# DT



## **SUBJECT GUIDE**



The topic curriculum at Phoenix Academy is designed to be both vibrant and creative and places children at its heart, it encompasses history, geography, art and DT, as well as science that works alongside our discreet science lessons and, when appropriate, based on the individual units covered. We believe that our curriculum provides an educational experience that excites children's imaginations, inspires them to learn, extends their horizons, deepens their understanding, and meets both their intellectual and personal needs.

Our curriculum is delivered through Imaginative Learning Projects (ILPs) which provide a rich provision of exciting and motivating learning activities that make creative links between all aspects of our children's learning and that allows them to revisit, consolidate and use the skills that they learn.

To help address and support the needs of our pupils, we believe that our children learn better when they are encouraged to use their imagination and apply their learning in engaging contexts. Our curriculum provides not only learning challenges but also opportunities to develop social skills, build confidence and a sense of value by requiring the children to solve problems, apply themselves creatively and express their knowledge and understanding effectively across the topics that they cover.

The planning of these units provides a rigorous framework of 'essential skills' that outlines what is to be covered by each topic. These 'essential skills' have been identified from the wider expectations of the national curriculum and streamlined to identify those that will provide a strong foundation of understanding for our pupils. They are revisited and built upon a four-year cycle and allow for progression by providing activities that are both age-related and aimed at their level of attainment.

These are used to encourage positive attitudes to learning which reflect the values and skills needed to promote responsibility for learning and future success. We understand that many of our children have barriers to their learning and we work hard to identify these barriers and break them down.

Our broad and balanced curriculum is designed to enable all children to become confident, enquiring and knowledge-thirsty learners, who will be prepared for each new stage of their education. Our curriculum provides children with a range of experiences to ignite curiosity, broaden cultural understanding and recognise their place individually, within the local area and the wider world.

Each topic starts with an introduction day or 'Wow' starter that is used to engage learners and build an interest right from the onset. Our implementation is adapted to the specific learning needs of our learners to provide support and challenge, ensuring an inclusive curriculum that meets the needs of all.

Teaching is delivered through a balance of direct teaching and carefully planned, child initiated activities. Timely interventions from all adults are given to move individuals forward, while teaching staff track the children's progress against the objectives of each topic, allowing gaps in their knowledge to be addressed as they progress through the school.



At Phoenix Academy we aspire to provide a Design Technology curriculum which is inspiring and practical. We want our children to use creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We intend for all our pupils to acquire appropriate subject knowledge, skills and understanding as set out in the National Curriculum. We want Design and Technology to promote the spiritual, moral, cultural, mental and physical development of pupils as designers, so they can develop skills and attributes that can be used beyond school and into adulthood in order for them to be successful in later life.

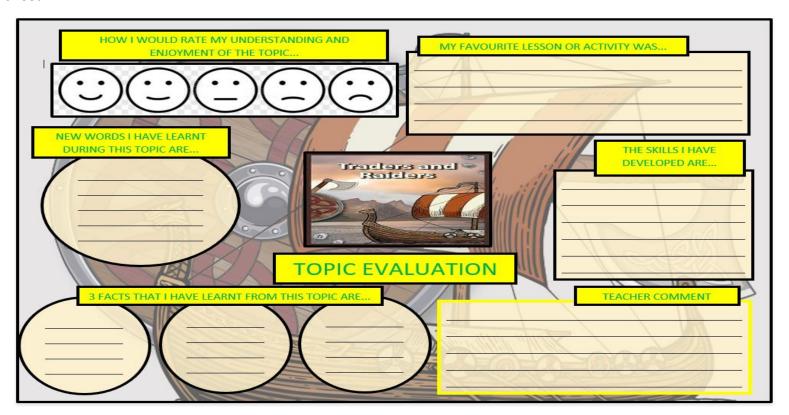


## **PROGRESS AND EVALUATION**

Progress against these objectives is recorded at the end of each topic on the FFT Aspire tracking system and allows staff to identify gaps in learning and to plan accordingly in the future.

At the end of each topic an evaluation sheet is also completed with the children to identify what they enjoyed and learned from each topic and any areas in which they would like to learn more.

#### Example evaluation sheet:





## **PROGRAM OF STUDY - DT**

Design and technology is taught over a four-year rolling cycle of engaging and varied topics, covering all objectives within the National Curriculum, and tailored to meet the needs of our pupils who are taught within mixed age classes. Objectives are covered at multiple points over each year and cycle, ensuring that they are revisited and built upon to develop not only the knowledge and skills of current pupils but also to support those pupils that join from other settings. Design technology is approached as an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth, and well-being of the nation.

## Design and technology programmes of study: key stages 1 and 2 National curriculum in England

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

## **Attainment targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.



## Subject content - Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

#### Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make
- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate
- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria and technical knowledge
- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.



## **Subject content - Key stage 2**

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

#### 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 [for example, 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



#### Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

## **Cooking and nutrition**

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

### Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from

#### Key stage 2

- 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



# **TOPIC OVERVIEW - DT**

YEAR	2020-2021								
TOPIC	Blue Abyss	lue Abyss Frozen Kingdom Gods & Mortals Relics, Rocks and rumbles Wriggle and crawl Rio de Vida							
ACTIVITY	design & make an	Ice buggy prototype	N/A	Cross sectional diagrams	Design & make	Carnival floats			
	aquarium				Minibeast homes				

YEAR	2021-2022							
TOPIC	Tribal Tales	Street Detectives	Traders & raiders	Allotment	Towers, Tunnels &	Scrumdidlyumptious		
					turrets			
ACTIVITY	Designing and making	N/A	Making weapons and	Cooking and nutrition;	Making models of	Cooking and ingredients		
	tools; Building		jewellery; Models of	Making planters; Making	towers, bridges and			
	structures		Anglo-Saxon homes;	structures	tunnels			
			Clay rune stones					

YEAR	2022-2023							
TOPIC	ID	Heroes & Villains	Off with her head!	Beast creator	Revolution	Scream Machine		
ACTIVITY	Tools and equipment;	Making puppets; Flip	N/A	Making models	N/A	Designing rides;		
	Design; Fashion and	books				Programming models;		
	clothing					Mechanical systems;		
						Evaluation; Food		

YEAR	2023-2024							
TOPIC	Moon zoom	Britain at war	Bright lights, big city	Urban pioneers	Pharaohs	Misty mountain, winding river		
ACTIVITY	Designing and making space themed vehicles; Evaluating toys; Using mechanisms	Recipes; Structures	N/A	N/A	Egyptian food; Making tombs and pyramids	Mountain climbing equipment		



# **PROGRESSION OF SKILLS AND KNOWLEDGE - DT**

Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Generating ideas - designing	Design appealing products for a particular user based on simple design criteria. Generate initial ideas and design criteria through own experiences. Develop and communicate these ideas through talk and drawings and mockups where relevant.	Generate ideas based on simple design criteria and their own experiences, explaining what they could make.  Develop, model and communicate their ideas through talking, mock-ups and drawings.	Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s. Use annotated sketches, prototypes, final product sketches and pattern pieces; communication technology, such as web-based recipes, to develop and communicate ideas.	Generate and clarify ideas through discussion with peers to develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.	Generate innovative ideas through research including surveys, interviews and questionnaires and discussion with peers to develop a design brief and criteria for a design specification. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views. and, where appropriate, computer-aided design	Use research using surveys, interviews, questionnaires and web-based resources. to develop a design specification for a range of functional products.  Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.  Generate and develop innovative ideas and share and clarify these through discussion.  Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Making	Select and use simple utensils, tools and equipment to perform a job e.g. peel, cut, slice, squeeze, grate and chop safely; marking out, cutting, joining and finishing; cut, shape and join paper and card. Select from a range of ingredients and materials according to their characteristics to create a chosen product.	Plan by suggesting what to do next. Select and use tools, equipment, skills and techniques to perform practical tasks, explaining their choices.  Select new and materials, components, reclaimed materials, and construction kits to build and create their products. Use simple finishing techniques suitable for the products they are creating.	Plan the main stages of making. Select from and use a range of appropriate utensils, tools and equipment with some accuracy related to their product.  • Select from and use finishing techniques suitable for the product they are creating.	Order the main stages of making. Select and use appropriate tools to measure, mark out, cut, score, shape and combine with some accuracy related to their products.     Explain their choice of materials according to functional properties and aesthetic qualities.     Select from and use materials and components, including ingredients, construction and electrical components according to their function and properties.	<ul> <li>Produce detailed lists of equipment and fabrics relevant to their tasks.</li> <li>Write a step-by-step plan, including a list of resources required.</li> <li>Select from and use, a range of appropriate utensils, tools and equipment accurately to measure and combine appropriate ingredients, materials and resources.</li> </ul>	<ul> <li>Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.</li> <li>Competently select from and use appropriate tools to accurately measure, mark, cut and assemble materials, and securely connect electrical components to produce reliable, functional products.</li> <li>Use finishing and decorative techniques suitable for the product they are designing and making.</li> </ul>



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Evaluating	Taste, explore and evaluate a range of products to determine the intended user's preferences for the product  Evaluate their ideas throughout and finished products against design criteria, including intended user and purpose.	<ul> <li>Explore a range of existing products related to their design criteria.</li> <li>Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.</li> </ul>	<ul> <li>Investigate a range of 3-D textile products, ingredients and lever and linkage products relevant to their project.</li> <li>Test their product against the original design criteria and with the intended user.</li> <li>Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul>	<ul> <li>Investigate and evaluate a range of products including the ingredients, materials, components and techniques that are used.</li> <li>Test and evaluate their own products against design criteria and the intended user and purpose.</li> <li>Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</li> </ul>	<ul> <li>Investigate and analyse products linked to their final product.</li> <li>Compare the final product to the original design specification and record the evaluations.</li> <li>Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. Consider the views of others to improve their work.</li> </ul>	<ul> <li>Continually evaluate and modify the working features of the product to match the initial design specification.</li> <li>Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.</li> <li>Test the system to demonstrate its effectiveness for the intended user and purpose.</li> </ul>



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Vocabulary	planning, investigating design, evaluate, make, user, purpose, ideas, product,	investigating, planning, design, make, evaluate, user, purpose, ideas, design criteria, product, function	user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, function, planning, design criteria, annotated sketch, appealing	evaluating, design brief design criteria, innovative, prototype, user, purpose, function, prototype, design criteria, innovative, appealing, design brief, planning, annotated sketch, sensory evaluations	design decisions, functionality, authentic, user, purpose, design specification, design brief, innovative, research, evaluate, design criteria, annotate, evaluate, mock-up, prototype	function, innovative, design specification, design brief, user, purpose design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional, mock-up, prototype



Skills	Year 1 Year 2	Year 3 Year 4	Year 5 Year 6
Food	Understand where a range of fruit and vegetables come from e.g., farmed or grown at home.  • Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of <i>The Eatwell plate</i> .  • Know and use technical and sensory vocabulary relevant to the project.	<ul> <li>Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared, or caught.</li> <li>Know and use relevant technical and sensory vocabulary appropriately.</li> </ul>	<ul> <li>Know how to use utensils and equipment including heat sources to prepare and cook food.</li> <li>Understand about seasonality in relation to food products and the source of different food products.</li> <li>Know and use relevant technical and sensory vocabulary.</li> </ul>
Vocabulary	fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g., soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients,	name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury, hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet	ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Structures	structures stron	ow to make freestanding ger, stiffer and more stable. nd use technical vocabulary project.	<ul><li>construct strong,</li><li>Develop a cubes and cuboid more complex 3D</li></ul>	and use knowledge of how to stiff shell structures. and use knowledge of nets of s and, where appropriate, shapes. chnical vocabulary relevant to	and reinforce	rstand how to strengthen, stiffen 3-D frameworks. and use technical vocabulary e project.
Vocabulary	framework, w underneath, si thicker, corner, wood, plastic	fix, structure, wall, tower, reak, strong, base, top, de, edge, surface, thinner, point, straight, curved, metal, circle, triangle, square, rd, cube, cylinder	net, cube, cuboid, length, width, bre scoring, shaping, t assemble, accurac reduce, reuse, red	ree-dimensional (3-D) shape, , prism, vertex, edge, face, eadth, capacity, marking out, tabs, adhesives, joining, cy, material, stiff, strong, cycle, corrugating, ribbing, ettering, text, graphics,		re, stiffen, strengthen, reinforce, stability, shape, join, temporary nt



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Textiles	products are made, usin two identical shapes.  Understand how different techniques e.g over stitch, stapling. Explore differen	v to join fabrics using	reinforce existing fab	now to securely join two her.  the need for patterns and he technical vocabulary	combination of accurate fabric shapes and differe • Understand how strengthened, stiffened appropriate.	ent fabrics.
Vocabulary	joining and finishing tec and components, templ out, join, decorate, finis	ate, pattern pieces, mark	zip, button, structure	tiffening, templates, stitch,		



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms/ mechanical systems	<ul> <li>Explore and use sliders and levers.</li> <li>Understand that different mechanisms produce different types of movement.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>	wheels, axles and axle holders.  Distinguish between fixed and freely moving axles.	mechanisms.  • Distinguish betw pivots.	use lever and linkage veen fixed and loose echnical vocabulary	Understand that electrical systems have a output.     Understand how be used to speed up, slo direction of movement. vocabulary relevant to the output of the output	n input, process and an gears and pulleys can w down or change the Know and use technical
Vocabulary	slider, lever, pivot, slot, bridge/guide, card, masking tape, paper fastener, join, pull, push, up, down, straight, curve, forwards, backwards	vehicle, wheel, axle and axle holder, chassis, body, cab assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used	mechanism, lever, linkag guide system, input, pro linear, rotary, oscillating reciprocating	cess, output	pulley, drive belt, gear, r follower, ratio, transmit, switch, circuit diagram, a exploded diagrams, med system, input, process, o	axle, motor, circuit, annotated drawings, hanical system, electrical



Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electrical systems	N/A		<ul> <li>Understand and use electrical systems in their products linked to science coverage.</li> <li>Apply their understanding of computing to program and control their products.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>		<ul> <li>Understand and use electrical systems in their products linked to science coverage.</li> <li>Apply their understanding of computing to program, monitor and control their products.</li> <li>Know and use technical vocabulary relevant to the project.</li> </ul>	
Vocabulary	N/A		series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device		reed switch, toggle switch, push-to-make switch, push-to-break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip control, program, system, input device, output device, series circuit, parallel circuit	



**Cultural capital** is defined as the accumulation of knowledge, behaviours, and skills that a student can draw upon and which demonstrates their **cultural awareness, knowledge and competence**; it is one of the key ingredients a student will draw upon to be successful in society, their career and the world of work. At Phoenix Academy we work tirelessly to build our student aspirations and expose them to a range of experiences to helps them achieve goals and become successful.

We recognise that for students to aspire and be successful academically and in the wider areas of their lives, they need to be given rich and sustained opportunities to develop their cultural capital. We do this in many ways, for example, through our curriculum, extra-curricular activities and trips.

We recognise that there are six key areas of development that are interrelated and contribute to building a student's cultural capital:

- 1. Personal Development
- 2. Social Development, including political and current affairs awareness
- 3. Physical Development
- 4. Spiritual Development
- 5. Moral Development
- 6. Cultural development

Where possible, each of these areas is covered over the course of individual topics



# <u>Cultural Capital – Opportunities by Topic</u>

## Cycle A

YEAR	2020-2021						
TOPIC	Blue Abyss	Frozen Kingdom	Gods & Mortals	Relics, Rocks and rumbles	Wriggle and crawl	Rio de Vida	
ACTIVITY	Sea Life Centre	Snow Dome	Birmingham Museum	Wrens Nest Nature Reserve	Mini Zoo UK	Dance Carnival Brazil	
	Birmingham	Telford	Birmingham	Dudley	Warwickshire	School Creative	
					School experience	experience	
COST							

## Cycle B

YEAR	2021-2022						
TOPIC	Tribal Tales	Street Detectives	Traders & raiders	Allotment	Towers, Tunnels &	Scrumdidlyumptious	
					turrets		
ACTIVITY	Will Lord of The Stone	Chasewater Railway	Saxons and Viking	Birmingham Botanical	Warwick Castle	Cadburys World	
	Age School experience	Cannock	School workshop	Gardens and Glass House	Warwickshire	Birmingham	
				Birmingham			
COST							



# <u>Cultural Capital – Opportunities by Topic</u>

## Cycle C

YEAR	2022-2023						
TOPIC	ID	Heroes & Villains	Off with her head!	Beast creator	Revolution	Scream Machine	
ACTIVITY	Visit by Police Officer	Visit to local Police	Kenilworth Castle and	Nature Centre at Habitat	Black Country Museum	Drayton Manor	
	or Forensic Scientist	Station	Elizabethan Gardens	Survival Wildlife & Nature	Dudley	Tamworth	
	School Experience	Wolverhampton	Kenilworth	environment Warwickshire	Bliss Hill		
					Telford		
COST							

## Cycle D

YEAR	2023-2024						
TOPIC	Moon zoom	Britain at war	Bright lights, big city	Urban pioneers	Pharaohs	Misty mountain, winding river	
ACTIVITY	Leicester Space Centre	Cosford Air Museum National memorial arboretum	Class trip to Walsall Town Centre	Pelsall History Centre	History Squad School Workshop	Canal and River Tour Stratford Upon Avon	
COST							



# **TEACHING STAFF**

All lessons are delivered and supported by class specific staff:

	ELM CLASS	ASH CLASS	PINE CLASS	CEDAR CLASS	ELDER CLASS	OAK CLASS
TEACHER	L. Tasker	D. Crowther	S. Elcock	R. Clifft	J. Lloyd	S. Hughes
CLASS SUPPORT	C. Stanyer	S. Sandu	J. Sammonds	T. Williams	N. Johnson	J. McDevitt-Smith

Cover provided when needed by: A. Holmes

G. Satchwell