St James' Church of England Primary School
Design & Technology Overview Sheet

Year 4 – Digital World: Mindful Moments

Rationale: Pupils who are **secure** will be able to:

- State and/or describe the advantages and disadvantages of existing products (timers).
- Understand how Micro:bit features could be used as part of a design idea.
- Write a program that displays a timer on the Micro:bit based on their chosen seconds/minutes.
- Suggest where the errors are, if testing is unsuccessful, by comparing the correct code to their own.
- State key functions in the program editor (e.g. loops).
- Express which stages of the project they enjoyed or found more challenging.
- Recall and describe the name and use of key tools used in Sketchup (CAD) software.

Learning Objectives:

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

MAKING

- Select from and use a wider range of tools and equipment Items and objects which are needed to complete a task. to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

TECHNICAL KNOWLEDGE

- To apply their understanding of computing to program, monitor and control their products

EVALUATE

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

Overview:

Lesson 1: Mindfulness - To create a design criteria for an electronic timer based on analysis of existing products

Lesson 2: Programming timers – To apply understanding of computer programming to instruct a Micro:bit to function as a timer

Lesson 3: Prototypes – To design, make and develop a prototype case for my mindful moment timer

Lesson 4: Brand identity – To design a logo for a mindfulness company using computer-aided design

Cross Curricular Links

PSHE – Mental health H15. That mental health, just like physical health, is part of daily life; the importance of taking care of mental health

Computing – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

Resources

• A range of timers: sand timers, on-screen timers, dial, digital and egg timers • A Micro: bit installed with the timer program *Micro:bit teacher demo* (see Classroom resources) • BBC Micro:bits with battery packs or MI power coin cell boards and Micro:bit USB cables (ideally a Micro:bit per child, however, if you have limited numbers of Micro:bits then any number from one • Coloured card, sugar paper, corrugated coloured paper/card • Precut paper strips of the same height and width for paper springs – no wider than 15mm, length minimum A4 • Ideas of popular companies for children's toys, technology and fast food

Impact/Assessment

Most Children will: • Stating and/or describing the advantages and disadvantages of existing products (timers). • Writing a program that displays a timer based on their chosen seconds/minute(s) on the Micro:bit after pressing button A. • Assembling the net using tape or glue and tabs securely into a box structure with a slot for the Micro:bit display. • Explaining the need for a company to stand out against competition, and/or stating the importance of logos in business.

More Able Children will: • Analysing and evaluating the advantages and disadvantages of existing products (timers). • Writing a program that displays a timer based on their chosen seconds/minute(s) on the Micro:bit after pressing button A. Be able to test their program using debugging skills to fix any programming errors independently. • Cutting out more complex nets and, or those of their own design with an increased level of accuracy. Using techniques such as layering to strengthen their net and consider ways of securing the Micro: bit inside. • Explaining and justifying the need for a company to stand out against competition and the need for a logo that represents the company accurately.