Design Technology – Medium Term Planning

Y5/6 Otter Class

SCAMBLESBY CofE PRIMARY SCHOOL: MEDIUM TERM-PLANNING Y5/6 Design Technology Autumn Year A	
Milestone 3 **CAMS (3.7) p403**	
Master practical skills	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.

Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
Breadth	**Technical knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures.
Vocabulary	

Session	Learning Objective	Learning questions and Success criteria	Lesson outline
1	To investigate toys with moving cam mechanisms	**How do toys move?** **What mechanisms are inside them to support their movement?** *SC: To recognise the movement of a mechanism within a toy or model. (Basic)* *SC: To to understand that a cam mechanism will change rotary motion into linear motion. (Advancing)* *SC: To investigate examples of cam toys and common on how they work. (Deep)*	
2	To investigate different types of cham mechanism.	**What impact does the shape of the cam have on the movement?** *SC: To describe how cams work using appropriate vocabulary. (B)* *SC: To explore how different shaped cams affect the movement of the follower. (A)* *SC: To make suggestions for how different cams could be used for different toys/purposes. (D)*	
3	To investigate ways of strengthening structures for a moving toy.	***What materials are you going to require to create your model?*** ***How will you ensure your structure will be strengthened?*** *SC: To make suggestions for how they could make a sturdy structure for a moving toy. (B)* *SC: To experiment with a variety of materials, tools and techniques. (A)* *SC: To identify ways of strengthening a structure. (D)*	
4	To be able to design a moving toy with a cam mechanism.	**What is your audience and how will this affect/impact your design?** *SC: To state the purpose and audience of their design. (B)* *SC: To design a moving toy with a cam mechanism. (A)* *SC: To describe how they will create their toy and what materials and tools their will need. (D)*	
	To be able to follow a design to create a moving toy with a cam mechanism.	**Can you use your plan to create your design?** *SC: To follow a design to create a moving toy. (B)* *SC: To work safety with a variety of materials and tools. (A)* *SC: To identify areas of their toy that could be improved upon. (D)*	

	To be able to evaluate a finished moving toy.	**Has your design been successful?** **What would you change?** *SC: To evaluate their finished product fairly. (B)* *SC: To suggest ways that they could improve their product if they were to make it again. (A)* *SC: To recognise ways in which they have been successful. (D)*	
Assessment			

SCAMBLESBY CofE PRIMARY SCHOOL: MEDIUM TERM-PLANNING Y5/6 Design Technology Spring Year A

Milestone 3

FOOD THROUGHOUT THE YEAR (3.8) p419

Master practical skills	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.

Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
Breadth	**Cooking and nutrition** • understand and apply the principles of a healthy and varied diet. • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Vocabulary

Session	Learning Objective	Learning questions and Success criteria	Lesson outline
1	To cook using British ingredients available all year round.	**Why are only some British foods seasonal?** **Why do other countries have the food available all year round?** *SC: To know what 'seasonal food' is. (Basic)* *SC: To know why certain foods are available all year round in Britain. (Advancing)* *SC: To use a variety of techniques to bake cakes safety and hygienically. (Deep)*	
2	To know how seasonal fruits in Britain are grown and produced.	***What variety of fruits are produced in Britain and in what season?*** ***How do farmers slow down or speed up the ripening process?*** *SC: To understand that some seasonal fruits are suited to climate and weather conditions in Britain.(B)* *SC: To know how fruit may be processed and or preserved. (A)* *SC: To follow instructions for a recipe using seasonal fruit or jam. (D)*	
3	`To understand why vegetables from an important part of a healthy and varied diet.	***What vegetables are grown in Britain and why are they an important food source?*** *SC: To know why vegetables for an important part of a healthy diet. (B)* *SC: To know when some British vegetables are in season. (A)* *SC: To prepare a healthy meal using seasonal vegetables. (Real food or collage) (D)*	
4	To find out about how seasonally produced meat can form part of a healthy diet.	**Why is meat important in a diet?** **What is its nutritional value?** **What alternatives can be used for vegetarians/vegans to ensure they get their full nutritional intake?** *SC: To name a variety of food products that come from animals. (B)* *SC: To know some reasons why some meat is not in season-all-year-round. (A)* *SC: To prepare a healthy, savoury meal using meat (or vegetarian alternative) (D)*	

5	To know fish are caught or reared, processed and used ion healthy meals.	**Where and why is fish farmed?** **What is quality assurance marks?** *SC: To know some ways in which fish are caught or reared and processed in Britain. (B)* *SC: To know some of the nutrients in fish. (A)* *SC: To prepare a healthy, savoury meal using fish or vegetarian alternative. (D)*	
6	To show what you have learned about eating seasonal food as part of a healthy, varied diet.	**What unusual foods are only in season for brief periods of time?** **What have you learnt about foods throughout the year?** *SC: To know some reasons why some foods are only in season for a short time. (B)* *SC: To explain why it is a good thing to eat seasonal food. (A)* *SC: To recall and apply what they have learned about seasonal food in Britain. (D)*	
Assessment			

SCAMBLESBY CofE PRIMARY SCHOOL: MEDIUM TERM-PLANNING Y5/6 Design Technology Summer Year A

Milestone 3

FRAME STRUCTURES (3.5) p369 (paper straws)

FRAME STRUCTURES (3.5) p369	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.

Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
Breadth	**Design** • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** • select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately. • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** • investigate and analyse a range of existing products. • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. • understand how key events and individuals in design and technology have helped shape the world
Vocabulary	

Session	Learning Objective	Learning questions and Success criteria	Lesson outline

1	To investigate free standing structures and evaluate their structure.	**What type of materials are used to create the frames?** **How are the frames constructed to withstand weight?** *SC: To identify the type of materials used for the frames. (Basic)* *SC: To discuss the importance of the joins and how these give support.(Advancing)* *SC: To investigate different frame structures and explore their structural shape and design in detail. (Deep)*	
2	To create a design and identify materials required.	***What will your design look like?*** ***What material will you use? Why?*** *SC: To create a design idea. (B)* *SC: To develop ideas through annotated diagrams (A)* *SC: To develop a step by step guide of the make process. (D)*	
3	To select from and use materials and components to make planned design.	**How will you start your design?** *SC: To explore materials and make informed decisions. (B)* *SC: To make careful measurements (A)* *SC: To consider ways of strengthening product and making amendments. (D)*	
4	To evaluate designs stability and structure.	**Was your design successful?** **Was it structurally sound?** *SC: To talk about their designs and how their structure has been developed. (B)* *SC: To (A)* *SC: To evaluate their product and make improvements following peer assessment. (D)*	
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Assessment			

SCAMBLESBY CofE PRIMARY SCHOOL:
MEDIUM TERM-PLANNING Y5/6 Design Technology
Autumn Year B

Milestone 3

ELECTRONIC MOTORS (3.3) p. 337

Master practical skills	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
Breadth	**Design** • use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. • generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. **Make** • select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately. • select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities. **Evaluate** • investigate and analyse a range of existing products. • evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. • understand how key events and individuals in design and technology have helped shape the world
Vocabulary	

Session	Learning Objective	Learning questions and Success criteria	Lesson outline
1	To look a range of existing electronic motor toy cars and investigate how they move	**How does the toy cars move?** **What is inside it that enables it to move?** *SC: To identify the moving parts within the car. (Basic)* *SC: To create a detailed diagram of their chosen car. (Advancing)* *SC: To (Deep)*	

2	To investigate ways of using electrical motors to create rotating parts.	**How does pulleys and belts create movement?** *SC: To understand how pully and belt systems can be used to transform movement. (B)* *SC: To describe how an electrical circuit with a motor can be used to create rotating parts. (A)* *SC: To manipulate their pulleys to create different movements. (D)*	
3	To create prototype models to investigate stable frameworks.	***How will you ensure stability in your design?*** *SC: To describe ways of strengthening and reinforcing structures. (B)* *SC: To suggest ways in which ideas for frameworks could be developed to ideas for their own car. (A)* *SC: To use a variety of materials and components accurately. (D)*	
4	To be able to design a car with rotating parts.	**What materials, resources will you need?** *SC: To make a decision about what kind of ride they will make. (B)* *SC: To design an appropriate electrical circuit for their car. (A)* *SC: To describe the process they will need to go through to successfully complete their product. (D)*	
5	To be able to make a car following a design.	**Can you use your design to create your product?** *SC: To follow a design to create a car with rotating parts. (B)* *SC: To work accurately and safety with a variety of tools, materials and electrical components. (A)* *SC: To identify ways of improving their electrical car to create a finished product of a high quality. (D)*	
6	To be able to evaluate a finished product.	**What was successful about your design?** *SC: To evaluate a finished product fairly. (B)* *SC: To suggest ways they could improve their product if they were to make it again. (A)* *SC: To recognise ways in which they have been successful. (D)*	
Assessment			

SCAMBLESBY CofE PRIMARY SCHOOL:
MEDIUM TERM-PLANNING Y5/6 Design Technology
Spring Year A

Milestone 3 **ARCH STRUCTURES (3.4) p. 353**	
Master practical skills	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
Breadth	**Technical knowledge** • apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

Vocabulary

Session	Learning Objective	Learning questions and Success criteria	Lesson outline
1	To identify arch structures in the world and explain why they are used.	**What are some famous arch structures?** *SC: To use the correct vocabulary. (Basic)* *SC: To research famous arch structures and describe their point of fixings and strength.(Advancing)* *SC: To research and evaluate famous arch structures. (Deep)*	
2	To create an. arch structures from different materials and test their strength.	***What materials are best to use?*** ***Can you explore different material strength in groups?***	

		SC: To use triangles to create truss bridges that span a given distance and support a load. (B) *SC: To build a bridge structure from selected materials that holds a load. (A)* *SC: To use research to select certain resources to create an arch which can hold a load. (D)*	
3	To design and make an arch structure suitable for the brief and specification given.	***How will you create your design?*** ***Can you create a step-by-step guide?*** *SC: To create a design and annotate. (B)* *SC: To create a step-by-step design. (A)* *SC: To create a design highlighting possible weaknesses and solutions. (D)*	
4	To carefully measure, cut, saw to ensure the dimensions are correct and use appropriate joining techniques.	***What materials have you used?*** ***How will you ensure strength in your design?*** *SC: To select appropriate tools and equipment to carry out task.(B)* *SC: To safely design and create the arch using chosen materials. (A)* *SC: To follow design and safety use materials and tools to create a strengthened arch. (D)*	
5	To evaluate the effectiveness of the product by referring to the specification.	**Why ?** **What** *SC: To evaluate if the product is able to withstand weight. (B)* *SC: To test the product and evaluate its effectiveness. (A)* *SC: To explain why selecting materials is an important part of the design process (D)*	
Assessment			

SCAMBLESBY CofE PRIMARY SCHOOL:
MEDIUM TERM-PLANNING Y5/6 Design Technology
Summer Year A

Milestone 3

BREAD (3.9) p.427

Master practical skills	• Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs.
Design, make, evaluate and improve	• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Take inspiration from design throughout history	• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices. • Create innovative designs that improve upon existing products. • Evaluate the design of products so as to suggest improvements to the user experience.
	Cooking and nutrition • understand and apply the principles of a healthy and varied diet. • prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques. • understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Vocabulary

Session	Learning Objective	Learning questions and Success criteria	Lesson outline
1	To investigate and evaluate bread products according to their characteristics.	**Why is bread so important?** **What does bread symbolise in different cultures?** *SC: To name and identify the origin of a number of bread products. (Basic)* *SC: To use appropriate vocabulary to describe bread products.. (Advancing)* *SC: To compare and evaluate a variety of bread products. (Deep)*	Children will learn about different types of bread and the cultures and/or regions from which they originate. They will then taste and describe a variety of breads.
2	To learn how bread products are an important part of a balanced	**What nutritional value does bread have?** **How much bread should be consumed?**	

	diet and can be eaten in different ways.	*SC: To understand the contribution bread can make to a healthy diet. (B)* *SC: To use a recording sheet to complete a survey. (A)* *SC: To evaluate their findings. (D)*	
3	To find out which different ingredients are needed to make bread and how ingredients can be altered and mixed to created different effects.	***What ingredients are used to make bread?*** *SC: To follow instructions. (B)* *SC: To weigh and measure ingredients. (A)* *SC: To experiment with different ways of altering a basic bread mixture successfully. (D)*	
4	To be able to design a new bread product for a particular person or event.	**What ingredients will you use?** **What audience will you be designing your bread for?** *SC: To use the results of investigations when developing design ideas. (B)* *SC: To explain how they will make their product. (A)* *SC: To explain what purpose they are designing and creating their product for. (D)*	
5	To be able to make bread based on a plan and design.	**What equipment will you require?** **What process will you use?** *SC: To apply what they have learnt when making their product. (B)* *SC: To follow a design accurately. (A)* *SC: To work safety, hygienically and accurately. (D)*	
6	To be able to evaluate a finished product.	***What went well?*** ***What would you change?*** *SC: To evaluate a finished product fairly. (B)* *SC: To describe how they could make further improvements to their product if they were to make it again. (A)* *SC: To evaluate what they have learnt throughout the course of the moduel. (D)*	
Assessment			