

Year 4- Eureka! (Autumn 2)

Visit: Think Tank - Birmingham

DT (Making a game)	Science (Electricity)	Science (Sound)
<ul style="list-style-type: none"> • Understanding use of electrical systems and their products. Identify a range of various products that use electricity in different ways and begin to think about how it is used in them and in games etc. • Investigate and analyse a range of products Choose 3 specific examples of electrical products, one of which is a game, that the pupils will evaluate) • Generate their own ideas and recognise that designs have to meet different needs then develop a design criteria Must be a game that includes a bulb and a buzzer. • Pupils to plan and design a game. • Pupils will make appropriate plans by drawing or writing (based on their design criteria and evaluations of existing products, using annotations where necessary) • Think ahead about the order of their work and tools/materials. Pupils to plan their making process, paying attention to the order, the tools and the equipment that will be necessary. • Pupils will begin to create their game designs ensuring they measure and mark accurately. Adding circuits to make eyes light up and buzzer go off and making alterations to designs as the need arises, such as making structures more stable by giving them a wide base. • Evaluate their ideas and products against criteria and make suggestions for future improvements. 	<ul style="list-style-type: none"> • Identify uses of electricity. Identify common appliances that run on electricity and look at the importance of it. What would we do without it etc. • Construct a circuit Pupils to construct a simple series electrical circuit, identifying and naming its basic parts. • Test a circuit. Pupils to identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery. • Identify components. Pupils to identify and recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Identify properties of materials. Pupils to investigate and recognise some common conductors and insulators and associate metals with being good conductors as well as materials that are good insulators and why. 	<ul style="list-style-type: none"> • Identify how sounds are made Introduce new topic of sound. (Show children instruments and items making a sound and they have to discuss how the sound is made/travels, links to vibration etc. and how these vibrations travel through a medium to the ear.) • Understand changes in pitch Using instruments and objects, pupils to find patterns between the pitch of a sound and features of the object that produced it and how it can be changed. • Understand changes in volume. Find patterns between the volume of a sound and the strength of the vibration that produced it using instruments and objects and compare this to pitch and recognise that sounds get fainter as the distance from the source increases.

Computing

Algorithms – How to make a game. (Linked to DT).

- **Experiment reading and using flow diagrams/algorithms.** (Pupils learn how to use a flow chart by trying to work out what playground game it describes. Pupils then go on to trying to work out what is wrong with the bugged version of the chart.) <http://www.code-it.co.uk/unplugged/playgroundgames/playgroundoverview.html>
- **Write an algorithm for their DT game.**
Session 1: Allow pupils to have a go at using publisher to create a flow diagram. Teacher is question pupils and prompt/challenge them to debug their sequences. (Ensure teacher does not debug any sequences)

Session 2: Encourage pupils to use accurate order sequencing and breaking actions into smaller steps. Continue to work with groups to debug their sequences.

Session 3: Organising their steps, colour coding and tidying up. *Extension:* Abstraction (Hiding the detail so you can concentrate on the bigger picture) Can the pupils group their steps E.g. getting up, getting to school, morning at school etc....