

Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: DT – Digital World Wearable Technology.

Year: 3

NC/PoS:

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

Prior Learning (what pupils already know and can do)

- That a structure is something built for a reason.
- That stable structures do not topple.
- That adding weight to the base of a structure can make it more stable.

End points (what pupils MUST know and remember)

- Give a brief explanation of the digital revolution and/or remember key examples.
- Suggest a feature from the virtual micro:bit that is suitable for the product.
- Write a program that initiates a flashing LED panel, or another pattern, on the virtual micro:bit when a button is pressed.
- Identify errors, if testing is unsuccessful, by comparing their code to a correct example.
- Explain the basic functionality of their finished program.
- Suggest key features for a way to attach the product to the user, with some consideration for the overall theme and the user.
- Create annotated diagrams to help illustrate how their product is worn.
- Describe what is meant by 'point of sale display' with an example.
- Follow basic design requirements using computer-aided design, drawing at least one shape with a text box and bright colours, following a demonstration.
- Evaluate their design using a focus group

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Key Vocabulary

Analogue, analyse, annotate, badge, computer-aided design (CAD), design criteria, develop, digital, digital world, electronic, feature, feedback, function, layers, monitor, net, opinion, product, program, sense, simulator, smart, technology, test.

Session 1: Evaluating wearable technology.

LO: To research and evaluate existing products.

Work through Recap & Recall. Introduce Digital Revolution using the presentation & allow children to sort objects. Before introducing Wearable Technology by looking at examples, ask the children if they know the term and can name any examples. Discuss specific examples (smart watches, fitness trackers, virtual reality headsets, smart glasses, fashion wearables). Which of these have the children heard of before? Discuss then children to complete Wearable technology analysis.

To finish lesson, work through Wrapping Up to discuss a possible new piece of wearable technology.

Vocab: analogue, analyse, digital, form, function, smart, technology.

Session 2: Light up wearables.

LO: To develop design criteria.

Recap on digital & non digital products using Attention Grabber. Show video using link:

<https://video.link/w/5VsJb>

Discuss the micro:bit with the children. Explain that this is a piece of technology they can use virtually in school. Explain that they will use the micro:bit as inspiration for a wearable piece of technology. Show Design Criteria slide then explain that they are going to design a product to **enable someone to be visible in the dark** (use harness in Attention Grabber as a reference) and for this product to be successful they should follow the design criteria. Children to complete their design as follows:

My product will...

I will design my product to...

My design must...

Encourage children to check that the criteria fit the design problem they are facing by using questions posed in Wrapping Up section.

Vocab: criteria, design brief, evaluate, feature, function.

Session 3: Programming wearable technology.

LO: To use code to program and control a product.

Introduce children to block coding then explain how they will write a program for the virtual micro:bit to make the LED panel flash on and off. Children need Ipads to create the program using the link: <https://makecode.microbit.org/> (Makecode).

1. Show the Pupil video: Programming button A part 1 – this models how to build the first part of the code.

2. Show the video Pupil video: Programming button A part 2 – this is to complete the code script. Advise the children to click button [A] on the virtual micro:bit to test their code.

Show the Pupil video: Programming button B - Once the code is complete, invite the children

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to test it by pressing button [B] on the virtual micro:bit

3. Show the video Pupil video: Programming the light *sensor* to introduce another feature of the micro:bit – responding to light level changes

Following completion of programming the code, allow children to work in partners to discuss their programming & refer back to the original design criteria eg Which parts of the design criteria have you achieved today? Did you include any extra code? What was the purpose of that additional code? Did it help you to achieve any of the other design criteria?

Vocab: control, electronic, initiate, loops, monitor, program, sense, simulator.

Session 4: Product concept.

LO: To develop and communicate ideas.

Work through Recap & Recall focusing on how they have previously drawn designs of their products. Using Attention Grabber, discuss possible fastenings for their product.

Explain that they are to create a concept design (describe how a concept is like an idea of how the product could look, but it may change when they to make it) of their product using their understanding of fastenings, attachments and the device's size to create the design. Children to complete their concept design, use presentation as a model & refer back to design criteria.

Vocab: annotate, fastening, feature, form, function, product concept.

Session 5: Point of sales displays.

LO: To develop ideas through computer-aided design.

Work through Attention Grabber to introduce & discuss what persuades us to buy things in shops. Explain that a point of sale display (POS) is designed to encourage someone to purchase a product. They often include persuasive language, offers, large colourful writing, and shapes to catch the eye. Point of sale displays also include stands that attractively display the products.

Children will use Sketchpad to create a point of sale display badge to accompany the design ideas for their wearable technology. Display each Pupil Video then complete each step using Sketchpad.

Play Pupil video: Sketchpad: Basic functions. This video uses the shape tool and shows how to resize, rotate and undo. Allow the children time to use the video to learn about, and experiment with, the different functions before playing the other videos.

Pupil video: Sketchpad: Vector fill and text demonstrates how different colours and patterns can be added to their shapes and how to add text.

Pupil video: Sketchpad: Layers shows how layers are used to place shapes and text over one another.

Following completion of the badge, children to work in pairs to devise success criteria for a good POS badge.

Vocab: badge, computer-aided design (CAD), layers, net, point of sale.

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Session 6: Focus groups.

LO: To improve a design based on feedback.

Children will be working in small groups to evaluate their completed product. Work through Recap & Recall to share their thoughts on a star rating for the image shown. Explain how it is based on their opinion which they will use to give feedback to final products. Use the following questions to allow children to consider their own final product:

Is the design made for children?

Does it make someone visible in the dark?

Can it be worn?

Does it use computer technology?

What was computer-aided design used for?

Using their completed designs, children to work in pairs to evaluate their partner's work using a tick / cross against their design criteria. Children to then work in small groups (focus groups) to gather different opinions on whether they would use the product. Establish expectations for their group work & allow children to discuss the products using the questions on their Focus group task sheet. Allow each group to feedback ensuring that it is based on the questions they discussed as a group. Children return to the Activity sheet: Product evaluation from earlier in the lesson where they are to add an idea from the focus group to improve their design.

Vocab: evaluate, feedback, opinion, focus group.

Future learning this content supports:

KS2 (Y6) – Digital World Navigating the World.