



Dear Colleague,

We aim to develop STEM activities which will raise aspirations, improve attainment in STEM subjects and increase participation in STEM related careers.

Below you will find a brief set of guidelines that will ensure that students have an engaging and rewarding experience.

Project Content

Activities should be multifaceted and will ideally include all of the following elements, where applicable:

- Have an overarching theme or problem
- Be hands on or involve analysis of evidence
- Contain a link to current research / industry / careers
- Be contextualised to show real life applications

Teaching and Learning styles

In order make sure that the sessions are engaging to all types of learners, aim to include as many of following teaching styles into the project as is applicable.

Constructing Meaning



An example of this is could be a debate on climate change.

- 1. The teacher could find out what opinions the students have
- 2. Set the scene for a debate with conflicting arguments.
- 3. Teacher helps the student to collate issues raised
- 4. Teacher facilitates the students to form an informed hypothesis using the information that they have heard









Enquiry (inductive)



An example of this is could be collecting fingerprints from a crime scene.

- 1. The students have to dust or fingerprints on various objects
- 2. Students identify patterns within the prints
- 3. Comparing prints to suspects, students make a hypothesis
- 4. Students re examine evidence to eliminate and incriminate suspects.

An example of this is could be and investigation on the acidity of Fizzy Drinks

- 1. The teacher asks students to test the validity of the statement: "Fizzy drinks are bad for your teeth."
- 2. Teacher helps students decide that they must test acidity, sugar levels, colouring...
- 3. Students test a range of carbonated drinks for their choice of parameter
- Upon analysis of the results, the students can now determine to what extent they believe the hypothesis to be true



Wetch this... Image: Constraint of the second sec

Direct Interactive

An example of this is could be DNA fingerprinting

- 1. The teacher shows the class how to visualise DNA via the method of gel electrophoresis
- 2. Students run their own experiments
- 3. Students answer questions in a worksheet to test their understanding of the experiment
- 4. Teacher summarises the session and contextualises what this method is used for in the world around us





Enquiry (deductive)





Using Models



An example of this is could be looking at the states of matter using the students themselves

- 1. The teacher tells students that they are particles in a gas, liquid or solid.
- 2. Teacher helps students act out particle behaviour e.g. packed tight, or bumping into each other
- 3. Teacher explains the key differences between the states
- 4. Teacher explains the limitations of the analogy and explains that this is a way to understand what is happening at a molecular level

It is key to note that the teaching styles above are not an exhaustive list, but merely a tool to enable you to identify the many approaches that can be used. From experience, we have see that the best activities are those that ustilise a blended approach of teaching styles.

Please complete and return the blank template on the next page to outline your initial plan for your project. We appreciate that the project will continue to develop over time; these are just your initial ideas.









Item	Description
Project Title	
Age of pupils	
Attainment level	
Main focus or problem	
What is the context or background?	
What links are there to industry / research / careers?	
Number of participants per team (if applicable)	
Resources required per team/ consumables (if applicable)	Please try to make an informed approximation, even if you don't know exact equipment requirements.
Space/facilities required (Classroom, lab, outside space)	
Learning outcomes (Knowledge and skills)	







Newton Fund

Project Description

How will the project be introduced?		
How will students plan to approach the problem?		
What evidence and/or techniques will they use?		
How will the project be assessed? (throughout the project)		
Any other notes:		
The project incorporates the following teaching styles	Constructing Meaning Enquiry (Inductive)	
	Enquiry (Deductive)	
(tick all that apply and detail)	Direct interactive	









Timeline of activities	Pupil activity:	Teacher support and questions:



