New Seaham Academy Design Technology Scheme of Work

Class: 3 - Careers – Civil Engineer, Architect, Food Technologist, Mechanical Engineer.

	Topic	Objectives	Resources
Autumn 1	Mechanisms – Make a vehicle with wheels. Step 4 may take several lessons to complete.	1. To explore and research a range of existing products to understand the key factors in their design. 2. To develop an understanding of movement of simple mechanisms including levers, sliders, wheels and axels. 3. To design a functional and appealing product based on a simple design criteria. 4. To create a functional and appealing moving vehicle with wheels by selecting appropriate tools and materials. 5. To test and evaluate the moving vehicle against their design criteria.	Wheels Axels
Spring 1	Food – Design and make a fruit smoothie.	1. To explore and research a range of products and explain why ingredients might have been used. 2. To know that all food has to be farmed, grown elsewhere or caught and sort them into the 5 food groups. 3. To develop an understanding of preparing simple dishes safely and hygienically without using a heat source. (skills such as cutting, peeling and grating). 4. To use my knowledge of fruits and vegetables to decide which would be best to use in a smoothie according to their characteristics to design a fruit smoothie. (colour, taste, texture etc.) 5. To make and present food appropriately using techniques such as cutting, peeling and grating.	Fruit Knives Chopping boards Blender

		6. To evaluate my product against my design criteria.	
Summer	Mechanisms: Levers Investigating different types of levers and how they work in everyday mechanisms. Pupils identify pivots and levers in products before creating their own lever systems and exploring how they make tasks easier.	1. To describe how seesaws are a simple lever. 2. To build and test a simple lever. 3. To describe scissors as a mechanism with two levers. 4. To make mechanisms with two levers. 5. To design levers for everyday use.	

New Seaham Academy Design Technology Scheme of Work

Class: 4 - Careers – Mechanical engineer, Landscape gardener, Tailor.

	Topic	Objectives	Resources
Autumn 1	Textiles – Make a puppet.	6. To explore and evaluate a range of similar products and begin to discuss why material choices have been made. 7. To research the work of Harry Corbett and discuss the similarities and differences between those puppets and similar products. 8. To investigate fabrics, fastenings and which tools will be best to do this. a. Tools and equipment to cut, shape and join fabric. b. Investigate how the textiles product can be assembled from two identical fabric shapes. 9. To design a simple puppet that is functional and has aesthetic characteristics. 10. To create a functional and aesthetic puppet by selecting correct fabrics and fastenings. 11. To evaluate the final product against the original design and design criteria.	Felt Fabric Needle Thread
Spring 1	Mechanism – Make a vehicle e.g. Medieval cart from history Step 2 and 3 can be merged into Step 5 as long as ample time is provided for the Chn	7. To explore and evaluate a range of existing/similar products (from History). 8. To select from and use materials and components including construction materials for the movement of simple mechanisms including leavers, sliders, wheels and axles. 9. To select from and safely use a range of tools with increased accuracy.	Soft wood Axles Wheels Levers Sliders Saw Clamp

	to practice using the equipment and evaluate the techniques used.	10. To design an appealing and functional moving vehicle. 11. To create an appealing and functional moving vehicle using the design criteria. 12. To evaluate the final product against the design and design criteria.	Ruler
Summer	Structures: A chair for a bear Investigating strong shapes and the properties of stiff and flexible materials by designing a chair inspired by the story 'There's a Bear on My Chair'. Pupils apply their understanding to build a suitable chair for the bear using appropriate materials and construction techniques.	6. To evaluate existing structures. 7. To explore how shape affects the strength of a tower. 8. To explore how thickness affects the strength of materials. 9. To make a strong and stable chair for a user. 10. To evaluate and improve a structure.	

New Seaham Academy Design Technology Scheme of Work

Class: 5 - Careers – Architect, Civil Engineer, Joiner, Carpenter, Book Illustrator

	Topic	Objectives	Resources
Autumn 1	Architecture – Buildings based on natural forms.	12. To explore and evaluate a range of existing products to begin to explain why materials have been chosen and methods of construction have been used. 13. To research the work of Antoni Gaudi and describe differences and similarities of his work and existing products. 14. To select and use a range of appropriate tools and materials with some accuracy to create a strong, stiff shell structure. 15. To design a free-standing structure that is functional and has aesthetic characteristics. 16. To create a free-standing structure by selecting tools and materials using the design and design criteria ensuring it is functional and has aesthetic characteristics. 17. To test and evaluate the final product against the original design and design criteria.	Junk modelling materials Scissors Clay Glue Sellotape Masking tape Pritt stick Paint Clay tools
Spring 1	Control – Produce a book with moving parts. Step 2 can be broken down into sections and each material must be evaluated.	13. To explore and evaluate a range of similar products and compare these to the work of Julian Wehr to begin to discuss why certain elements were used. 14. To investigate a range of materials and joining materials that will be best to create a moving book that is functional and has aesthetic characteristics.	Paper Felt Foam Card Scissors Pipe cleaners Glue

		a. Select from a wide range of materials and components (sliders, levers, other moving parts in books) b. Select from wide range of joining materials that will be the most successful to allow the product to be functional. 15. To design a book with moving parts that is functional and has aesthetic characteristics. 16. To create a book with moving parts that is functional and has aesthetic characteristics using the design and design criteria. 17. To test and evaluate the final product against the design and design criteria.	Sellotape Lolly sticks Split pins
Summer *Complete over Summer 1 & 2.*	Electrical control – Design and make a 'Burglar Trap' – something which triggers a light or buzzer to come on.	11. To explore and evaluate a range of existing products discussing material choices and improvements that could be made. 12. To create a range of simple electrical circuits using a range of components and explain how they work. 13. To explore and investigate how materials can be combined with the electrical circuit to enhance the function of the circuit. 14. To design a burglar alarm that is functional and has aesthetic characteristics using correct vocabulary. 15. To use a wide range of materials and components to create a functional burglar alarm using the design and design criteria. a. Use textiles, mechanical components, electrical components, construction materials and kits to create the actual casing of the alarm.	Wires Buzzers Bulb Cell Textiles Construction materials and kits Electrical housing

		16. To test and evaluate the final product against the design and suggest improvements.	

New Seaham Academy Design Technology Scheme of Work

Class: 6 - Careers – Food Technologist, Nutritionist, Book Illustrator

	Topic	Objectives	Resources
Autumn 1	Food – Design and make a healthy meal e.g. a salad Can link this to International Day	18. To know that food is grown, reared and caught in the UK, Europe and the wider world. 19. To know that a healthy diet is made up from a variety and balance of different foods and drinks. Eatwell Plate 20. To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, kneading and baking. 21. To taste and evaluate a range of fruit and vegetables according to their characteristics to determine which characteristics are best to use. 22. To design a healthy meal using knowledge of a balanced diet and characteristics of fruit and vegetables. 23. To create a healthy meal using the design and design criteria. 24. To evaluate the final product against the design and design criteria.	Fruits Vegetables Knives Chopping boards Plates
Spring 1	Control – Produce a book with moving parts e.g. pop up book. 17. Make a pop up book for Class 3 (gather information from them	18. To explore and evaluate the work of Waldo Hunt and a range of similar products to begin to discuss function, aesthetics and how they could be improved. 19. To investigate and evaluate the effectiveness of various folds used to make a pop up book. a. V folds, step folds, bird beak folds, lift the flap – use the videos at the bottom to support the creation of the folds.	V folds Step fold Bird beak fold Lift the flap Scissors Paper Card

	and ask them to help evaluate the product to identify areas of improvement). 18. Work in small groups and create a page each to create an overall book. The book must tell a story. 19. It may take several lessons to make the different folds and they must be evaluated once made.	b. Select which materials will be best to use to make an effective pop up book. 20. To gather information about needs and wants of a pop up book to develop a design criteria to ensure the product is fit for purpose. 21. To design a pop up book that is functional and has aesthetic characteristics. 22. To create a page from a pop up book that is functional and has aesthetic characteristics by selecting materials and folds using the design and design criteria. 23. To evaluate the final product against the design and design criteria. To gather the views of others to identify areas of improvement.	Felts Oil pastels Colouring materials
Summer	Wearable Tech Exploring the development of LEDs and how they have enabled a wide range of light-up wearable technologies. Pupils apply their understanding by creating and testing programs to control an array of LEDs before using computer-aided design (CAD) to develop a wearable product.	1. To analyse wearable products that use light-up technology. 2. To create design criteria for a product. 3. To use code to control light-up technology in a product. 4. To program a product to react to light using a sensor. 5. To communicate product design ideas using computer-aided design (CAD).	

https://www.youtube.com/watch?v=2mFxIbqUb0g - step fold

https://www.youtube.com/watch?v=AXJ9i8bvxOY – various folds
https://www.youtube.com/watch?v=poqdYrqgvkA the boy part 2
https://www.youtube.com/watch?v=z3ewhwajCpY
https://www.youtube.com/watch?v=1pIcN1nb1YA - simple bird beak fold
https://www.youtube.com/watch?v=RoNpBDSvfxo - V folds
https://www.youtube.com/watch?v=TBsPJkvsNrI
https://www.youtube.com/watch?v=KvMU1m_qKN0 - lift the flap
https://www.youtube.com/watch?v=qMhzKKqNboc - bird beak fold

New Seaham Academy Design Technology Scheme of Work

Class: 7 - Careers – Mechanical Engineer, Aeronautical Engineer, Food Technologist, Nutritionist.

	Topic	Objectives	Resources
Autumn 1	Electrical control – Make an electrically controlled moon buggy. Step 2 and 3 can be completed together alongside Step 6 as long as ample time is provided for the Chn to practice key skills of using the equipment and evaluate the techniques used. Step 6 may take several lessons to complete.	25. To observe existing products and designs of Ferenc Pavlics to investigate and evaluate their functional and aesthetic qualities of moon buggies. 26. To investigate, select and use appropriate materials which have both functional properties and aesthetic qualities. 27. To select from and safely use a range of tools with increased accuracy. 28. To generate a range of designs for a moon buggy that is functional and has aesthetic qualities. 29. To create a functional and aesthetic moon buggy by selecting materials and tools using the design and design criteria. 30. To test and evaluate the final product against the design and design criteria identifying strengths and areas of development.	Soft wood Axels Wheels Triangle axel holders Saws Clamps Hot glue Glue
Spring 1	Food – Design and make a healthy meal e.g. stew. Step 3 and 5 can be combined to ensure the food is being	20. To know that food is grown, reared and caught in the UK, Europe and the wider world and to understand that seasons may affect the food available. 21. To understand how food is processed into ingredients that can be eaten or used in cooking and suggest why the ingredients have been used. 22. To know how to prepare and cook a variety of savoury dishes safely and hygienically.	Hob/oven Pan Chopping board Knives Grater Bowls Spoons

	used the same day. Ensure Chn use the correct techniques to prepare the food/ingredients.	a. To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 23. To design a healthy meal identifying which ingredients will be used and why. 24. To create a healthy meal using the design and design criteria. 25. To evaluate the final product against the design and design criteria and to know how recipes can be adapted by adding or substituting one or more ingredients.	

New Seaham Academy Design Technology Scheme of Work

Class: 8 - Careers – Nutritionist, Food Technologist, Mechanical Engineer.

	Topic	Objectives	Resources
Autumn 1	Electric control – Make an electrically controlled lorry. Step 3 and 4 can be completed together alongside Step 6 as long as ample time is provided for the Chn to practice key skills of using the equipment and evaluate the techniques used. Step 6 may take several lessons to complete.	31. To observe existing products and designs to investigate and evaluate their functional and aesthetic qualities of a controlled lorry. 32. To research the work of Mervyn Morris and describe the similarities and differences between their work and similar products. 33. To investigate, select and use appropriate materials which have both functional properties and aesthetic qualities. 34. To select from and safely use a range of tools with increased accuracy. 35. To generate a range of designs for a controlled lorry that is functional and has aesthetic qualities. 36. To create a functional and aesthetic controlled lorry by selecting materials and tools using the design and design criteria. 37. To test and evaluate the final product against the design and design criteria identifying strengths and areas of development.	Soft wood Axels Wheels Triangle axel holders Saws Clamps Hot glue Glue
Spring 1	Food – Design and make a healthy meal.	26. To know that food is grown, reared and caught in the UK, Europe and the wider world and to understand that availability can be affected by the seasons.	Hob/oven Pan Chopping board Knives Grater

	Step 5 and 6 combine into the same sessions.	27. To understand how food is processed into ingredients that can be eaten or used in cooking and suggest why the ingredients have been used. 28. To know that different foods contain different substances, nutrients, water and fibre that are needed for health. 29. To design a healthy meal identifying which ingredients will be used and why. 30. To know how to prepare and cook a variety of savoury dishes safely and hygienically. a. To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 31. To create a healthy meal using the design and design criteria. 32. To evaluate the final product against the design and design criteria and to know how recipes can be adapted by adding or substituting one or more ingredients.	Bowls Spoons
Summer	Monitoring Devices Exploring programmable technology and 3D design by creating a Micro:bit animal monitoring device that responds to temperature changes. Pupils develop CAD skills by learning to use the Tinkercad interface and tools before designing and improving their product.	1. To carry out research to develop design criteria. 2. To write a program to monitor the ambient temperature, including an alert. 3. To generate creative and unique Micro:bit case, stand or housing ideas. 4. To learn about and practise 3D CAD skills.	

New Seaham Academy Design Technology Scheme of Work

Class: 9 - Careers – Mechanical Engineer, Food Technologist, Nutritionist.

	Topic	Objectives	Resources
Autumn 1	Structure – Make a shelter to survive in the rain forest – Bush craft activity. Steps 3, 4 and 5 can be combined, ensure time is given for the children to practice each of the skills.	38. To observe a range of existing products and evaluate the functional properties and aesthetic qualities of these products. 39. To research the work of William Paterson and Oscar Car Kerrison and describe the differences and similarities between their work and existing products. 40. To demonstrate an understanding of which materials can be used to create a functional shelter. 41. To develop an understanding of how to use a range of tools, equipment and materials to make products that are assembled and are fit for purpose. 42. To explore how to reinforce and strengthen a 3D framework. 43. To generate a range of designs that are functional and have aesthetic qualities to create a shelter. 44. To crate a shelter using a design and design criteria. 45. To compare and critically evaluate the finished product against the design specification, functionality, aesthetics and fitness for purpose.	Tarpaulin Branches Knives Saws Rope Woodland materials
Summer	Food – Making bread – linked to rations.	24. To know that food is grown, reared and caught in the UK, Europe and the wider world and to understand that availability can be affected by the seasons.	Hob/oven Pan Oven/baking tray

		25. To understand how food is processed into ingredients that can be eaten or used in cooking and suggest why the ingredients have been used. 26. To know that different foods contain different substances, nutrients, water and fibre that are needed for health. 27. To explore and evaluate a range of similar products and suggest why ingredients have been used. 28. To know how to prepare and cook a variety of savoury dishes safely and hygienically. a. To know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 29. To create a loaf of bread using the design and design criteria. 30. To evaluate the final product against the design and design criteria and to know how recipes can be adapted by adding or substituting one or more ingredients.	Chopping board Knives Bowls Spoons
Summer	Automata Toys Applying woodworking skills by constructing an automaton with moving parts and mechanisms. Pupils measure and cut materials, assemble a frame, select suitable cams and design characters to create an interactive shop display.	5. To create design criteria to meet a user's needs. 6. To use an exploded diagram to assemble a frame. 7. To explore a mechanism to inform a design decision. 8. To evaluate a completed design.	