The Dumping Ground

Make a radio door alarm

Computing topics covered

Hardware
- Connecting a micro:bit to a laptop
- Connecting input sensors
- Calibrating a sensor
- Transmitting/receiving radio signals
- Producing LED/audio output

Coding and Programming
- Sequencing
- Repeat loops
- Selection and conditionals
- Events and triggers
- Debugging

Computational Thinking
- Logical Reasoning
- Decomposition
- Algorithms
- Patterns
- Abstraction

Curriculum links

England

Computing NC: KS2
- Select, use & combine a variety of software on a range of digital devices to design & create a range of programs, systems & content that accomplish given goals including collecting, analysing, evaluating & presenting data & info
- Design, write & debug programs that accomplish specific goals, including controlling or simulating physical systems
- Work with variables & various forms of input & output

Design Technology KS2
- Use research & develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular audience
- Apply their understanding of computing to program, monitor & control their products

Northern Ireland

Thinking Skills & Personal Capabilities: Thinking, Problem Solving & Decision Making KS2
- Generating possible solutions
- Trying out alternative approaches
- Evaluating outcomes

Using ICT: Computational Thinking and Coding KS2
- As a class look at and talk about examples of coding projects
- Recognise how they can decompose these projects
- Use a range of commands to create a project, including variables, operators and control statements such as 'if… then…' alongside the use of 'if…then… else' and comparators
- Test and debug at regular intervals and collaborate with others to solve problems as they arise

Wales

Science & Technology: Design Thinking & Engineering offer technical and creative ways to meet society's needs and wants. Progression Step 3
- I can use design thinking to test and refine my design decisions without fear of failure
- I can combine component parts, materials & processes to achieve functionality and improve the effectiveness of my outcomes
- I can apply my knowledge & skills when making design decisions in order to produce specific outcomes

Scotland

Technologies: Computing Science 2nd
- I can explain core programming language concepts in appropriate technical language. TCH 2-14a
- I can create, develop and evaluate computing solutions in response to a design challenge TCH 2-15a

Cross-curricular opportunities

Geography/Humanities
- Making maps showing the location of the micro:bit door alarms and possible route for intruders - developing map making skills, scale, co-ordinates, symbols and keys
- Using a compass to find direction of North, the Earth as a magnet and the North and South poles

Art/Expressive Arts
- Designing different icons for the alarm output on the micro:bit LED display

Music/Expressive Arts
- Composing different musical alarm sequences

Maths and Numeracy
- Linking the project to the maths topics measurement and use of standard units

Science/Science and Technology
- Exploring and revising the properties and behaviour of magnets and magnetic materials and how a compass works
- Comparing a digital compass to a traditional one

Design Technology/Technologies
- Designing and creating a suitable box or case to hide and/or protect the micro:bit alarm attached to the door, and a way of making the alert micro:bit portable/wearable