** WE ARE SCIENTISTS **

**Class:** Tigers (Y5/6) **Teacher:** Mrs Gardiner & Mrs Graham **Term and Year:** Year B – Spring Term

**PRIMARY PROVOCATION**

*Encouraging children to think deeply, ask questions, debate, have opinions and develop spiritually.*

“The whole of life is coming to terms with yourself and the natural world. Why are you here? How do you fit in? What’s it all about?

*David Attenborough*

In this topic, children will have the freedom to explore depths of evolution, inheritance, animals and their habitats, including learning about classification and life cycles. With this, children will be able to form their own questions and areas of enquiry, provoking independent learning attitudes. Children will extend this learning and understanding through DT where they will plan, design, build and evaluate bird boxes.

This will allow pupils to explore the quote which acts as our provocation and draw their own conclusions based on what they have learned.

**THE ROOTS OF TEACHING FOR LEARNING**

**These are the prerequisites of Teaching for Learning**

*constant feedback from all adults*

 *sustained shared thinking between adults and children, between children*

*continuous questioning and hypothesising*

*high expectations for all*

*valuing every person and every contribution*

*learning from mistakes*

 *recognising and celebrating achievements*

*willingness to be brave*

Teaching for Learning is rooted in our values. In WE ARE SCIENTISTS we are focusing on the following values.

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| RespectThroughout learning about the lifecycles of diverse plants and animals, and about their incredible adaptations to their environments, pupils will be actively encouraged to both marvel and to actively respect the natural world. Our work with the National Trust and the DT project embodies proactive regard for safeguarding local organisms and enhancing habitats and environments. | KoinoniaKoinonia comes alive within this curriculum as pupils have ongoing opportunities to consider moral, ethical and social responsibilities whilst studying species and environments within the local environment and globally, in considering healthy choices, and within the wider context of human evolution and the future. In making Bird Boxes and working with conservation experts from the National Trust, koinonia in the local community comes alive. |
| Cultural Capital The inputs from a leading conservation expert from the National trust add cultural capital to children’s understanding, awareness and practical conservation and environmental work within the local community. | Social ActionThis is built into the planning in the form of practical conservation and environmental work within the local community. One of the main aims of the Final Flourish is to cascade learning, insights, a sense of awe and responsibility together with practical skills with the parents, governors and locals who attend. This will hopefully enhance the sustainability of the initial work undertaken by pupils. |

**THE TRUNK OF TEACHING FOR LEARNING**

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| **Teaching for Learning Objectives** | **Activities to Support Teaching for Learning** |
| **What are the adults doing?** | **What are the children doing?** |
| **Science****Biology** **Living things and their habitats*** describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
* describe the life process of reproduction in some plants and animals.
* describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
* give reasons for classifying plants and animals based on specific characteristics.

**Key Vocabulary****Plants****Pollination, life cycle, reproduce, sexual, asexual, plantlets, runners, bulbs, cuttings, tubers, bulbs, flowering plants & non- flowering plants****Animals****life cycle, reproduce, sexual, sperm, fertilises, egg, larva, live young, metamorphosis, mammal, amphibian, insect, bird****Classification****vertebrate, invertebrate, exoskeleton, kingdom, order, genus, species, plant, mammal, amphibian, bird, reptile**, **crustacean, insect, arachnid****(echinoderm, annelid, myriapod), Carl Linnaeus, warm blooded, cold blooded,** **oxygen, carbon dioxide, micro-organism, bacteria, yeast, fungus, protist, flowering and non-flowering, vascular, non-vascular****Animals, including Humans*** describe the changes as humans develop to old age.
* describe the ways in which nutrients and water are transported within animals, including humans.
* identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
* recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

**Key Vocabulary****Baby, toddler, child, adolescent, teenager, adult, pregnant, gestation, birth, puberty, primary and secondary sexual characteristics****nutrients, water, ingestion, digestion, absorption, elimination, bloodstream, circulatory system, cells, broken down, enzymes, saliva****Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle****Evolution and Inheritance*** recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
* recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
* identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

**Key Vocabulary** **offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, breed, cross-breed, genetics, variation, adaptation, cloning, genetic-engineering, extinction, identical, inherit, inheritance, generation, Darwin, advantageous, disadvantageous, natural selection, mutations, fossil record, selective breeding, fossilisation****Working Scientifically****Year 5**With help, recognise which type of enquiry is best to answer a questionDecide what observations and measurements to make (controlling variables with help)Make accurate observations and measurements using simple equipmentRecord data and observations systematically (including tables and scientific diagrams)Present the results in a range of formats (including line graphs and frequency charts)Draw reasonable conclusions from my data and observations considering the reliability of the resultsSuggest how to extend my work by making the results more reliable or considering further questions**Year 6**I can describe my own and others' scientific ideasI can evaluate my own and others' scientific ideas using evidence from a range of sourcesI can ask questions about the scientific phenomena I am studying and select the most appropriate enquiry type (e.g. observation over time, noticing patterns, grouping and classifying, fair/ comparative testing and research using secondary resources)I can recognise and control variables where necessaryI can use a range of scientific equipment to take accurate and precise measurementsI can decide when to take repeat readingsI can record data and results using scientific diagrams and labels, classification keys, tables and scatter graphsI can explain and evaluate my methods, communicating these in a variety of waysI can explain and evaluate my findings, communicating these in a variety of waysI can raise further questions that could be investigated based on my data and observations**Key Vocabulary Working Scientifically** **hypothesis, prediction, plan, fair, identify, comparative, fair, accurate, precise, variables, observations, record, repeat, quantitative measures, evaluation, diagrams, classification keys, present, charts and graphs, patterns, conclusions, questions, raise questions, investigate, research, explain, relationships, evidence , confirm, refute, validity, reliability**Design and Technology**Knowledge: Materials, Textiles and Construction*** Know how to use craft knife, cutting mat and safety ruler
* Know the purpose and how to use more technical tools such as bradawl and hand drills.
* Understand the different properties of materials/textiles and how they can be combined to achieve a desired effect.

**Skills Progression****Design*** Investigate products/images to collect ideas
* Sketch and model alternative ideas
* Develop one idea in depth
* Combine modelling and drawing to refine ideas
* Record ideas using annotated diagrams
* Use drawings to help formulate design ideas
* Make prototypes
* Use sound information to inform decisions
* Draw plans which can be read/followed by someone else
* Give a report using correct technical vocabulary

**Make*** Cut accurately and safely using scissors or craft knife.
* Measure, mark and cut accurately to 1mm
* Build support frameworks
* Use a glue gun with close supervision
* Pin, tack and join fabric using an over stitch, back stitch or blanket stitch (if appropriate to chosen fabric for kite design).

**Evaluate*** Use the design criteria to inform their decisions about ways to proceed
* Justify their decisions about materials and methods of construction
* Reflect on their work using design criteria stating how well the design fits the needs of the user
* Identify what does and does not work in the product.
* Make suggestions as how their design could be improved

**Key Vocabulary****design, research, diagram, annotated, protocol, amend, improve, record, evaluate, consider, design criteria, measure, accurately, property, materials, , showcase, sustainability, saw, screw, drill, glue** | * **Clarifying and facilitating shared exploration of the overall purpose and specific learning in hand and how it connects to previous learning**
* **Using and clarifying subject specific terminology and revisiting often to secure children’s understanding and fluency**
* **Identifying subject specific / challenging vocabulary and offering regular opportunities for children to refine their understanding and accurate use**
* **Asking a large number of questions; sharing knowledge; checking for shared understanding and re-checking the responses of all students (if someone did not know, revisit); asking students to explain key concepts and values; provide feedback; scaffolding by modelling questions and thoughts and asking for shared refinements in explanations**
* **Presenting new material teaching material in small logical steps and being precise about knowledge goals – clear shared expectations**
* **Rigorously sharing knowledge /instructional teaching** **in highly interactive ways backed up by discussion, questioning and activities to ensure fluency**
* **Regularly discussing the 5 different types of scientific enquiry and their best uses /applications and methodologies**
* **Revisiting and re-activating learning continually to ensure fluency in essential knowledge and vocabulary, thereby enabling pupils to progress to blossom (analysis) and flourish (creative synthesis).**
* **Asking children to rephrase, summarise and elaborate their understanding**
* **Modelling accurate and refined data collection and recording using bar charts, graphs**
* **Enabling children to draw conclusions from their enquiries whilst considering reliability and validity**
* **Asking children to explain what they have learnt and using questions to enlist full explanations and add extra finesse and wider links within answers**
* **Providing exemplars, models, templates and scaffolds to guide students’ developmental practice**
* **Using classroom organisation and groupings fluidly to best support learning including using pupils as peer coaches**
* **Encouraging and supporting children to raise questions and present then refine ideas through questioning, narration of thought processes, hypothesis and prediction, develop primary investigations and research through secondary resources, drawing conclusions and evaluating the effectiveness of their investigations and designs**
* **Providing modelling and scaffolds for measuring, recording and interpreting data**
* **Carefully linking learning in Science and DT to integrate learning about lifecycles, adaptations and classification to proactive work to design suitable and sustainable habitats**
* **Modelling how to critique and evaluate different design options**
* **Modelling how to record design planning and improvements**
* **Presenting images, models and exemplars in DT for collective and small group consideration**
* **Demonstrating how to use DT equipment and specific construction techniques together with reinforcing essential health and safety considerations**
* **Insisting upon detailed and carefully considered planning before construction commences**
* **Inviting local leading specialists in to run mini flourishes – National Trust and habitats/bird and animal shelter building**
* **Collaboratively organising the Final Flourish**
 | * **Actively listening**
* **Being prepared, organised and committed**
* **Recalling and re-activating learning by rephrasing, summarising, creating knowledge maps**
* **Engaging collaboratively in shared discussion and debate as a whole class and in smaller groupings**
* **Sharing ideas and posing questions**
* **Using scaffolds, templates and exemplars**
* **Sharing understanding and definitions of vocabulary and using and applying vocabulary accurately**
* **Undertaking different types of scientific enquiry diligently and increasingly, selecting the appropriate type of enquiry to use with reduced prompts**
* **Planning, undertaking and drawing conclusions from experiments**
* **Predicting, hypothesising**
* **Measuring and Recording data**
* **Recording scientific experiments in appropriate formats**
* **Exploring and unpicking concepts and questions**
* **Explaining and articulating key concepts**
* **Giving, receiving and acting upon feedback to improve and refine work and ideas**
* **Generating ideas and exploring possibilities**
* **Using technology to research and record ideas/learning**
* **Actively participating in teamwork to enhance their understanding**
* **Challenging the opinions of others in appropriately respectful ways**
* **Communicating learning in relevant ways to high standards**
* **Articulating their conceptual understanding**
* **Developing and fine-tuning teamwork skills**
* **Applying their knowledge of lifecycles, habitats and adaptations to create suitable and sustainable animal homes, shelters and sanctuaries**
* **Investigating and researching effective bird box design**
* **Investigating best materials to use for cost and durability /effectiveness**
* **Designing and making a planned bird box within a designated budget using annotated diagrams**
* **Constructing, testing, designing and evaluating their bird box design**
* **Revising their ideas and deepening their understanding in light of cumulative learning and challenging ideas**
* **Selecting and using cutting and joining equipment safely and responsibly in DT**
* **Showcasing bird boxes, presenting a detailed explanation of the rationale behind their design and explaining wider habitat improvements that they have engineered**
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Learning Objectives:

LO – New plants and how they are formed

LO – Mammals

LO – Jane Goodall

LO – Understanding metamorphosis

LO – Comparing life cycles

LO – Classifying

LO – Linnaean system

LO – Microorganisms

**GROWING**

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| The child is beginning to demonstrate understanding and is engaging with the learning. They recall some knowledge and use some vocabulary correctly and in context but maybe not sufficiently confident to do this without prompting. They are carefully led, by the adult, through small steps of guided learning to recognise, practise and repeat key skills. |
| **Teaching for Learning Objectives** | **Activities to Support Teaching for Learning** |
| **What are the adults doing?** | **What are the children doing?** |
| Children who are GROWING in Science will begin to understand the five lines of enquiry and with support use these to learn about Science. Children who are GROWING in Science …will practise and repeat the key knowledge for their year group and begin to remember it to answer factual Scientific questions. They will begin to learn and understand the vocabulary. They will begin to understand the five lines of enquiry and with support use these to learn about Science. Children who are GROWING in DT will… Children who are growing will begin to learn the knowledge taught and practise skills through repetition. They will try out different skills, processes and materials to develop their learning. . | * **Offering very precise knowledge goals for each facet of the learning and asking questions to ensure children have understood these goals**
* **Presenting and revisiting new material in small steps with opportunities for student rehearsal, questioning and rephrasing after each step**
* **Addressing misconceptions**
* **Offering models and scaffolds to break more complex learning (diverse key facts and scientific experiment recording processes) into manageable stages**
* **Re-teaching as required**
* **Giving exemplars, worked examples and physical representations of completed tasks**
* **Asking questions, thinking aloud and modelling thought processes and steps (I wander…) to enable children to sequence, summarise, recall and explain key knowledge, processes for investigation and vocabulary**
* **Giving detailed instructional support (for example when undertaking investigations, researching secondary sources and recording learning). Narrating the steps and decisions**
* **Asking the pupils to explain what they have just learnt and the thought-processes or steps behind this**
* **Addressing and improving short, partially**

 **formed or partially incorrect answers*** **Offering initial inputs and ongoing pit-stop check points to support children in the research and planning stages of their kite design**
* **Creating mixed ability pairings to facilitate modelling and skills-sharing within DT**
 | * **Explaining their understanding at regular intervals to a partner and/or the teacher**
* **Acting upon prompts, feedback and models to refine that understanding and address misconceptions**
* **Recalling and re-activating knowledge in a variety of different ways including verbal rephrasing, summarising, knowledge maps, use of post-its, notes to secure overlearning and enable fluency and better lay the foundations for problem-solving**
* **Beginning to explain concepts, plan scientific experiments and investigations and research, and design kites using scaffolds and examples to develop secure knowledge and understanding and assist practical work**
* **Using, defining and re-defining key vocabulary with increasing fluency and accuracy**
* **Creating ‘quiz’ questions based on their knowledge and understanding for peers to answer**
* **With peer support and teacher input, design a bird box using basic understanding of requirements, DT design principles and construction materials and skills required**
* **With support, construct a bird box based upon their design**
* **Present their work, ideas, findings and evolving plans and suggest improvements**
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**BLOSSOMING**

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| The child is engaged and enjoying the learning and able to apply the necessary skills and knowledge in order to demonstrate their understanding of the learning. They confidently meet the objectives and demonstrate a full ability to use the vocabulary correctly and in context. They are confident when making links and explaining their method to others. They are encouraged to explore and experiment whilst the adult sets challenges, hypothesises and explores misconceptions with them. |
| **Teaching for Learning Objectives** | **Activities to Support Teaching for Learning** |
| **What are the adults doing?** | **What are the children doing?** |
|  Children who are BLOSSOMING in Science will be able to explain the five lines of enquiry and use them accurately to investigate questions and explain what they have learnt.  Children who are BLOSSOMING will….. remember the key knowledge for their year group and accurately use and apply this to answer Scientific questions and to explain results discovered in Scientific investigations. They will be able to apply correct vocabulary when questioned and in context. They will be able to explain the five lines of enquiry and use them accurately to investigate questions and explain what they have learnt**BLOSSOMING IN BIOLOGY****Children who are BLOSSOMING in Biology will…** Describe and compare different reproductive processes and life cycles in animals Name, locate and describe the functions of the main parts of plants, including those involved in reproduction Describe the effects of diet, exercise, drugs and lifestyle on how the body functions (T1)Name and describe the functions of the main parts of the circulatory systems (T1)Use the observable features of plants, animals and microorganisms to group, classify and identify them into broad groups, using keys or other methods Use the basic ideas of inheritance, variation and adaptation to describe how living things have changed over time and evolved and provide evidence for evolution **Children who are BLOSSOMING in DT will…** Point out the design features of their products that will be suitable for and appeal to the intended users who they designed it for Explain how their product works and is suitable using scientific as well as design theory Make appropriate lists of tools, equipment and materials that they will need to make my product Work and plan within a designated budget with some guidance and supportMake step-by-step plans asa guide to making particular parts of their productReview and update their step-by-step plans whilst making a productFollow procedures for safety and hygiene Use a good range of materials and components including construction materials and kits, textiles, Accurately assemble, join and combine materials and componentsAccurately measure, mark out, cut and shape materials and components Think about the quality of the design, manufacture and fitness for purpose of their products whilst designing and creating products and make improvements Evaluate design ideas against original design specification and evaluate the quality of the design and its fitness for purpose as ideas developEvaluate their finished products against their original design specification | * **Sharing the overall purpose and specific learning throughout**
* **Ask children to rephrase, summarise and elaborate upon their learning – especially in light of further learning**
* **Asking questions and modelling thought processes to support this process**
* **Providing modelling, exemplars and models to support children’s independent thought process and learning**
* **Accessing compatible working groups and peer support to promote learning**
* **Giving specific feedback to guide improvements**
* **Addressing misconceptions or partial exploration and analysis**
* **Providing high quality instruction, learning materials and elaboration activities to enable children to consolidate and extend their learning**
* **Asking pupils to postulate ideas, hypotheses and questions**
* **Requiring children to explain in their own words similarities and differences between different lifecycles and reproductive processes in their OneBooks**
* **Requiring children to record evidence for evolution based upon their understanding of inheritance, variation and adaptation in creative ways in their One Books**
* **Enabling children to plan, implement, measure and record their scientific investigations using proformas for data recording as required**
* **Enable children to evaluate their experiments and draw conclusions with support**
* **Providing opportunities to extend learning though questioning, research and active investigation**
* **Providing primary and secondary sources and resources for children to begin to interpret, analyse and evaluate. Offering inputs to extend their thinking and postulate further lines of enquiry**
* **Promoting debate and modelling/reinforcing appropriate challenge**
* **Instructing and supporting children in safe use of DT equipment**
* **Modelling and reinforcing accurate measuring and cutting skills**
* **Regularly asking children to present their ideas for bird box design and asking probing questions to support improvements**
* **Providing initial support of children’s understanding of budgets and directing them to recommended suppliers**
* **Insisting that children actively record all stages of the bird box design planning phase, present them each lesson and include annotations as to the choices that they have made**
 | * **Actively listening and asking questions throughout**
* **Reactivating, rephrasing and summarising prior learning in order to cumulatively elaborate, refine and add depth to knowledge and understanding; and, adapt ideas in light of further knowledge and understanding**
* **Using and applying knowledge and vocabulary accurately**
* **Analysing and examining scientific forces – and recording when they are helpful, when unhelpful and what can be done to increase and reduce them**
* **Exploring key concepts and knowledge in their investigations of evolution and adaptation with growing independence and making presentations to the class**
* **Making and expanding upon links and connections within their learning**
* **Using templates and exemplars to assist with problem-solving, analysis and recording of learning**
* **Using technology confidently and effectively**
* **Actively participating in teamwork to enhance their learning**
* **Persevering, acting on feedback to improve and refine understanding and work**
* **Using and interpreting primary and secondary sources and resources in pairs or small groups to raise questions and endeavour to answer them**
* **Recording their understanding of concepts, questions, knowledge and ideas studied independently**
* **Recording their scientific experiment design, practice and outcomes with growing independence**
* **Planning experiments including accurate data measurements and recording independently**
* **Recording accurate measurements and results**
* **Drawing conclusions form experiments and investigations in science and recording them using appropriate vocabulary**
* **With support, evaluating the design of their investigations, research, plans and raising improvements and further questions**
* **Raising questions to ask of the visiting astrophysics expert**
* **Usually working in small groups and with support from the teacher to guide as required**
* **Taking responsibility for directing their own lines of enquiry and research whilst acting upon feedback and accessing support as required. (Evolution, adaptation, lifecycles, habitat enhancement and bird box building)**
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**FLOURISHING**

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| The child is exhibiting a depth of learning and enthusiasm relating to the objectives. They can select knowledge and understanding for different contexts and justify their choice when using their repertoire of skills. They are able to revise, review and reflect on what they know and create their own solutions to situations, justifying the rationale for what they are demonstrating. They are able to, and indeed want to, ‘show off’ with what they know and what they can do; they want to share that they are flourishing and how they know they are flourishing. Adults are present for affirmation and organisation. |
| **Teaching for Learning Objectives** | **Activities to Support Teaching for Learning** |
| **What are the adults doing?** | **What are the children doing?** |
| Children who are FLOURISHING in Science will be able to choose the appropriate line enquiry to answer a particular question in Science and create their own investigation; explaining their reasons for their choice and what they have learnt from it. Flourishers independently and consistently use and apply the knowledge for their year group in and out of context. They will use this knowledge to justify and reason when answering questions. They will also use this knowledge to choose and create their own opportunities through Scientific enquiry. They will be able to apply vocabulary consistently and independently in and out of context. They will be able to choose the appropriate line enquiry to answer a question in Science and create their own investigation; explaining their reasons for their ***choice and what they have learnt from it.*** **Flourishing in Biology**Pupils who are flourishing will raise their own questions and lines of investigation and research and present them in their own words. They will synthesise learning about theory and practical examples when studying evolution, lifecycles and adaptations. Theywill take a lead role in peer teaching about the circulation system. Within their studies of evolution, adaptation and habitats, and, they will create ever – evolving concept maps to record their integrated understanding of inter-relatedness and human responsibility. They will use these insights to raise more advanced questions and suggestions when working with our expert from The National Trust.**Flourishing in DT**Flourishing pupils will independently research effective and achievable bird box designs, modify these constructions based upon budgetary constraints and versatility; independently discuss and adapt their design as an integral part of the construction phase and make and record changes as they do so; create a flow chart and detailed rationale as to their initial intentions and changes leading to final product.  | * **Sharing the overall purpose and specific learning throughout**
* **Ask children to rephrase, summarise and elaborate upon their learning – especially in light of further learning**
* **Asking questions and modelling thought processes to support this process**
* **Providing modelling, exemplars and models to support children’s independent thought process and learning**
* **Accessing compatible working groups and peer support to promote learning**
* **Giving specific feedback to guide improvements**
* **Addressing misconceptions or partial exploration and analysis**
* **Providing high quality instruction, learning materials and elaboration activities to enable children to consolidate and extend their learning**
* **Asking pupils to postulate ideas, hypotheses and questions**
* **Providing opportunities to extend learning though research, specialists and debate**
* **Providing primary and secondary sources and resources for children to begin to interpret, analyse and evaluate. Offering inputs to extend their thinking and postulate further lines of enquiry**
* **Promoting debate and modelling/reinforcing appropriate challenge**
* **Offering additional specialist inputs and practical project work via bespoke workshops from the National trust.**
 | * **Actively listening and asking questions throughout**
* **Reactivating, rephrasing and summarising prior learning in order to cumulatively elaborate, refine and add depth to knowledge and understanding; and, adapt ideas in light of further knowledge and understanding**
* **Using and applying knowledge and vocabulary accurately**
* **Explaining underlying concepts creatively in verbal and written format**
* **Analysing and examining concepts of scientific and recording independently in innovative ways**
* **Making and expanding upon links and connections within their learning**
* **Using templates and exemplars to assist with problem-solving, analysis and recording of learning**
* **Using technology confidently and effectively**
* **Actively participating in teamwork and independent debate to enhance their learning**
* **Persevering, acting on feedback to improve and refine understanding and work**
* **Using and interpreting primary and secondary sources and resources in pairs or small groups to raise questions and endeavour to answer them**
* **Independently raising lines of scientific enquiry to answer through realistic practical experiment and devising, undertaking, recording and evaluating experiments**
* **Raising and recording predictions and hypothesis at the onset of scientific experimentation and linking these to the conclusions they reach**
* **Working independently to research and design a bird box based upon their understanding of impacting scientific factors**
* **Independently producing detailed and annotated diagrams with a rationale for the intended bird box design**
* **Independently costing best materials within designated budget**
* **Recording an explanation of their budgetary decisions and purchases in relation to their understanding of requirements**
* **Evidencing independent improvements in the planning and design stage for bird box making**
* **Taking responsibility for directing their own lines of enquiry and research whilst acting upon feedback and accessing support as required.**
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DT Bird House Design units of work

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| DT 1 To investigate the purpose, appearance and essential design criteria of bird houses | * Children know that different birds require different homes for protection and to raise their young
* Children can explain that different birds have specific needs and recognise that bird houses are therefore designed to reflect their needs
* Children can give reasons why birds may prefer to live in artificial houses rather than nests
* Children can give reasons why bird houses are linked to monitoring and conservation
* Children can research, observe and record bird behaviours and their different needs
 | With support and prompts, children can record simple information about different species of common bird and their different housing requirements for example, linking entrance hole size to size of body. With prompts, they can recall why birds need houses. With support, they can research key facts about two species of bird and their housing requirements. | Children can record specific details about at least 6 common birds in the UK and their bird house requirements using videos and Internet. They can investigate and record information about the size of the bird, the required height of the bird house, hole size, number of entrances needed, type and number of eggs, incubation time, when nestlings leave and suitable places to site the bird houses e.g. barn owls 4 metres above the ground, robin =in thick vegetation. Children can explain why birds need homes and why artificial ones may be advantageous. | Children can independently research different birds and their housing needs, recording specific and carefully observed details. They can extend their knowledge of common birds in the UK and locality and provide a well-articulated rationale for the purpose and advantage of artificial homes. They can research webcam technology linked to bird homes and find out about how bird houses are used for monitoring and conservation. |
| To investigate the materials and features of bird houses and learn how to draw flat pack, 3D and exploded diagrams with accurate measurements | * Children can detail the materials and features bird houses have.
* Children understand what exploded and 3D diagrams are used for
* Children can draw 3D diagrams and exploded diagrams
* Children can explain why designers need to draw 3D diagrams and written plans before constructing a product and know what the purpose of diagrams and plans is.
 | With support, children work in a small group to identify and list the different materials that may be needed and could be used based upon images of bird boxes.Children make a simple flat pack diagram of a basic bird house using visual reminders and prompts and guidance about the measurementsChildren to have a go at an exploded diagram with support from a FlourisherChildren can state what might go wrong in creating a bird house with no designs or planning. | Children work in small groups to identify and list the different materials that may be needed and could be used based upon images of bird boxes. They consider where these materials might be obtained from.Children progress from a basic flat pack diagram to a 3D one and attempt an exploded diagram using correct measurements (based upon their research in phase 1)Children write a short explanation as to the purpose of diagrams and plans prior to construction | Children work in small groups to identify and list the different materials that may be needed and could be used based upon images of bird boxes. They consider where these materials might be obtained from including materials from school or home that might be useful. Children independently create a flat packed diagram, a 3D diagram from different views and an exploded diagram with accurate measurements gained in phase 1Children write an informed explanation as to the purpose of diagrams and plans prior to construction |
| To investigate and practice woodwork skills 1 | * Children can explain what tools and equipment are needed to make objects with wood
* Children can detail and remember the importance of safety precautions when working with wood and tools
 | Using video clips, children are supported in recording the tools and equipment, skills needed, steps involved and vital safety precautionsThey create simple posters detailing safety when using hand saws, safety when using hammers and nails and safety when using clampsThey can recall what safety equipment must be worn (goggles, dust masks and gloves) | Using video clips, children record the tools and equipment, skills needed, steps involved and vital safety precautionsThey create posters detailing safety when using hand saws, safety when using hammers and nails and safety when using clampsThey know and list what safety equipment must be worn (goggles, dust masks and gloves) | Using video clips, children record the tools and equipment, skills needed, steps involved and vital safety precautionsThey create informative posters detailing safety when using hand saws, safety when using hammers and nails and safety when using clampsThey know and list what safety equipment must be worn (goggles, dust masks and gloves) |
| To investigate and practice woodwork skills 2Planbee Wordwork skills slide,instruction and challenge cards | * Children can follow instructions to practice and develop woodwork skills
* Children can recall and apply important safety precautions when working with wood and tools.
* Children practice and evaluate their measuring skills, using a clamp ,sawing and sanding and using a hammer and nails
 | Children work in a small group with support to undertake task one from the woodwork skills cards. They complete a scaffolded evaluation sheet | Children work in small groups to undertake task one on the Woodwork skills cards. They assist each other. If and when ready, they collaborate with task two. They evaluate their successes and difficulties encountered. | Children work in small groups to undertake tasks one and two of the challenge cards. If and when able, they progress to challenge three. They evaluate their strengths and difficulties encountered and offer tips for future use when measuring wood, when cutting word and when glueing/nailing wood. |
| To be able to design a bird house for a specific bird 1 | * Children can design a bird house to suit a specific bird
* Children can draw diagrams of their bird house design with increasing accuracy
* Children can identify and list the tools, equipment, materials needed to make their bird house
* Children can actively recall the safety precautions needed when doing practical woodwork
* Children to consider when electric tools might be beneficial
 | Children provided with the design request cards from local Bird Experts. With support from a designated adult (parent/student) they research the bird’s needs using a basic proforma of questions. They draw simple diagrams of a bird house for one of the birds including measurements. They list the tools and materials they will need and recall essential safety procedures. With support, they sequence simple steps in the construction process. | Children provided with the design request cards from local Bird Experts and work in small groups to further research the bird’s housing needs using proforma questions. As a group they then work out measurements and create flat pack, 3D and exploded diagrams. They work together to identify the tools and materials needed, step by step instructions including fastening techniques and safety requirements | Children provided with the design request cards from local Bird Experts and work in pairs to independently instigate further research, then design one using flat pack, 3D and exploded models including measurements. They list materials and tools needed. They list the steps to be taken and detail how they will join the house together securely. They include details of safety precautions |
| To be able to design a bird house for a specific bird 2 | * Children can design a bird house to suit a specific bird
* Children can draw diagrams of their bird house design with increasing accuracy
* Children can identify and list the tools, equipment, materials needed to make their bird house
* Children can actively recall the safety precautions needed when doing practical woodwork
* Children to consider when electric tools might be beneficial
 | Children continue with their designs from previous phase and with support, they improve their understanding and design | Children now work in pairs – either to complete and perfect their designs from the previous phase or to design a bird home for a bird of their choice. They are given scaffold sheets to support their planning processes | Children work in pairs to design a bird home for a bird of their choice. They independently research its full needs, identify specific resources and equipment (including how much word etc), detail step by step instructions, detail methods and joining techniques. They create 3D and exploded diagramsEquipment needs to be ordered |
| To be able to make a bird house by following a plan | * Children can follow a plan to make a bird house
* Children follow the essential safety procedures
* Children can make amendments to plans where needed in the construction process
* Children can select appropriate materials for specific features
 | With adult support, children follow instructions to create a simple bird house | In pairs, Children revisit their design plans and compare them with the instructions for a simple bird house. They make amendments to their plans to simplify them as need be. They construct a bird house in pairs. They consider how it will be fastened using images from the prepared PowerPoint | Children construct from one of their design plansThey consider how it will be fastened using images from the prepared PowerPoint |
| To evaluate, make predictions and promote a completed bird house. | * Children can answer evaluation questions on their completed bird house
* children understand why evaluating designs and products is important
* children use retail ideas to promote their bird house to a prospective buyer?
 | children have a mindmap scaffold to support them in evaluating their bird house and complete with initial guidance and follow up promptsChildren offer simple explanations about why planning, designing, constructing, modifying and evaluating are important when making a productChildren create an advertisement poster explaining why bird houses are useful and why people should buy them | Children work in pairs to complete a more detailed evaluation map and use this to independently write a reviewChildren write explanations about why planning, designing, constructing, modifying and evaluating are important when making a productChildren create an advertisement poster explaining why their bird house is useful and why people should buy it | Children complete a detailed mindmap including how they would promote and advertise the need for bird houses and their product in particular to customersChildren write explanations about why planning, designing, constructing, modifying and evaluating are important when making a productChildren create an advertisement poster explaining why their bird house is useful and why people should buy it linking to the provocation and to responsibilities to actively care for our planet |

Science Coverage – Tigers

Yr A

Main Unit - Earth and Space, Forces (covered in Spring term)

Sub Units - Light, Electricity

Yr B

Main Unit - Living things and their habitats; Animals including Humans and Evolution and Inheritance (covered in Spring term)

Sub Units - Materials, A scientist just like me (working scientifically)

Sub units covered within the summer term, post SATs, and are done through an in depth science fortnight

** WE ARE SCIENTISTS **

**Class:** Tigers (Y5/6) **Teacher:** Mrs Gardiner & Mrs Graham **Term and Year:** Year B – Spring Term

**FINAL FLOURISH**

Children will have the chance to visit Thorp Perrow Bird of Prey and Mammal Centre, Bedale, where they will learn about the adaptations of the mammals and birds on site. This catalyst of learning will inspire the teaching of this unit alongside the work needed to design and build bird boxes.

The Final Flourish will incorporate a second visit by Tom at the Bird of Prey and Mammal Centre (either remotely or a visit to us in school) where he will evaluate the bird boxes. Children will prepare presentations about their design and build processes which will include details about the birds they have created the bird boxes for. Tom, our expert, will then help the children to evaluate these bird boxes.