UNIVERSITY OF BATH

Bath's first Science Festival

Bath Taps into SCIENCE

Science Fair Project Guide:

Teachers' handbook – Key Stage 1

Contents

Introducing the Project

This booklet provides all the information necessary to run a six week Science Project for Key Stage 1 pupils. The project gives pupils the opportunity to choose an experiment, run this experiment and then present their findings in poster form.

The booklet is split into six sessions, which can be run in a one off hour long session, or can be spread out over a week (Recommended). Please use your discretion when delivering the sessions, in terms of pitching the activities at the correct level.

Inside, there are a number of worksheets which will need photocopying. Any worksheet that needs photocopying is marked with the following symbol...

If the worksheet also requires the children to write on it, it will be marked with the following symbol...

Good Luck!

Project Ideas

At Key Stage 1 level, it is probably too much to ask for the children to come up with an experiment themselves. This booklet therefore provides a number of ideas for possible projects.

It is down to you whether or not you want your whole class to carry out the same experiment, or if different groups carry out different **experiments.**

1. Egg Drop – what is the best way to protect an egg?

What you will need

- Eggs (Lots of them)
- Sandwich bags
- Flour
- Paper towels
- Water

What to do

First, you need to choose what height to drop the eggs from, it needs to be the same every time!

Place an egg inside a zip lock sandwich bag (This is the control) and drop from the designated height. Record whether or not the egg cracks, this could be done in a simple table.

Repeat with each different protective method. E.g. Fill a Sandwich bag with water and an egg and then drop from the same height.

The children may be encouraged to think of their own protective methods and test these as well.

2. How can we make an egg float?

What you will need

- Eggs
- Water
- Salt

- Tall drinking glasses

What to do

Fill one glass full with water and fill another glass half way up with water

Stir in around 6 tablespoons of salt to the half full glass

Very carefully, pour plain water into the half full glass until it is nearly full (make sure the salt water and plain water don't mix)

Lower the egg into the water, and the egg should float.

The experiment could be repeated with different amounts of salt.

3. What does exercise do to your heart?

What you will need

- Stopwatch

What to do

Get children to measure their pulse whilst sitting down (Show them how to do this by finding their pulse in their wrist. Record how many heart beats in a minute.

Get the children to do star jumps for 20 seconds, and then measure their pulse again and record the number of beats per minute. You could then repeat this with different lengths of exercise.

4. How big are your lungs?

What you will need

- Large water bottle
- Plastic tub/bowl, deep enough to hold water
- Rubber Tube/hose
- Tape
- Marker Pen
- Measuring cup

What to do

- Create the apparatus for measuring lung capacity by following the instructions on the following video: https://www.youtube.com/watch?v=cy4kzOeLD5E
- Ask the pupils who they think has the biggest lungs etc
- Get the children to test their own lung capacity and compare their results with their classmates.

5. Will it float, or will it sink?

What you will need

- Something made from plastic
- Something made from metal
- Something made from wood
- Any other materials/objects you can think of
- A bowl of water

What to do

Fill the bowl with water

Ask the children which objects they think will float and why

One by one place each object into the water and then record which objects float

Need more inspiration?

Further project ideas can be found using this link, and then downloading the 'Early years activity pack' https://www.britishscienceweek.org/plan-your-activities/activity-packs/

All of these projects are just suggestions, please feel free to come up with your own or even see if your class can come up with one themselves.

Week One

'Lesson' Plan

Preparation	Learning activities	Resources
Photocopy worksheets	Intro: Explain what the project is. Ask them what they think a scientist is, generate a discussion in the class about what scientists do etc Activity 1: Draw a Scientist- **Worksheet** Ask the class to draw what they think a scientist looks like, using the Draw a Scientist worksheet on page 8 Activity 2: **Worksheet** Split your class into groups of 4/5, or however many you feel is appropriate. Introduce the project ideas to the class and ask them to pick a project (Unless you have decided the whole class should perform the same project) Once they have chosen, ask each child to write down what their question is on the worksheet on page 9 (Make sure they keep this worksheet as they will need it again)	Draw a scientist worksheet Question worksheet (page 9)

Draw a Scientist – Activity 1

What is your question?

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What do you think will happen?

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What did happen?

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Week Two

‘Lesson’ Plan

Preparation	Learning activities	Resources
Photocopy worksheets	Intro Re-cap what was done last time Activity 1: Paper Plane Activity Activity 2: How will you do your experiment? Talk to the class about how they are going to do their experiment. Get them to write this down or draw how they are going to do their experiment.	Draw a scientist worksheet Question worksheet (page 9)

Paper airplane activity

- Make four paper planes out of different materials (e.g. Normal paper, Cardboard, tissue paper, Cardboard)
- Ask for four volunteers to throw the planes… Tell the class that you want to find out which plane will fly the furthest
- Once the planes have been thrown, pick up the plane that flew the furthest and the one that flew the least distance. Discuss why this might be.
- Ask your class questions such as: Is it **fair** that a different person flew each plane?
- The idea of this activity is to loosely introduce the idea of a fair test to the pupils

How will you do your experiment?

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Week Three/four

‘Lesson’ Plan

Preparation	Learning activities	Resources
Get all resources for the experiments prepared	Intro Re-cap what was done last time Activity 1: Refer back to the worksheet from week one (Page 9) and ask each group to discuss what they think will happen when they run their experiment, and then write it down on the worksheet. Activity 2: Run the Experiments	Draw a scientist worksheet Question worksheet (page 9)

Week five/six

‘Lesson’ Plan

Preparation	Learning activities	Resources
Get all resources for poster making ready	Intro; Show class examples of poster boards. Activity 1: Refer back to the worksheet from week 1 (page 9). Ask students what they found out and get them to write it down on the sheet. Activity 2: Create Poster boards	Draw a scientist worksheet Question worksheet (page 9)

Creating a display board

Tip: When you read a science display board you usually start at the top left and read down each column...

Now that your pupils have finished their research, it is time to for them to prepare their display board for the science fair! Stress to your pupils the important of making the display board attractive. They may be an expert in their chosen topic but if they don't make their display board attractive then people may not be interested in their work!

Below is an example of a display board at a primary school science fair. However this was created by Key Stage 3 students, so don't expect your pupils to create something that looks like this. However you can use this format help your students create more simple display boards.

Trifold cardboard display board

Catchy title

Clearly labelled sections with large text

Abstract: Summary of your research

Results: including graphs

Hypothesis

Photos of the results or you carrying out the experiments

Background research

Materials

Conclusion and future directions/ further experiments

Experimental methods/ procedure

Examples of materials used in the experiments that you can use to help you explain your research

Display board examples

The display board does not have to be all singing and dancing, the idea is to get pupils excited and enthusiastic about doing STEM research. Here are some examples of display boards that have been produced in the past...