



Topic: Digital world – Navigating the world

National Curriculum Objectives which are covered in this unit:

Design

Pupils should be taught to:

- 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

Pupils should be taught to:

- 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

Pupils should be taught to:

- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Technical knowledge

Pupils should be taught to:

- Apply their understanding of computing to program, monitor and control their products.

Lesson sequence - include the key concept, L.O. and brief description of lesson

<p>WALT: write a design brief and criteria based on a client request.</p> <p>Developing an informed design brief and criteria based on information extracted and analysed from a client's letter.</p> <p>Success criteria</p> <ul style="list-style-type: none"> I can write a design brief from information submitted by a client. I can develop design criteria to fulfil the client's request. I can consider and suggest additional functions for my navigation tool. <p>Pupils with secure understanding indicated by: highlighting key information that directly describes the request, such as 'multifunctional' and 'compact', with a simple explanation for selecting them; writing a design brief that includes some of the information gathered from the client's letter; completing points 3 and 6 of the design criteria with given choices (pedometer, light or thermometer functionality).</p> <p>Pupils working at greater depth indicated by: highlighting key information that indirectly lends itself to a design solution, such as 'outdoor equipment' and justifying their selections with a detailed explanation, 'the product will need to be durable and waterproof'; writing a design brief from scratch, basing their structure on the bullet points provided and including information gathered from the client's letter; completing points 3 and 6 of the design criteria with ambitious choices that they will solve by tinkering in the 'Micro:bit MakeCode editor'.</p>	<p>WALT: write a program to include multiple functions as part of a navigation device.</p> <p>Programming a navigation tool which combines various functions to produce a multifunctional device for trekkers.</p> <p>Success criteria</p> <ul style="list-style-type: none"> I can program an n, e, s and w cardinal compass. I can explain the key functions in my program, including any additions. I can explain how my program fits the design criteria and how it would be useful as part of a navigation tool. <p>Pupils with secure understanding indicated by: writing a program that displays an arrow to indicate cardinal compass directions with an 'on start' loading screen; suggesting where there are errors in the code and ways to fix them by comparing their program to a finished example or by retracing steps; explaining in basic terms, the program's function and how it will be useful as part of a navigation tool; including an additional function such as those prescribed in the extension program or on previous Digital world units.</p> <p>Pupils working at greater depth indicated by: explaining in detail the program's functions and how they will be useful as part of a navigation tool; including and justifying an additional function they have developed by tinkering with the micro:bit MakeCode editor.</p>	<p>WALT: develop a sustainable product concept.</p> <p>Learning about the impact humans are having on the planet and considering how we can make more sustainable material choices.</p> <p>Success criteria</p> <ul style="list-style-type: none"> I can consider materials and their functional properties. I can understand the need for sustainability in design. I can develop a product idea through annotated sketches. <p>Pupils with secure understanding indicated by: considering material choices carefully when and explaining why they made that decision; developing a product concept that includes some annotated features based on information pulled from the client's (Aria's) letter; evaluating a product concept against a list of design criteria with basic statements.</p> <p>Pupils working at a greater depth indicated by: explaining why and how their material choices are sustainable for the planet; including detailed annotated features in their product concept based on information pulled from the client's (Aria's) letter; evaluating with constructive criticism to improve the concept.</p>	<p>WALT: develop 3D CAD skills to produce a virtual model.</p> <p>Developing skills to combine 3D objects to form a complete product in CAD 3D modelling software and learning about its application in industries such as film and animation.</p> <p>Success criteria</p> <ul style="list-style-type: none"> I can identify key industries that utilise 3D CAD modelling and explain why. I can place and manoeuvre 3D objects using computer-aided design. I can change the properties of or combine one or more 3D objects using computer-aided design to produce a 3D CAD model. <p>Pupils with secure understanding indicated by: explaining key industries that use 3D CAD modelling and why; recalling and describing the name and use of key tools used in Tinkercad (CAD) software; combining more than one object to develop a finished 3D CAD model in Tinkercad.</p> <p>Pupils working at greater depth indicated by: explaining industries they feel could find 3D CAD modelling useful; combining more than one object to create a replica finished 3D CAD model of their product concept in Tinkercad; including additional features on their product concept directly in Tinkercad.</p>	<p>WALT: present a pitch to 'sell' the product to a specified client.</p> <p>Creating and presenting a pitch to share and 'sell' their final product concepts and programs to the Adventure Awaits company.</p> <p>Success criteria</p> <ul style="list-style-type: none"> I can explain the key functions and features of my navigation tool. I can explain my material choices and why they were chosen. I can describe how my product fits the client's request and how it will benefit the customers. <p>Pupils with secure understanding indicated by: completing a product pitch plan that includes key information (e.g. functions of the program and materials chosen) drawn from the rest of the project; reading their answers from a planned list of questions and including some detail as to how their product meets the design brief; using visual references on their pitch poster to describe their micro:bit program and 3D CAD model.</p> <p>Pupils working at greater depth indicated by: completing a detailed product pitch plan; recalling their answers from planned questions and answering additional unexpected questions with confidence; using visual references on their pitch poster to describe and explain their micro:bit program and 3D CAD model.</p>
<p>Prior learning</p> <p><i>List year groups and topics with connected learning</i></p>	<p>Year 4 Mindful moment</p>			
<p>Future learning</p> <p><i>List year groups and topics with connected learning</i></p>				

<p><u>Key vocabulary to be explicitly taught</u></p>	<p>application (apps) biodegradable boolean cardinal compass client corrode design brief design criteria duplicate environmentally friendly equipment function GPS tracker if statement lightweight loop mouldable navigation pedometer product lifecycle product lifespan program recyclable replica smart smartphone sustainable design value variable</p>
<p><u>Cross-curricular links</u></p>	<p>English Reading – comprehension Pupils should be taught to:</p> <ul style="list-style-type: none"> Retrieve, record and present information from non-fiction. <p>Spoken language Pupils should be taught to:</p> <ul style="list-style-type: none"> Give well-structured descriptions, explanations and narratives for different purposes, including for expressing feelings. <p>Computing Pupils should be taught to:</p> <ul style="list-style-type: none"> Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. <p>Geography Human and physical geography Pupils should be taught to describe and understand key aspects of:</p> <ul style="list-style-type: none"> Human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.
<p><u>Enrichment</u></p> <p><i>Give visit/visitor/first hand experience and focus</i></p>	
<p><u>Useful websites/resources</u></p>	<p><u>DT Year 6 Unit Digital World Knowledge Organiser - Kapow Primary</u> <u>Vocabulary display: Digital world: Navigating the world</u></p>