plan.	Demonstrate how to put the pieces of the puppet together to create the desired shape.	Have the children work in small groups to assemble their puppet, with supervision and guidance as needed.	Review the steps taken to assemble the puppet and discuss any challenges or successes.
Lesson 4	Discuss the importance of adding details to a puppet to make it more expressive and characterful.	Demonstrate how to add details to the puppet using materials such as paint, buttons, or small objects.	Have the children add details to their puppet, with supervision and guidance as needed.	Review the added details and discuss the children's creative choices.
Lesson 5	Review the purpose of a puppet and the importance of using it effectively to tell a story or convey a message.	Demonstrate how to use the puppet to express different emotions and characters through	Have the children practice using their puppet to tell a story or convey a message, with	Review the children's use of their puppet and discuss any areas for improvement.



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		facial expressions and movements.	supervision and guidance as needed.	
Lesson 6	Discuss the importance of evaluating the appearance, expressiveness, and effectiveness of a puppet.	Evaluate the puppet as a group, using a checklist to rate its appearance, expressiveness, and effectiveness. Would they change anything?	Have the children evaluate their own puppet, using the checklist to rate it.	Review the results of the evaluations and discuss any changes that could be made to improve the puppet.
RESOURCES:				
<ul style="list-style-type: none">• Materials for the puppet (e.g. paper, fabric, buttons, glue, paint, goggle eyes)• Appropriate tools (e.g. scissors, ruler, pencil, needles, thread)• Checklist for evaluating the puppet				



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YEAR 3 AUTUMN TERM: BUILDING BRIDGES				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a model bridge that can hold some weight. Discuss the different types of bridges and the materials that can be used to make them (e.g. wood, cardboard, plastic).	Show the children examples of different types of bridges and discuss the features that make them strong (e.g. shape, size, support). Introduce the concept of making a plan for their bridge, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their bridge and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a bridge and the properties of these materials (e.g. strength, flexibility).	Demonstrate how to handle and cut different materials using appropriate tools (e.g. scissors, ruler, pencil, saw, hammer). Show the children how to join materials using techniques such as gluing or tying.	Have the children practice handling and cutting the materials they will use for their bridge, as well as joining these materials using the chosen technique.	Review the importance of using the appropriate tools and handling materials safely.
Lesson 3	Review the steps for assembling the bridge and the importance of following a plan.	Demonstrate how to put the pieces of the bridge together to create the desired shape and structure.	Have the children work in small groups to assemble their bridge, with supervision and guidance as needed.	Review the steps taken to assemble the bridge and discuss any challenges or successes.
Lesson 4	Review the aim of the project and the importance of testing the bridge to see if it can hold some weight.	Demonstrate how to test the bridge by slowly adding weight to it and observing its stability.	Have the children test their bridge by slowly adding weight to it, with supervision and guidance as needed.	Review the results of the tests and discuss any necessary changes to the bridge to improve its strength.



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Lesson 5	Discuss the importance of evaluating the appearance, stability, and strength of a bridge.	Evaluate the bridge as a group, using a checklist to rate its appearance, stability, and strength.	Have the children evaluate their own bridge, using the checklist to rate it.	Review the results of the evaluations and discuss any changes that could be made to improve the bridge.
Lesson 6	Review the steps taken to design and create the bridge and the results of the evaluations.	Demonstrate how to present the bridge to an audience, including explaining the design process and the results of the tests.	Have the children present their bridge to the class, with supervision and guidance as needed.	Review the children's presentations and discuss any areas for improvement.

RESOURCES:

- **Materials for the bridge (e.g. wood, cardboard, plastic, glue, string)**
- **Appropriate tools (e.g. scissors, ruler, pencil, hammer, nails, saw)**
- **Weights for testing the bridge (e.g. coins, blocks)**
- **Checklist for evaluating the bridge**



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YEAR 3 AUTUMN TERM: UNLEAVENED BREAD				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating an unleavened bread product. Discuss the ingredients and equipment needed for bread making (e.g. flour, water, salt, mixing bowl, rolling pin). Link to Passover.	Show the children the steps for making unleavened bread and demonstrate how to measure and mix the ingredients.	Have the children practice measuring and mixing the ingredients for unleavened bread, with supervision and guidance as needed.	Review the steps for making unleavened bread and discuss any questions or concerns.
Lesson 2	Review the importance of kneading dough to develop the gluten in the flour and create a smooth, elastic texture.	Demonstrate the proper technique for kneading dough, including stretching and folding the dough.	Have the children practice kneading the dough, with supervision and guidance as needed.	Review the technique for kneading dough and discuss the importance of developing the gluten.
Lesson 3	Discuss the different shapes that dough can be formed into and the techniques for achieving these shapes (e.g. rolling, pressing, twisting).	Demonstrate how to shape the dough into a variety of shapes, including rolls, balls, and flatbreads.	Have the children practice shaping the dough into different shapes, with supervision and guidance as needed.	Review the different shapes the dough can be formed into and discuss the children's creative choices.
Lesson 4	Review the steps for baking bread, including preheating the oven and preparing the baking pan.	Demonstrate how to transfer the shaped dough to the baking pan and bake it in the oven.	Have the children transfer their shaped dough to the baking pan and bake it in the oven, with supervision and guidance as needed.	Review the steps for baking bread and discuss the importance of following the recipe.
Lesson 5	Discuss the importance of evaluating the appearance, texture, and taste of bread.	Evaluate the bread as a group, using a checklist to rate its appearance, texture, and taste.	Have the children evaluate their own bread, using the checklist to rate it.	Review the results of the evaluations and discuss any changes that could be made to improve the bread.



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Lesson 6	Review the steps taken to design and create the bread product and the results of the evaluations.	Demonstrate how to present the bread to an audience, including explaining the design process and the results of the evaluations.	Have the children present their bread to the class, with supervision and guidance as needed.	Review the children's presentations and discuss any areas for improvement.
RESOURCES:				
<ul style="list-style-type: none">• Ingredients for unleavened bread (e.g. flour, water, salt)• Equipment for bread making (e.g. mixing bowl, rolling pin, baking pan)• Oven for baking the bread• Checklist for evaluating the bread				



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YEAR 3 SUMMER TERM: ROMAN SLINGSHOT CHARIOTS				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a model of a Roman Chariot Slingshot. Discuss the features of a Roman Chariot Slingshot and the materials that can be used to make the model (e.g. cardboard, plastic, glue).	Show the children examples of Roman Chariot Slingshots/catapults and discuss the features that make them effective (e.g. size, shape, strength). Introduce the concept of making a plan for their model, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their model and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a model Roman Chariot Slingshot and the properties of these materials (e.g. strength, flexibility).	Demonstrate how to handle and cut different materials using appropriate tools (e.g. scissors, ruler, pencil). Show the children how to join materials using techniques such as gluing or tying.	Have the children practice handling and cutting the materials they will use for their model, as well as joining these materials using the chosen technique.	Review the importance of using the appropriate tools and handling materials safely.
Lesson 3	Review the steps for assembling the model and the importance of following a plan.	Demonstrate how to put the pieces of the model together to create the desired shape and structure.	Have the children work in small groups to assemble their model, with supervision and guidance as needed.	Review the steps taken to assemble the model and discuss any challenges or successes.
Lesson 4	Review the aim of the project and the importance of attaching a functional slingshot to the model.	Demonstrate how to attach a slingshot to the model using appropriate materials (e.g. elastic bands, string).	Have the children attach a slingshot to their model, with supervision and guidance as needed.	Review the steps taken to attach the slingshot and discuss any challenges or successes.
Lesson 5	Review the aim of the project and the importance of testing	Demonstrate how to test the model by launching projectiles using the slingshot.	Have the children test their model by launching projectiles, with	Review the results of the tests and discuss any modifications that need to be made to improve the model.



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	the model to see if it can launch projectiles.		supervision and guidance as needed.	
Lesson 6	Review the steps taken to design and create the model Roman Chariot Slingshot and the results of the tests.	Demonstrate how to present the model to an audience, including explaining the design process and the results of the tests.	Have the children present their model to the class, with supervision and guidance as needed.	Review the children's presentations and discuss any areas for improvement.
RESOURCES:				
<ul style="list-style-type: none">• Materials for making the model Roman Chariot Slingshot (e.g. cardboard, plastic, glue, elastic bands, string)• Tools for handling and cutting materials (e.g. scissors)				



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YEAR 4 AUTUMN TERM: CREATING A VIKING DRAWSTRING PURSE				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a Viking drawstring purse. Discuss the features of a Viking drawstring purse and the materials that can be used to make it (e.g. fabric, thread, cord).	Show the children examples of Viking drawstring purses and discuss the features that make them effective (e.g. size, shape, strength). Introduce the concept of making a plan for their purse, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their purse and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a Viking drawstring purse and the properties of these materials (e.g. durability, color, pattern).	Demonstrate how to measure and cut fabric using a ruler and scissors, following a pattern or template. Show the children how to prepare the cord or thread for sewing.	Have the children practice measuring and cutting the fabric for their purse, as well as preparing the cord or thread.	Review the importance of accurately measuring and cutting fabric and preparing the cord or thread.
Lesson 3	Review the steps for sewing the purse and the importance of following a plan.	Demonstrate how to sew the fabric pieces together using a basic running stitch, as well as how to attach the cord or thread to the purse.	Have the children work in small groups to sew their purse, with supervision and guidance as needed.	Review the steps taken to sew the purse and discuss any challenges or successes.
Lesson 4	Review the aim of the project and the importance of attaching a functional drawstring to the purse.	Demonstrate how to attach a drawstring to the purse using appropriate materials (e.g. cord, ribbon, elastic).	Have the children attach a drawstring to their purse, with supervision and guidance as needed.	Review the steps taken to attach the drawstring and discuss any challenges or successes.
Lesson 5	Review the aim of the project and the importance of testing the purse to see if it can hold objects and be closed securely.	Demonstrate how to test the purse by placing objects inside and closing it using the drawstring.	Have the children test their purse by placing objects inside and closing it, with supervision and guidance as needed.	Review the results of the tests and discuss any modifications that need to be made to improve the purse.
Lesson 6	Review the steps taken to design and create the Viking drawstring purse and the results of the tests.	Demonstrate how to present the purse to an audience, including how to describe the design, materials, and any modifications made.	Have the children present their purses to the class or to a small group, with supervision and guidance as needed.	Review the presentations and discuss any successes or areas for improvement.
RESOURCES:				
<ul style="list-style-type: none">• Fabric (various colours and patterns)• Scissors• Ruler				



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- Cord or thread
- Sewing needle
- Elastic, ribbon, or other materials for drawstring
- Objects to place inside purse for testing (e.g. small toys, coins)

YEAR 4 SPRING TERM: TORCHES				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a torch with a simple electrical circuit. Discuss the features of a torch and the materials that can be used to make it (e.g. battery, bulb, wires, switch).	Show the children examples of torches and discuss the basic components of an electrical circuit (e.g. power source, conductor, switch). Introduce the concept of making a plan for their torch, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their torch and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a torch and the properties of these materials (e.g. size, strength, conductivity).	Demonstrate how to gather and prepare the materials for the torch, including cutting wires to size and stripping the ends.	Have the children practice gathering and preparing the materials for their torch.	Review the importance of accurately gathering and preparing materials for the torch.
Lesson 3	Review the steps for constructing the simple electrical circuit and the importance of following a plan.	Demonstrate how to connect the power source (battery), conductor (wires), and switch to create a simple electrical circuit.	Have the children work in small groups to construct the simple electrical circuit for their torch, with supervision and guidance as needed.	Review the steps taken to construct the circuit and discuss any challenges or successes.
Lesson 4	Review the aim of the project and the importance of testing the torch to see if it works.	Demonstrate how to test the torch by turning it on and off using the switch and checking that the bulb is functioning.	Have the children test their torches, with supervision and guidance as needed.	Review the results of the tests and discuss any modifications that need to be made to improve the torch.
Lesson 5	Review the aim of the project and the importance of refining and improving the torch.	Demonstrate how to make modifications to the torch based on the results of the tests, including adjusting the placement of the switch or adding a lens to focus the light.	Have the children make any necessary modifications to their torches, with supervision and guidance as needed.	Review the modifications made and discuss the improvements to the torches.
Lesson 6	Review the steps taken to design and create the torch with a simple electrical circuit and the results of the tests.	Demonstrate how to present the torch to an audience, including how to describe the design,	Have the children present their torches to the class or to a small group, with supervision and guidance as needed.	Review the presentations and discuss any successes or areas for improvement.



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		materials, and any modifications made.		
RESOURCES:				
<ul style="list-style-type: none"> Batteries Bulbs Wires Switches Lenses (optional) Tools for stripping wire ends and making connections (e.g. wire stripper, pliers) Objects to use as weights or props in testing the torch (optional) 				

YEAR 4 SUMMER TERM: VOLCANOES				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a model volcano that can erupt. Discuss the features of a volcano and the materials that can be used to make it (e.g. clay, paint, rocks, papier Mache).	Show the children examples of model volcanoes and discuss the basic components of a volcano (e.g. cone, crater, magma chamber). Introduce the concept of making a plan for their volcano, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their volcano and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a model volcano and the properties of these materials (e.g. malleability, durability, colour).	Demonstrate how to sculpt the base and cone of the volcano using clay or other modelling material. Show the children how to add details to the volcano using rocks, paint, or other materials.	Have the children practice sculpting and detailing the base and cone of their volcano.	Review the steps taken to sculpt and detail the volcano and discuss any challenges or successes.
Lesson 3	Review the aim of the project and the importance of creating an eruption mechanism for the volcano.	Demonstrate how to create a simple eruption mechanism using a bottle, baking soda, and vinegar.	Have the children work in small groups to create an eruption mechanism for their volcano, with supervision and guidance as needed.	Review the steps taken to create the eruption mechanism and discuss any challenges or successes.
Lesson 4	Review the importance of testing the volcano to ensure that it works properly.	Demonstrate how to test the volcano by adding the eruption mechanism and activating it.	Have the children test their volcanoes, with supervision and guidance as needed.	Review the results of the tests and discuss any modifications that need to be made to improve the eruption.
Lesson 5	Review the aim of the project and the importance of refining and improving the volcano.	Demonstrate how to make modifications to the volcano based on the results of the tests, including adjusting the placement of the eruption mechanism or	Have the children make any necessary modifications to their volcanoes, with supervision and guidance as needed.	Review the modifications made and discuss the improvements to the volcanoes.



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		adding additional details to the model.		
Lesson 6	Review the steps taken to design and create the model volcano and the results of the tests.	Demonstrate how to present the volcano to an audience, including how to describe the design, materials, and any modifications made.	Have the children present their volcanoes to the class or to a small group, with supervision and guidance as needed.	Review the presentations and discuss any successes or areas for improvement.

RESOURCES:

- Clay or other modelling material, papier mache
- Rocks, paint, or other materials for detailing the volcano
- Bottle
- Baking soda
- Vinegar
- Tools for sculpting and detailing the volcano (e.g. sculpting tools, paintbrushes)

YEAR 5 AUTUMN TERM: CREATING A VICTORIAN TOY				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a Victorian toy using cams, levers, and/or pulleys. Discuss the features of Victorian toys and the materials that can be used to make them (e.g. wood, metal, paper).	Show the children examples of Victorian toys and discuss the basic principles of cams, levers, and pulleys. Introduce the concept of making a plan for their toy, including a sketch and a list of materials.	Encourage the children to brainstorm ideas for their toy and make a sketch of their design. Have them think about which materials they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different materials that can be used to make a Victorian toy and the properties of these materials (e.g. strength, flexibility, durability).	Demonstrate how to cut and shape the materials for the toy using tools such as saws, files, and sandpaper.	Have the children practice cutting and shaping the materials for their toy.	Review the steps taken to cut and shape the materials and discuss any challenges or successes.
Lesson 3	Review the aim of the project and the importance of	Demonstrate how to create simple mechanisms using cams, levers,	Have the children work in small groups to create mechanisms for	Review the steps taken to create the mechanisms and discuss any challenges or successes.



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	incorporating cams, levers, and/or pulleys into the toy.	and/or pulleys and attach these to the toy.	their toy, with supervision and guidance as needed.	
Lesson 4	Review the importance of testing the toy to ensure that it works properly.	Demonstrate how to test the toy by activating the mechanisms and observing the movement.	Have the children test their toys, with supervision and guidance as needed.	Review the results of the tests and discuss any modifications that need to be made to improve the movement.
Lesson 5	Review the aim of the project and the importance of refining and improving the toy.	Demonstrate how to make modifications to the toy based on the results of the tests, including adjusting the placement of the mechanisms or adding additional details to the toy.	Have the children make any necessary modifications to their toys, with supervision and guidance as needed.	Review the modifications made and discuss the improvements to the toys.
Lesson 6	Review the steps taken to design and create the Victorian toy and the results of the tests.	Demonstrate how to present the toy to an audience, including how to describe the design, materials, and any modifications made.	Have the children present their toys to the class or to a small group, with supervision and guidance as needed.	Review the presentations and discuss any successes or areas for improvement.

RESOURCES:

- Wood, metal, or other materials for the toy
- Cams, levers, and/or pulleys
- Tools for cutting and shaping the materials (e.g. saws, files, sandpaper)



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YEAR 5 SPRING TERM: DESIGN A FAIRTRADE MEAL				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
Lesson 1	Introduce the project and the aim of creating a meal made from fair-trade ingredients. Discuss the concept of fair trade and the benefits of supporting fair-trade farmers and producers.	Show the children examples of fair-trade products and discuss the different ingredients that can be used to make a meal (e.g. grains, vegetables, meats). Introduce the concept of making a plan for their meal, including a sketch and a list of ingredients.	Encourage the children to brainstorm ideas for their meal and make a sketch of their design. Have them think about which ingredients they will need and make a list of these.	Discuss the children's ideas and give feedback on their design plans.
Lesson 2	Review the different ingredients that can be used to make a meal and the properties of these ingredients (e.g. taste, texture, nutritional value).	Demonstrate how to select and prepare ingredients for the meal, including washing, chopping, and cooking techniques.	Have the children practice selecting and preparing ingredients for their meal.	Review the steps taken to select and prepare the ingredients and discuss any challenges or successes.



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Lesson 3	Review the aim of the project and the importance of using fair-trade ingredients in the meal.	Demonstrate how to identify fair-trade products and incorporate them into the meal.	Have the children work in small groups to choose fair-trade ingredients for their meal, with supervision and guidance as needed.	Review the steps taken to choose fair-trade ingredients and discuss any challenges or successes.
Lesson 4	Review the importance of testing the meal to ensure that it is enjoyable and safe to eat.	Demonstrate how to test the meal by tasting and evaluating the flavours and textures of the dish.	Have the children test their meals, with supervision and guidance as needed.	Review the results of the tests and discuss any modifications that need to be made to improve the flavour and safety of the meal.
Lesson 5	Review the aim of the project and the importance of refining and improving the meal.	Demonstrate how to make modifications to the meal based on the results of the tests, including adjusting the ingredients or cooking techniques.	Have the children make any necessary modifications to their meals, with supervision and guidance as needed.	Review the modifications made and discuss the improvements to the meals.
Lesson 6	Review the steps taken to design and create the meal and the results of the tests.	Demonstrate how to present the meal to an audience, including how to describe the design, ingredients, and any modifications made.	Have the children present their meals to the class or to a small group, with supervision and guidance as needed.	Review the presentations and discuss any successes or areas for improvement.

RESOURCES:

- Fair-trade ingredients (e.g. grains, vegetables, meats)
- Cooking equipment (e.g. pots, pans, utensils)
- Appliances (e.g. stove, oven, microwave)
- Safety equipment (e.g. aprons, oven mitts)

YEAR 5 SUMMER TERM: CREATING GREEK SANDALS

Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduce the concept of Greek Sandals and their history and show examples of different styles.	Discuss the design process and how to brainstorm and sketch ideas for a Greek Sandal design.	Have the students sketch their own Greek Sandal design.	Review and discuss the different design ideas.



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2	Review the design sketches and determine what materials will be needed for the project.	Demonstrate how to accurately measure and mark the materials for cutting, and how to safely use scissors to cut the materials.	Have the students measure and cut their own materials according to their design.	Review the correct technique for measuring and cutting materials.
3	Review the different pieces that make up the sandal base.	Demonstrate how to assemble the sandal base using glue or a sewing machine.	Have the students assemble their own sandal base.	Discuss the different methods for assembling the sandal base and the pros and cons of each.
4	Discuss the various ways to add decorative elements to the sandals, such as beads, embroidery, or ribbon.	Demonstrate how to add decorative elements to the sandals using the chosen method.	Have the students add decorative elements to their own sandals.	Review the different decorative elements that were added and how they were attached.
5	Review the completed sandals and discuss any final touches that may be needed.	Demonstrate how to finish the sandals, including adding any necessary padding or lining.	Have the students finish their own sandals.	Have the students evaluate their finished sandals, considering factors such as comfort, durability, and aesthetic appeal.
6	Discuss how to present the finished sandals, including packaging and labelling.	Demonstrate how to create a presentation board or display for the sandals.	Have the students create a presentation board or display for their sandals.	Have the students present their sandals to the class, explaining their design process and any challenges they faced.

RESOURCES:

- Scissors, glue, sewing machine (optional), beads, embroidery thread, ribbon (optional), fabrics, padding or lining materials (optional), presentation board or display materials (e.g. poster board, display case)

YEAR 6 AUTUMN TERM: DESIGN A SIMPLE ALARM				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary



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1	Introduce the concept of simple electronics and how they can be used in an alarm system.	Demonstrate how to use a circuit board and basic components, such as resistors, capacitors, and transistors.	Have the students build a simple circuit using a circuit board and provided components.	Review the completed circuits and discuss how they work.
2	Review the different types of alarm systems and their features.	Discuss the design process and how to brainstorm and sketch ideas for an alarm system.	Have the students sketch their own alarm system design.	Review and discuss the different design ideas.
3	Review the design sketches and determine what materials will be needed for the project.	Demonstrate how to build a basic structure using materials such as cardboard, plastic, or wood.	Have the students build their own alarm system structure according to their design.	Review the different structures and discuss any challenges that were encountered.
4	Review the completed structure and discuss how to integrate the electronics into the design.	Demonstrate how to connect the circuit board and components to the structure using wires and connectors.	Have the students integrate the electronics into their own alarm system structure.	Review the different methods for integrating the electronics and the pros and cons of each.
5	Discuss the different options for programming the alarm system, such as using a microcontroller or a simple computer.	Demonstrate how to program the alarm system using a chosen method.	Have the students program their own alarm system using scratch to code (programming a sound monitor). **See KS2-Classroom-Sound-Monitor-Activity-Scratch 1.4 and 2.0.pdf	Review the different programming methods and discuss any challenges that were encountered.
6	Review the completed alarm system and discuss any final touches that may be needed.	Demonstrate how to evaluate the alarm system, considering factors such as effectiveness, reliability, and usability.	Have the students evaluate their own alarm system.	Have the students present their alarm system to the class, explaining their design process and any challenges they faced.

RESOURCES:

- **Circuit board, basic components (resistors, capacitors, transistors), materials for building a structure (e.g. cardboard, plastic, wood), wires and connectors, microcontroller or simple computer (optional), presentation materials (e.g. poster board, display case)**



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- <https://www.stem.org.uk/elibrary/resource/36036>

YEAR 6 SPRING TERM: ANDERSON SHELTERS				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduce the concept of Anderson Shelters and their history and show examples of different designs.	Discuss the design process and how to brainstorm and sketch ideas for an Anderson Shelter.	Have the students sketch their own Anderson Shelter design.	Review and discuss the different design ideas.
2	Review the design sketches and determine what materials will be needed for the project.	Demonstrate how to accurately measure and mark the materials for cutting, and how to safely use scissors or a craft knife to cut the materials.	Have the students measure and cut their own materials according to their design.	Review the correct technique for measuring and cutting materials.
3	Review the different pieces that make up the shelter and discuss how they fit together.	Demonstrate how to assemble the shelter using glue or a sewing machine.	Have the students assemble their own shelter.	Discuss the different methods for assembling the shelter and the pros and cons of each.
4	Discuss the various ways to add details and decorations to the shelter, such as furniture, wallpaper, or plants.	Demonstrate how to add details and decorations to the shelter using the chosen methods.	Have the students add details and decorations to their own shelter.	Review the different details and decorations that were added and how they were attached.
5	Review the completed shelter and discuss any final touches that may be needed.	Demonstrate how to finish the shelter, including adding any necessary lighting or electricity.	Have the students finish their own shelter.	Have the students evaluate their finished shelter, considering factors such as authenticity, functionality, and aesthetic appeal.
6	Discuss how to present the finished shelter, including packaging and labelling.	Demonstrate how to create a presentation board or display for the shelter.	Have the students create a presentation board or display for their shelter.	Have the students present their shelter to the class, explaining their design process and any challenges they faced.
RESOURCES:				
<ul style="list-style-type: none">• Scissors or craft knife• Glue• Sewing machine (optional)• Furniture, wallpaper, plants (optional)• Lighting or electricity materials (optional)• Presentation board or display materials (e.g. poster board, display case)				



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YEAR 6 SUMMER TERM: FOOD FOR THE END OF YEAR CELEBRATION				
Lesson	Introduction	Modelling a New Skill	Opportunity for Children to Apply Skill	Plenary
1	Introduce the concept of designing and creating food for a special occasion, and discuss the importance of considering dietary requirements.	Discuss the design process and how to brainstorm and sketch ideas for the end of year celebration food.	Have the students sketch their own food ideas for the celebration.	Review and discuss the different design ideas.
2	Review the design sketches and determine what ingredients will be needed for the project.	Demonstrate how to research and source ingredients, considering factors such as availability, cost, and dietary restrictions.	Have the students research and source ingredients for their own food ideas.	Review the different ingredients that were sourced and discuss any challenges that were encountered.
3	Review the ingredients and discuss any necessary food prep, such as chopping, marinating, or seasoning.	Demonstrate how to prepare and cook the food using appropriate kitchen equipment and techniques.	Have the students prepare and cook their own food.	Discuss the different methods for preparing and cooking the food and the pros and cons of each.
4	Discuss the various ways to present the food, including plating, garnishing, and labeling.	Demonstrate how to present the food using the chosen methods.	Have the students present their own food.	Review the different food presentations and discuss any challenges that were encountered.
5	Review the completed food and discuss any final touches that may be needed.	Demonstrate how to package the food for transport or storage.	Have the students package their own food.	Have the students evaluate their finished food, considering factors such as taste, appearance, and appropriateness for the occasion.
6	Discuss how to showcase the finished food at the end of year celebration, including	Demonstrate how to create a presentation board or display for the food.	Have the students create a presentation board or display for their food.	Have the students present their food at the end of year celebration, explaining their



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	setting up a display and interacting with guests.			design process and any challenges they faced.
RESOURCES:				
<ul style="list-style-type: none">• Kitchen equipment (e.g. stove, oven, pots and pans, utensils)• Ingredients• Packaging materials (e.g. Tupperware, foil, bags)• Presentation board or display materials (e.g. poster board, display case)				