Primary Schools Programme 2024

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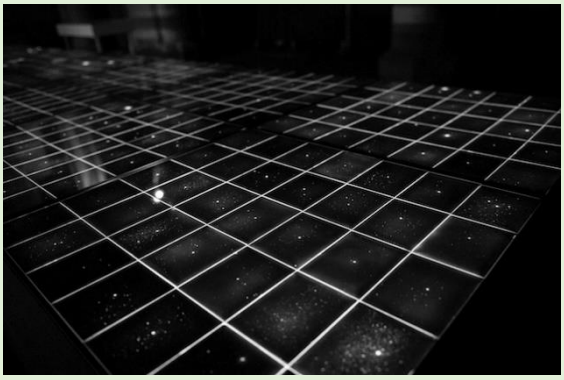
An Imperfect Account of a Comet

Orkney International Science Festival is pleased to invite you to join us in Lynda Laird's audiovisual installation celebrating the celestial discoveries of the 18th century astronomer Caroline Herschel in St. Magnus Cathedral throughout the festival: 5th – 11th September 2024.

The work is presented as 560 photographic glass plates of stars that Herschel noticed were missing from the British Star Catalogue and serves to bring these 'omitted' stars to light. As such, they represent all the women whose groundbreaking knowledge and wisdom has been overlooked, undervalued, and ignored throughout history.

During her lifetime, Herschel also discovered 8 comets and 14 nebulae, which are acknowledged in an accompanying sound composition, '8 Comets'. The music was written and produced by Phil Tomsett, recorded by Annie Needham and read by Daniela Roberts. *The project funding is still to be agreed, so please do make your booking and we will confirm closer to the date*



RAS Bicentennial Quilt

The Royal Astronomical Society (RAS) created a "Bicentennial Quilt" for its anniversary in 2020, with 100 patchwork squares on astronomical themes. With the support of Callum Potter, a former Society president who now lives in Orkney, we will display the quilt in Saint Magnus Cathedral.

How to Book a Visit to the Comet Installation and RAS Bicentennial Quilt

We are able to offer school groups an opportunity to visit the Comet Installation and RAS Bicentennial Quilt during the Festival period. There will be a package of some art/science activities during their visit i.e., printing with cyanotypes (a photographic process, invented by Caroline's nephew John Herschel), comet and constellations making. The visits will be scheduled every morning and afternoon on Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th and Wednesday 11th September.

We will provide special (FREE) packages to schools, especially from outer islands of Orkney and areas of high deprivation, to visit the Comet Installation and subsidies will be available to cover travel costs to the venue. Booking required!

Please complete the following booking form: https://bit.ly/3U1QJIT. Alternatively, please email your enquiries with the following information to a.wright@oisf.org and Alexandra Wright, our Schools Programme Coordinator will be in touch:

Name of School

Class(es) and number of pupils (for each session)

Preferred date/time and list alternative date(s)/time(s) in order of preference.

Teacher name and contact details (email and phone)

Aurora from the ISS and Jupiter from Juno by Morag Potter

Visit to An Imperfect Account of a Comet Installation and RAS Bicentennial Quilt at Orkney International Science Festival is supported by:

Science and Technology Facilities Council

Royal Astronomical Society

THISTLE WIND PARTNERS

Primary School Programme – How to Book

We're thrilled to offer again a variety of in-person and online sessions for this year's School's Programme.

Please complete the following booking form: https://bit.ly/3U1QJIT

Alternatively, please email your enquiries with the following information to a.wright@oisf.org and Alexandra Wright, our Schools Programme Coordinator will be in touch:

- Name of School Class(es) and number of pupils (for each session)
- Preferred date/time and list alternative date(s)/time(s) in order of preference.
- Teacher name and contact details (email and phone)

Protecting Scotland's Seas by Marine Conservation Society

Suitable for: P4-P7

Available to Book: Friday 6th (all day at one school) & Monday 9th (AM & PM sessions, can do 2 small schools or 1 big one). Schools to be located on Orkney mainland.

Length of Session: 1.5hour

Sessions for primary schools which include a whole school assembly about the Marine Conservation Society and the work we do (30mins), followed by a one-hour interactive workshop with P4-P7 class(es). The workshop will focus on the marine life in Scotland, threats to the ocean including marine litter and climate change and some ways in which we can help the ocean followed by a Q&A session.

Building a RoboNation! By The National Robotarium

Suitable for: Nursery/P1, P2-P7

Available to Book: Monday 9th September

Length of Session: 90 minutes

Learn more about the real-world projects that the National Robotarium undertakes and the different robotic systems that help us solve the problems of tomorrow with the technology of today. Get hands on with some of our robotic kits to engineer solutions to our session's challenge.

The Nursery/P1 session is a 30 minute show and tell.

Stars in Space
by Dr Anne-Marie Weijmans (University of St Andrews)

Suitable for: P1-P3

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length: flexible: 30 - 45 minutes

There are a lot of stars in space, and when we connect them all together, they have some stories to tell! In this workshop we will talk about the night sky, and how we can match stars together in constellations. We then will make our own constellations with some sparkling stars. And of course, there will be lots of time to ask all your space questions! (The format of this workshop is very flexible, and Anne-Marie would be happy to incorporate any space topics that the teacher and/or pupils are interested in).

Photo Horsehead Nebula by SPECULOOS Team/E. Jehin/ESO

Design Your Own Constellations
by Dr Anne-Marie Weijmans (University of St Andrews)

Suitable for: P4-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

On a dark, clear night there are many stars that we can see in the sky. To not get completely lost we look out for the constellations, and the ones we use have been handed down to us mostly from Greek mythology. But what are constellations? What do we know about the stars that make them up? And how have people looked and used constellations in the past? In this workshop we will explore these questions and redesign the night-sky with modern constellations based on our own stories. Follow-up activities could include a creative writing exercise around the constellations that we will design.

Build Your Own Stone Circle
by Dr Anne-Marie Weijmans (University of St Andrews)

Suitable for: P6-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Orkney is famous for its many archaeological finds, which include the impressive Ring of Brodgar. But how can stone circles like this be used as a calendar? In this workshop we are going to explore how we see the Sun move through the sky during the day and over the course of a year, and we will also see how this differs between Orkney and locations further south or north. We will also explore this in terms of Earth's movement around the Sun and find out why we have seasons. We will then use that knowledge to design our own stone circle and build a scale model. Follow-up activities could include building a larger version in the school yard or setting up a solargraphy experiment with a pinhole camera.

Puffin Detectives: A Climate Mystery by Dynamic Earth

Suitable for: Nursery/P1, P2-P4

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 45 minutes

In this interactive storytelling-style workshop, learners will investigate the effects of climate change on Scottish wildlife via the investigations of two young "Pufflings" living on the Isle of May. They will discover more about these iconic birds and their way of life, fitting them into the wider picture of life on and around the island. Through a series of fun activities, they will find out how variations in weather affect butterfly populations, seal pups and ultimately the food which the puffins depend on.

Climate Change by Dynamic Earth

Suitable for: P5-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 50 minutes

During this workshop, your pupils will investigate how the UK has been affected by climate change over recent decades and the implications of this for the future. Using a combination of discussion and activities, pupils will investigate the greenhouse effect and identify sources and sinks of greenhouse gases. They will finish off by playing "Science or Fiction", an interactive game exploring some of the solutions being proposed to combat climate change.

Scottish Inventors Challenge by Young Enterprise Scotland

Suitable for: P5-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 9:30am-2:30pm

Young Enterprise Scotland's Scottish Inventors Challenge is a day-long in-school programme for P5-P7 that encourages young people to apply taught skills, think creatively and learn about successful inventors and inventions hailing from Scotland.

As part of the challenge, students will learn about Enterprising Skills and apply these in problem-solving contexts to invent their own product or service that will help towards saving the planet.

Scotland's Marine Superstars by Scottish Seabird Centre

Suitable for: P1-P7

Available to Book: Thursday 5th & Friday 6th September

Length of Session: 1 hour

The Scottish Seabird Centre are excited to announce that our popular Scotland's Marine Superstars workshop will be returning for Orkney Science Festival 2024. This curriculum-linked, interactive session will introduce children to some of Scotland's most iconic, beautiful, and important marine species.

Students will have the opportunity to watch amazing footage of marine life, listen to sounds, marvel at life-sized props and models, and get involved in activities designed to engage children with the marine environment on their doorstep and inspire them to protect it.

Note: While new species will be incorporated into the workshop if it has been previously delivered to a school/class, priority will be given to schools/classes that have not yet received the workshop in previous years.

This event can take the form of single or combined classes, but whole school assemblies are preferred.

Whaletalk by Scottish Association for Marine Science

Suitable for: Nursery/P1, P2-P7

Available to Book: Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Of all the creatures in the marine environment, whales and dolphins are among the most recognisable and best-known. However, we rarely get a glimpse into their underwater world. We can't necessarily see marine mammals in their deep underwater habitat, but we can listen. Underwater acoustic technology helps scientists to identify species and their location and reveals patterns of behaviour and migrations. As humans develop technology to further exploit the ocean's natural resources, can we learn more about the behaviours of these creatures by listening more?

Whaletalk, our current research campaign, strengthens the case for long-term monitoring of marine mammals and helps to raise public awareness of marine mammal sounds and behaviours in Scottish waters.

Looking at Extinct and Endangered Insects/Animals using Screen Printing by Artist Lin Chau

Suitable for: P2-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th & Tuesday 10th September

Length of Session: 2 hours

Using screen printing, participants will print partially finished images with coloured ink. The theme will be on extinct and endangered insects/animal spices.

The aim of the workshop is for kids to learn about our environment and create an artwork to keep.

Explore the Fascinating History of Astronomy: from Stonehenge to Telescopes with Vassilios Spathopoulos

Suitable for: P5-P7

Available to Book: Thursday 5th, Friday 6th & Monday 9th September

Length of Session: 1 hour

In this engaging workshop, we will immerse ourselves in the captivating world of astronomy. Using models of ancient astronomical structures and instruments, we'll journey through time, uncovering the contributions of different civilisations. Our toolkit comprises replicas of Stonehenge, a Polynesian star compass, an ancient Greek computer, and an astrolabe. The workshop will include a type of hands-on activity such as the construction of a paper sundial or learning how to navigate using the stars. Join me on this celestial adventure as we connect the past with the present, celebrating the rich heritage of human curiosity and scientific exploration.

Mission to the Moon by Cerebral Ape Ltd

Suitable for: P5-P7

Available to Book: Thursday 5th, Friday 6th & Monday 9th September

Length of Session: 1 hour

Participants will learn all about Nasa's plan to build a base on the moon and will have to work as a team to control a robotic rover. They will be tasked with driving it over the surface of a realistic lunar landscape and use their problem-solving skills to complete various challenges.

Islands of Birds with Orkney RSPB

Suitable for: P2 – P6

Available to Book: Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Join the RSPB Learning Officer and have a look at all the projects the RSPB runs through a fun map game! Figure out where and when you can see most bird species on the islands and their significant role for our livelihoods. Come along to discover many more fun bird games!

Block Coding using Scratch by Claire Griffiths

Suitable for: P2+ (N.B. Scratch Jnr (iPad app) can be used with P1 upwards)

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 30 minutes - 1 hour depending on age group/class

A hands-on course using the free block-based programming language, Scratch 3. Alongside learning how to use the Scratch Online Editor, there will be an opportunity for the students to look at and use free downloadable help cards and easy to use Scratch books. Find out how to download Scratch 3.0. Offline Desktop editor.

Learn about the free online Scratch support materials, including discussion groups, downloadable teaching manuals/help cards and lessons etc. Scratch can be used to teach many aspects of the broader curriculum, including numeracy, literacy, game development and music creation. Examples will be shown.

N.B. Scratch files can be downloaded from the Scratch website/Desktop Offline Version to be opened/edited later.

Unplugged Computing for BGE by Claire Griffiths

Suitable for: P1-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 30 minutes - 1 hour depending on age group/class

A practical course using a varied range of free online applications, websites and support materials to teach Computer Science and Unplugged Computing. Computational thinking can be introduced right at the start of a child's school life and will be useful to them throughout their school and working life. For example, for breaking down tasks and looking for patterns. Unplugged Computing uses free activities such as puzzles and games to teach computing concepts such as algorithms, logical reasoning, cryptography, and binary numbering. This workshop will introduce fun and very practical ways to learn about Computing Science. Barefoot Computing Resources will be used for some activities.

N.B. No Computers needed (literally unplugged!!)

AI and its Role in All Our Lives by Claire Griffiths

Suitable for: P1-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Duration: 30 mins - 1 hour depending on age group/class

Artificial Intelligence is part of our lives even if we don't know about it! This workshop will look at some common examples of AI that we might have in the places we live, our schools and in the fields around us on Orkney. There will be some hands-on activities to show the students how AI learns how to behave or knows what to do to help us. Finally find out in what ways we are different to an AI controlled machine or program.

Equipment needed: Presenter needs access to a whiteboard/projector screen and an ability to play a PowerPoint Presentation. The children do not need a laptop or computer. They can research the topic after the workshop.

Targeted questions will be left for the class teacher to use if they wish with their class/group.

Introduction to the BBC Micro:bit by Claire Griffiths

Suitable for: P4+

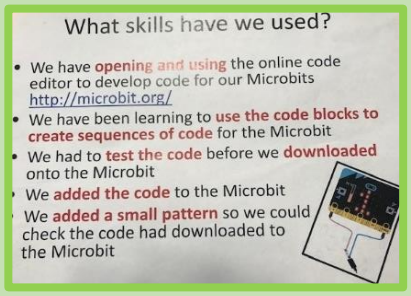
Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

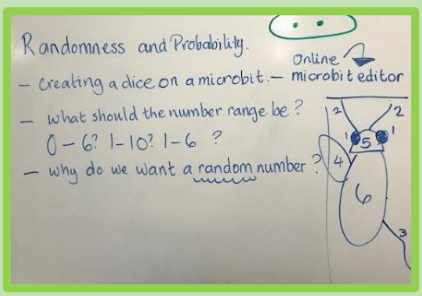
Length of Session: 30 minutes - 1 hour depending on age group/class

A practical course learning how to code a BBC Micro:bit and use it in a variety of ways e.g. as a thermometer. The Micro:bit is a compact microcomputer. It can be used to teach programming using its simple block editor. It has 25 LED lights which can flash messages. There are two programmable buttons to control and pause games. The BBC Micro:bit can detect sound, light, movement and because it knows what direction it is, it can become your very own compass! It is easy to code the BBC Micro:bit using the free online editor (similar to Scratch) on the BBC Micro:bit website.

There is also a free iPad app which provides access to code editors and can be linked to any microbit via Bluetooth. In addition, the website offers projects from beginner to advanced. There is also a wide variety of other teaching resources, including complete, editable computing units of work and resources with cross-curricular links.

N.B. A class set of Micro:bits is available for use in the workshop or use your own.





Entangled Enigma Workshop by Maths Blast

Suitable for: P2-P4

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Ropes, slime, and topology converge in a workshop that blends the art of rope escapology, the properties of Möbius strips, and the creative world of slime making, all within the fascinating realm of mathematics. This workshop will unravel the mysteries of mathematics in a way that captivates both the mind and the senses.

Supported by International Centre for Mathematical Sciences (ICMS) Public Engagement Fund

Ri Masterclasses by The Royal Institution of Great Britain

Suitable for: P5-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Offered by presenters from The Royal Institution of Great Britain, this session will include CPD session for educators, providing them ready to use materials, list of resources needed and background information. The session will include activities which compare fractions using coloured water combined in different ratios and Number scripts, comparing different number systems from many ancient cultures.

Supported by International Centre for Mathematical Sciences (ICMS) Public Engagement Fund

Shape and Symmetry Workshop by Katie Steckles and Hana Ayoob

Suitable for: P5 -P7

Available to Book: Thursday 5th, Friday 6th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour

Led by mathematician Katie Steckles and illustrator Hana Ayoob, participants will use rulers and compasses to construct shapes, drawing inspiration from traditional mandala patterns. This creative activity not only provides insight into the underlying mathematical principles of design but also encourages participants to craft their own unique artwork.

Supported by International Centre for Mathematical Sciences (ICMS) Public Engagement Fund

Silicon Croft Coding Session by Silicon Croft

Suitable for: P5-P7

Available to Book: Mornings of Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1.5 hours

Silicon Croft are returning to OISF with another opportunity for primary schools to participate in one of their popular Scratch workshops! Scratch is a fun and interactive tool for students to learn coding and is suitable for all levels of experience. Workshops are delivered during the morning sessions only, so book early to avoid disappointment!

Periodic Success by Jamie Gallagher

Suitable for: P5-P7

Available to Book: Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 45 – 60 minutes

Hidden in the periodic table live tales of romance, murder, greed and wonder. Which element will make you reek of garlic? Why do we love gold? And what is the disgusting secret of antimony? Join material scientist Dr Jamie Gallagher on an interactive and explosive tour of the elemental housing block as we celebrate the Periodic Table.

Kitchen Chemistry by Jamie Gallagher

Suitable for: P5-P7

Available to Book: Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 45 – 60 minutes

Chemical reactions aren't just bubbling beakers in laboratories – our day to day lives are packed with amazing and overlooked chemical reactions. Take a tour around the kitchen with Jamie Gallagher and explore the sights, sounds and smells of everyday chemistry. Explosive oranges, disgusting cola and the secrets of sugar all lie in wait as we put the 'ordinary' world under a microscope. The kitchen becomes the scientist's playground in this jam-packed show filled with fun experiments guaranteed to make you look at science in a whole new light.

Scottish Roots by Royal Botanic Garden Edinburgh

Suitable for: Nursery/P1, P2-P4

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: Nur-P1 60 minutes, P2-4 90 minutes

Technical requirements: Indoor space with projector/ smartboard to shows slides and play audio. Outdoor space with some plants or greenspace.

Join the Royal Botanic Garden Edinburgh as we take a journey into a world of plants, myths and legends. Listen to stories to learn about some of our amazing and unique Scottish plants, their traditional uses and the different names they have around our country. Get hands on with activities which get scientific cogs turning and creative ideas flowing. Then head outside into your playground to spot some of these special plants and get inspired to protect and care for biodiversity and the planet.

This workshop was made possible by the National Lottery Heritage Fund with thanks to National Lottery players.

Rainforests in Your Playground by Royal Botanic Garden Edinburgh

Suitable for: P4-P7

Available to Book: Thursday 5th, Friday 6th, Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 90 minutes

Technical requirements: Classroom with projector/ smartboard to shows slides and play audio. Outdoor space with some plants or greenspace.

Become a member of the science team at the Royal Botanic Garden Edinburgh and head out on an expedition to Thailand. Discover what it would be like to visit a tropical rainforest through interacting with real rainforest plants and exploring rainforests through our virtual reality headsets! Then head out on an expedition into your own playground to discover how the environment in Scotland is different to the rainforest and start building your local plant knowledge!

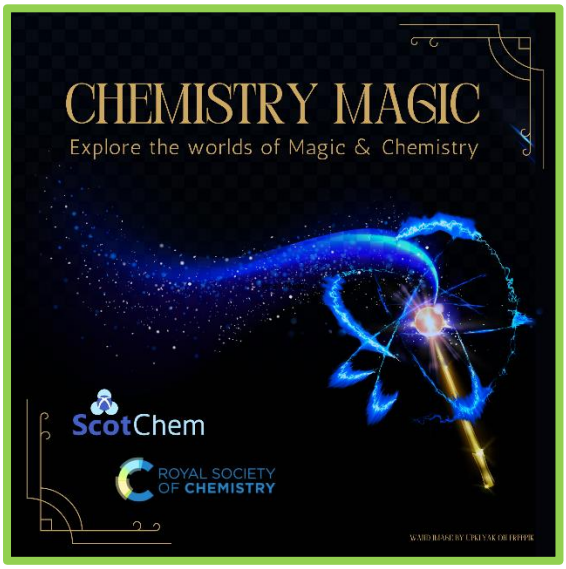
This workshop is made possible by The National Lottery Heritage Fund, with thanks to National Lottery players.

Science in Magic by Adrian Allan

Suitable for: P5-P7

Available to Book: Thursday 5th & Friday 6th September

Length of Session: 1 hour



From science that appears magical to the science behind the magic, discover magical experiments each offering a new concept to explore. Learn how to shrink your own head, make water vanish from a cup, bend metal with your mind and make a coin pass through a solid object. At the end of the session you will learn how science is used to create magical illusions that amaze and astonish.

Supported by Royal Society of Chemistry Public Engagement Fund.

Lego Renewables- Build a Wind Turbine by My World of Work

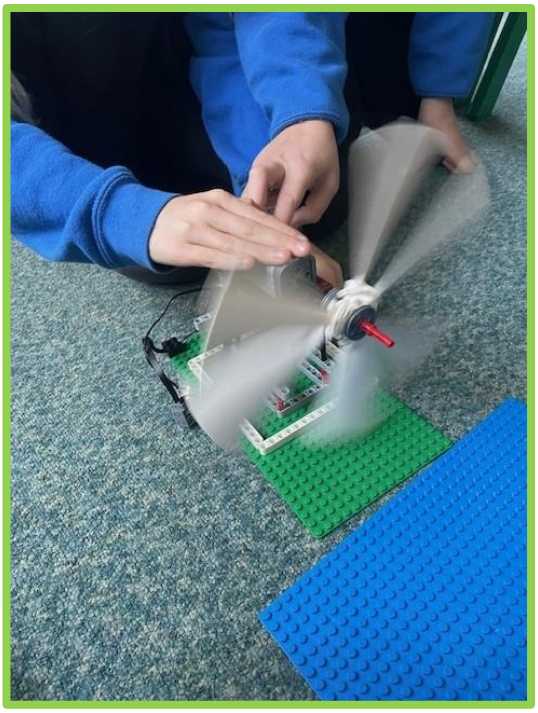
Suitable for: P5-P7

Available to Book: Thursday 5th & Friday 6th September

Length of Session: 90 minutes

Using LEGO Renewables kit, pupils will be challenged to build their own wind turbine or solar station and find out how renewable energy is changing our world. Students will be able to see electricity produced and improve their models by testing. There is also time to think about fair testing and an element of competition.

This session is suitable for classes of 24 and students will work in pairs.



Cracking Cryptography - Online Session by My World of Work

Suitable for: P5-P7

Available to Book: 9:30-10.30 on Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour (Online)

Join in this on-line session to explore careers in cyber security and learn how to use a Caesar cipher to crack code. Through a range of fun, code-breaking activities, you will discover how encryption has created jobs in almost every industry around the world. Suitable for whole classes and every pupil requires access to their own device connected to the internet. Different schools can sign up for same session for an element of competition.

Games Design Series – Online Session by My World of Work

Discover what it takes to be a game designer and progress through the Game Design series. There are three levels of activities which have been devised to build on your coding and design skills.

Monday 9th September

Game Design 1: "Maze Maker" - Introduces pupils to software, language and basic coding skills.

Tuesday 10th September

Game Design 2: "The Floor is Lava" - Builds on the foundations learnt in Game Design 1 and teaches pupils to code their own platform game.

Wednesday 11th September

Game Design 3: "The Final Frontier" - Further enhances your programming skills whilst introducing the space industry in Scotland.

To take part, all pupils must have access to a device connected to the internet. Full classes can participate.

Suitable for: P5-P7

Available to Book: 11:00-12:00 on Monday 9th, Tuesday 10th & Wednesday 11th September

Length of Session: 1 hour+ (Online)

Marine Online Sessions by Ashleigh Kitchiner

- **How to Survey for Whales**
- **Marine Mammals in Orkney**
- **Life as a Marine Biologist**
- **Marine Mammals for Early Years**
- **Build your own Sea Creature**

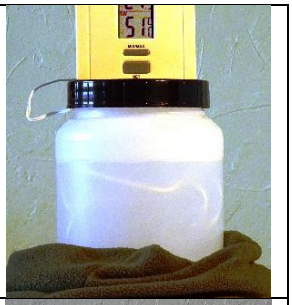
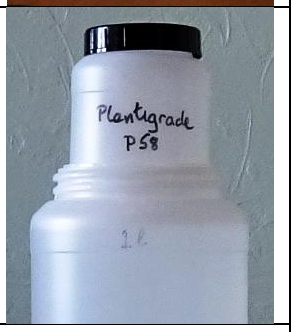
Suitable for: Nursery/P1, P2-P7

Available to Book: During the Science Festival, but possibly beyond it

Length of Sessions: 30-45 minutes (Online)

Marine Adventure Talks for Young Explorers: Dive into any one of these exciting talks including a four-week program designed especially for primary school students! Join Ashleigh as she invites you to explore the wonders of marine biology, discover thrilling career possibilities in the ocean world, and learn how to journey across the globe with these exciting jobs. Get ready for a fun-filled activity where we'll use our imaginations to create the perfect sea creature, thinking about its warmth, sleekness, and behaviour. Let the adventure begin!

Competition: Warm Orkney: STEM Projects for the Orkney Science Festival

1. Design and test hot water tank insulation. [Engineering]	
2. Test tanks of different sizes. [Maths]	
3. Add a heat battery. [Technology] Sunamp Heat Batteries™	
• Save heat and the planet.	• Help Orkney save energy and money.

- Free kit for each school.
- £60/£30 prizes for the best reports. (Primary and Secondary)
- Do any of the three experiments.
- Teams of up to 5 pupils can enter the competition.
- Teachers to send results to dave.craig@prosper.scot **before the end of term: Tuesday 2nd July**.

A good report is brief, well-presented, and accurate with numbers.

Use diagrams, sketches and photographs. Hand-written or typed - or use spreadsheets. If you use a micro:bit, include your code

Free kit for each school, including a micro:bit temperature sensor, battery box and leads. Ask dave.craig@prosper.scot with a note of approximate class size, and whether you need a v2 micro:bit as well as the leads.

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