



PLANNING DOCUMENT FOR TEACHERS AND HOME EDUCATORS

NARRATIVE SET OUT FOR STEMFEST

Deep Ocean Lab

Come and join Greg Foot on a scientific adventure...diving down into the deep, dark ocean! Starting on the deck of the 'Baseline Explorer', you'll be lifted out into the waves.

Once you've been cleared to dive, you'll break the surface and head down, further and further, until you reach the side of an underwater volcano 250m under the surface, in the Twilight Zone just off the coast of Bermuda.

This show is recorded specially for the Virtual STEM Fest.

Does not require any resources

Careers fair

Take a virtual walk around the Career Show! Here, you will learn about some of the influential companies in the South East and hear about the important and exciting jobs our STEM professionals undertake.

Find the Did you know? facts, watch films about different careers and try out our new careers game. Download the quiz sheets and send your answers to askanambassador@canterbury.ac.uk

We recommend you download the scavenger hunt sheet and make notes of careers of interest.

What's my Job?

Guess the STEM Ambassador's role from the 3 items that are shown. STEM Ambassadors will show you 3 items related to their work and provide you with some hints about what they do every day. Can you guess their job?

Use the downloadable sheet and find the answers to the questions. All completed quiz sheets will receive a certificate and winning entries will be selected to win vouchers.

There is a worksheet to help you identify the STEM Ambassadors role. It can found by clicking the Resources link, top right of the screen.

Workshops

There are a range of STEM workshops to virtually take part in and most will need very little equipment! They are divided into 4 groups, Science, Technology, Engineering and Mathematics.

SCIENCE

Power of Magnets: In this workshop you learn about the power of magnets and how magnets are affected by heat. This session is led by a charismatic presenter who enables the difficult science of magnets to be understood more easily.

No resources required but you might want to follow this up with magnets, weights, string, and a tin can.

Speed of an Electron: James takes you through how quickly an electron moves. This session will provide the answers to those questions you never knew you had. Which is faster: an electron, a hare, or a tortoise?

This is a thinking activity, no resources needed.

Fizzability: Emilia is a chemist and she does some tests on 'Fizzability' – testing the acidity of common products in your kitchen, using things you will have at home. Try and find out the answer to the question...how acidic are the things you drink?

Two tablespoons, teaspoon, plastic cups, vinegar, milk and water, bicarbonate of soda and cream of tartar

Do Insects have a Favourite Colour? There are lots of insects flying around, your job is to see if they have a favourite colour, and if so, why?

Coloured paper card (4 colours) and stones, stopwatch.

Coastal Erosion: Kayleigh demonstrates how to recreate coastal erosion at home and how we can protect our coastlines from tides and currents.

Plastic bag of sand, stones, two washing up bowls, water, 2 pieces of card, and a bottle of water.

Science of Surface Tension: This workshop will lead you through the science of surface tension. Xin uses pepper and a range of everyday kitchen chemicals to test which makes the greatest difference.

Pepper, water, bowls, everyday kitchen liquids such as washing up liquid, cardboard, small sticks.

Random Quadrat Sampling: By taking part in this sampling activity, you will be able to observe and quantify plant and insect populations in your chosen environment. Download the Seek App to help you identify them!

String or wool, lolly sticks, paper, pencil, tape measures.

Survival Challenge: In this challenge, you need to think about the most effective adaptations to ensure survival in a changing environment. Create your own animals and then test out your adaptations to see if your animal would be successful in its environment. Send your entry to askanambassador@canterbury.ac.uk to be in with the chance to win prizes.

Paper and coloured crayons.

Red Cabbage Challenge: Robin, a STEM Ambassador, created this activity with his grandchildren, now it's your turn to give it a try! Come and find out about acids and alkaline substances in everyday life.

Red cabbage, water, lemon juice, vinegar, bicarbonate of soda, washing soda and white sugar.

Did Mammoths Exist? How do we know that these animals existed? What evidence is there and why did they become extinct? This activity requires you to examine what scientists think and come up with your own ideas. This is an activity where there is an opportunity for independent research and to undertake scientific

reasoning. You could enter your research to gain a CREST award.

Secondary sources

Colloids and dispersion: In this workshop, you will learn about nano particles, the usefulness of nano technology and properties of different liquids.

There are opportunities to try out things later, no resources needed.

TECHNOLOGY

The World in Infrared: The human eye can only see visible light, between red and blue. But beyond the red end is a whole range of usually invisible infrared light! Join us as we explore the world around us with our infrared camera and see the familiar world in a completely new light!

No resources needed

Technology in Sport: Here, you will explore the technology used in tennis, football and other sports to decide if the ball is in or out, or if it is a goal! The company that developed this technology is based in Sussex. In this video, you will see what it would be like to work in this company. Find out how a job like provides travel and opportunities to attend some of the most famous sporting events in the world.

No resources needed

'Seek by iNaturalist': Use an app on a phone or iPad to identify animal and plant species. Joe and Rodrigo show you how to use the app 'Seek by iNaturalist'. Follow along as they identify some ways this can be used and the problems that sometimes exist. This would be a great app to use alongside the Quadrat Sample activity in the science section.

App 'Seek by iNaturalist'. Free to download and then opportunities to try this in the environment. Would link well to quadrat activity.

CAD Design: This video will provide you with an understanding of computer-aided design in the process of inventing, designing and producing new items. Find out how CAD is used in the STEM workplace.

No resources needed

ENGINEERING

The Egg Drop: Can you create the most effective solution and keep you egg intact? Ghazal shows you some important information to ensure your egg drop is successful, and then sets you a challenge to drop an egg, protecting it only with paper straws!

Eggs, foam, scissors, string, a tape measure, stopwatch, paper straws.

The Amazing Rocket challenge: Engineer Anne sets a challenge to test out a home-made rocket. You will be led through an investigative challenge and provided with data that will help you to create an effective rocket. Shape and rocket fuel are important parts of this session. Enjoy experimenting!

Film canisters, bicarbonate of soda, vinegar, paper, pencils.

Building spaghetti towers: How tall can you go? You will need a marshmallow and some spaghetti; all winning towers will receive a certificate. There is a prize for the tallest tower.

Dry spaghetti and a marshmallow, tape measure.

Boat challenge: Can you make a boat that travels across water? Ernesto invites you to try out a simple challenge, which has a great deal of potential for exploration with materials and streamlining.

Large bowl of water, carboard to make boats, pencil and scissors, washing up liquid, a cocktail stick and a stopwatch.

Solar-Powered Oven: Can you design and make a solar powdered oven that can cook nachos? This will help you learn about solar energy, how to reduce your energy consumption and become more energy efficient.

Tin foil, shoebox or a cardboard pizza box, newspaper, a plastic ruler, scissors, pencil and something to cook

Aerodynamics and Green-Powered Challenge: In this video, you will learn about the key principles of aerodynamics, which is vital if you want to create a vehicle that goes faster!

No resources needed

MATHEMATICS

The Amazing Maths of Everyday Life: Here, you will realise how the maths you learn in school really will help you in everyday life. This workshop is provided by the National Physics Laboratory (NPL).

200g of water, a weighing scale, thermometer, sugar, paper, two teaspoons, paper and pad.

Magical Möbius loops & other shapes:

Prepare to be surprised by the strange properties of a Möbius loop and other shapes. Explore the weird and wonderful world of mathematical topology, a branch of mathematics that you may not have heard of before! All you need is strips of paper, some glue and a pair of scissors.

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The Logic of the Fox, Chicken and Grain:

Think logically as you complete this challenge. How can you get all three across a river? Avoid disaster and think like a mathematician to complete this brain teaser...the answer will be provided later!

Think logically!