Year Group: 6	Term: Spring	Topic: Digital World
NC Links		
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. To generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. To understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].		
Other Curriculum Links		
Science; Computing		
Links to Caedmon Curriculum Drivers		
Aspirations and Careers -embracing challenges that help us to grow -understanding that resourcefulness can help us to be the best version of ourselves -understanding how our learning links to the wider world -having an awareness of the local labour market		
Links to Rights Respecting		
Article 28 – Every child has the right to an education. Primary education must be free and different forms of secondary education must be available to every child. Discipline in schools must respect children's dignity and their rights.		
Links to North East Ambition		
Link a lesson to the career of an Aerospace Engineer. What does the job entail? What skills are needed in the job? Why do people need aerospace engineers? What day to day tasks would you undertake in this job? Gatsby Benchmark 4 - Linking curriculum learning to careers		
Topic Overview		
• By the end of this unit, children will incorporate key information from a client's design request such as 'multifunctional' and 'compact' in their design brief. • Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen. • Identify errors (bugs) in the code and suggest ways to fix (debug) them.		

- Self and peer evaluate a product concept against a list of design criteria with basic statements.
- Identify key industries that use 3D CAD modelling and why.
- Recall and describe the name and use of key tools used in Tinkercad (CAD) software.
- Combine more than one object to develop a finished 3D CAD model in Tinkercad.

Possible Visits/Visitors

Essential Subject Skills to be covered

- Writing a design brief from information submitted by a client.
- Developing design criteria to fulfil the client's request.
- Developing a product idea through annotated sketches.
- Placing and manoeuvring 3D objects, using CAD.
- Changing the properties of, or combine one or more 3D objects, using CAD.
- Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).
- Explaining material choices and why they were chosen as part of a product concept.
- Programming an N,E, S,W cardinal compass.
- Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.
- Developing an awareness of sustainable design.

Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.

Overall Learning Outcomes

- To know that accelerometers can detect movement.
- To understand that sensors can be useful in products as they mean the product can function without human input.
- To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.
- To know that 'multifunctional' means an object or product has more than one function.

- To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.

Learning Intentions (for use in self assessment at end of topic)

- To write a design brief and criteria based on a client request.
- To write a program to include multiple functions as part of a navigation device.
- To develop a sustainable product concept.
- To create a high-quality product suitable for a target user
- To develop 3D CAD skills to produce a virtual model.
- To present a pitch to 'sell' the product to a specified client.
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Suggested Strategies for Recording Learning

- Design and sketch ideas
- Market research into target audience
- Write comments/teacher to write verbal feedback.
- Annotate ideas
- Photograph work