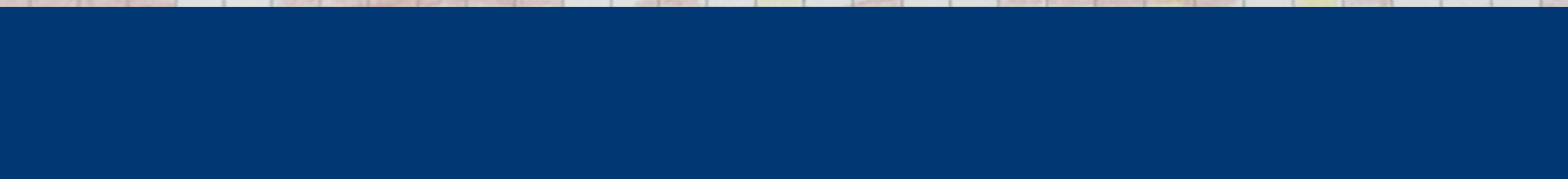
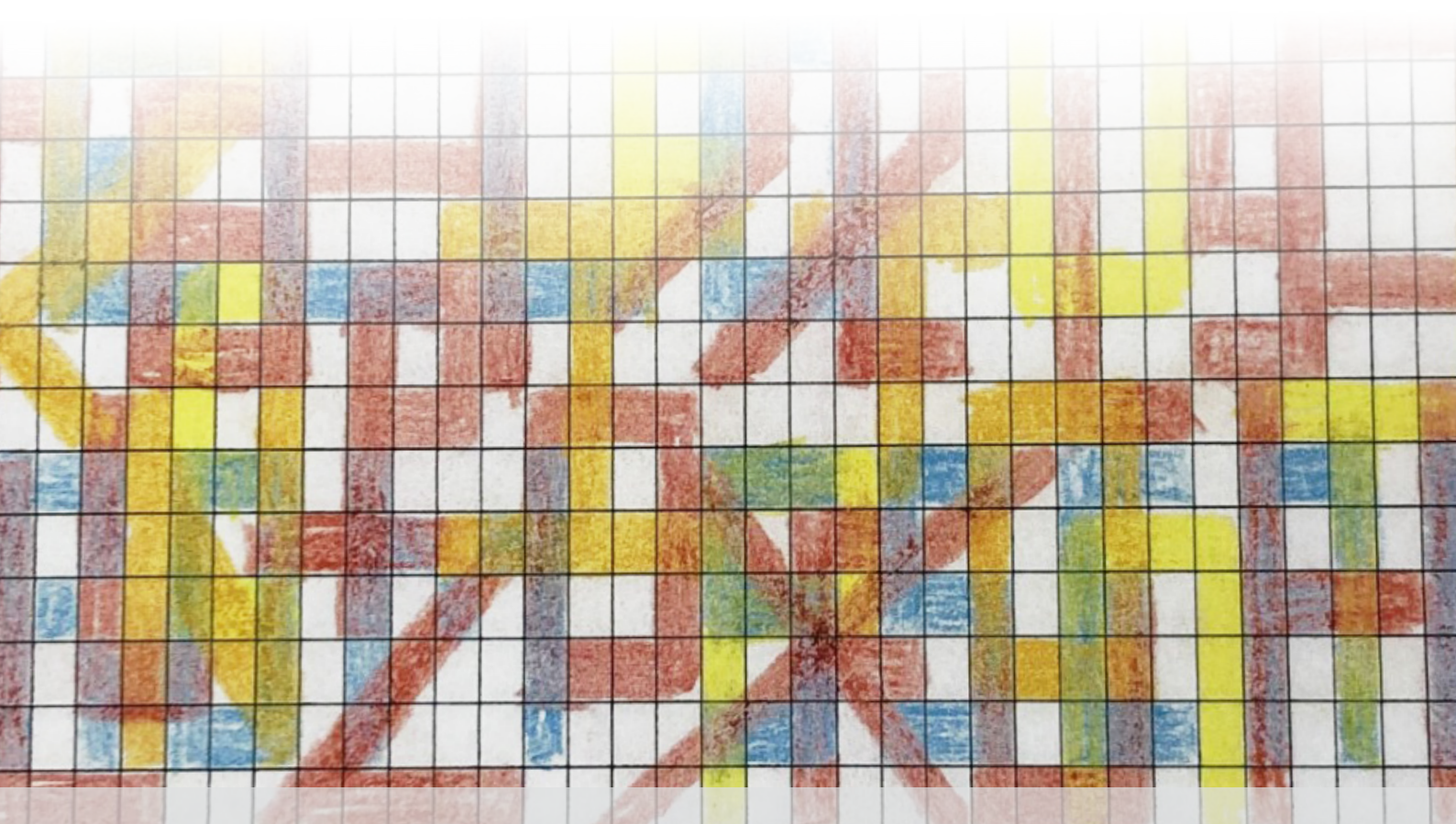


# early years & primary STEM bulletin

Ideas and inspiration for for primary teachers and early years practitioners

> Get the message?	2	> Great Science Share 2021	14
> Five reasons to start the Young Stem Leader Programme in your centre	8	> STEM Ambassadors in Scotland week	15
> Explorify at home: supporting science teaching during school closures	10	> Treehouse - a fun digital solution to support mental health & wellbeing of pupils and staff	16
> Starters for science	11	> Vexcode VR	18
> Whistlestop Science Weeks	12		



# Get the message?

Secret messages or ciphers have been used throughout history to disguise communications for many different reasons. In this bulletin we will explore a variety of ways in which you can encrypt and decode messages and outline the links to Curriculum for Excellence.

Once learners have explored the different methods of concealing and revealing their own messages, they could suggest applications for use in class. For instance: to decode a punchline to a joke, find the answer to question, a clue to a treasure hunt or the answer to an “escape room” type challenge.

## Cracking the Code

### The Caesar Wheel Cipher

This is one of the earliest known ciphers, it is a simple substitution cipher and named after the Roman emperor Julius Caesar – apparently he used this method to send encrypted messages to his generals.

One larger and one smaller circle of paper or card – each with 26 sections marked on their outer edge (Figure 1) are placed together so they can rotate easily (a paper fastener is ideal to join the two circles together). For a template visit [Bletchley Park | How to Make a Caesar Wheel](#).

Write the letters of the alphabet A-Z around the outside of the larger wheel (one letter in each section) then repeat for the inner circle, but this time use lower case a-z.

To produce a code you need to pick a “key” – this will allow your code to be deciphered by your partners – to select a key rotate the inner disc so that you match up two different letters. The choice is yours – for example you might line up A and f – like we have.

Now write your message, substituting the letters in your words for the corresponding letters on the inner

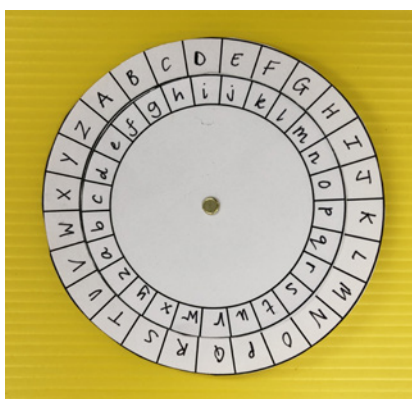


Figure 1 - Caesar Cipher Wheel.

wheel. You could leave a space between each word when you write your message.

To decode the message your partner will need an identical copy of the wheel (or be able to access yours) and you will need to share the key i.e. the unique pairing you used to create the code – once they have the key they can decipher your message.

Can you read this message using the A = f key? The wheel in Figure 1 is set up for decoding this message.

**mjqqt kwtr xxjwh**

There are lots of ways to substitute one letter for another, substitute letters for numbers or even symbols. You could add extra sections onto the wheels to allow you to include punctuation marks or include a symbol to indicate a space. Learners could easily come up with their own ideas – the important thing is to be able to share the method for decoding the message with others. Remember not to leave the letters lined up on your wheel if you want to keep the message a mystery to those without the key!

When thinking about breaking codes in real life situations we often think about wartime applications – one of the most famous places in the UK is probably Bletchley Park. Although their work was kept secret for many years, the code breakers working at Bletchley Park (including Alan Turing) were able to decipher many messages, including those encoded by the German’s Enigma machine. The Bletchley Park code breakers have been credited with shortening the Second World War by a number of years and their work enabled a leap forward in modern computing. The Bletchley Park website has a range of learning resources and offers a virtual tour [Bletchley Park | Learning](#).

Another very useful method of encryption and one that can be replicated easily in the primary classroom, is Morse Code. This famous code replaces letters in the alphabet with a sequence of dots and dashes (Figure 2). By constructing a simple circuit with a switch and bulb (or buzzer) learners can send messages to each other (Figure 3). Morse Code was developed by Samuel Morse and Alfred Vail – the first message being sent in May 1844. >>

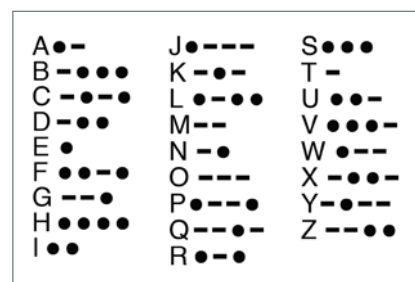
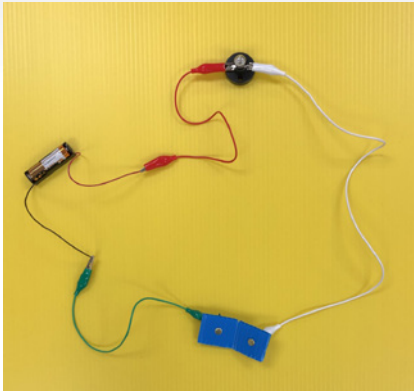


Figure 2 - Morse Code + letters (image: bp.blogspot.com).

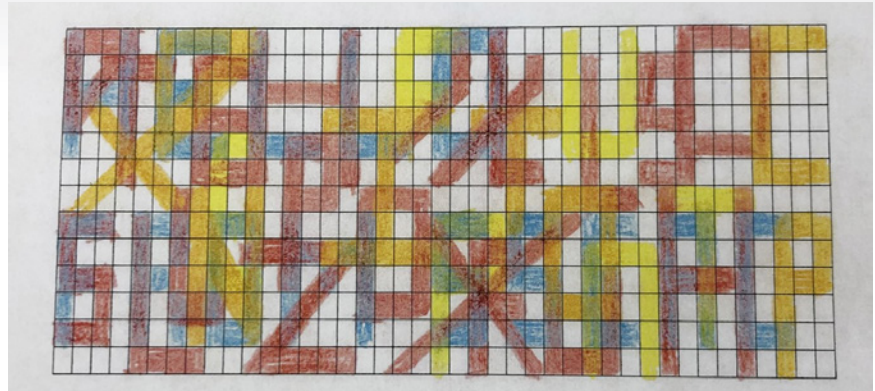




**Figure 3** - Circuit, including a simple switch, for sending Morse Code messages.

Morse Code has been used in wartime communications and military campaigns, as well as in shipping and transportation. RMS Titanic used Marconi wireless to send messages via Morse Code. The Primary Science Teaching Trust (PSTT) have a book and resources based on [Titanic Science | Primary Science Teaching Trust](#). Here you will also find some videos SSERC produced to support this resource.

Encryption methods are used in everyday life to make our interactions and transactions secure and confidential – whether you are browsing the web, shopping on-line, withdrawing cash from an ATM, using a credit card, storing photos and videos, making a call, sending a message or using social media – encryption will be used to try to make these transactions as safe and secure as possible ([How the modern world depends on encryption - BBC News](#)).



**Figure 4** - A mystery message – can you read it?

### Filter Fun

One way of using light in a creative way is to make a mystery message that can only be read using a coloured filter. At first glance the paper seems to show many different colours – it is hard to see any message (Figure 4). However, once a piece of red cellophane, or a filter, is placed over the paper the message is revealed (Figure 5).

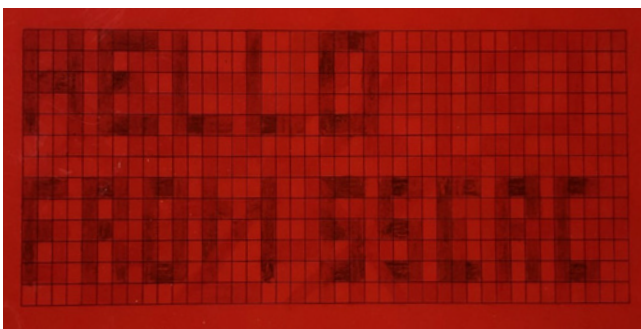
How does this work? The message is written in blue and then disguised with red based pigments (red, pink, orange) in a pattern designed to break up the outline of the message. When the red filter is placed over the paper red light passes through the filter, but other colours – like blue – do not. Blue light from the message does not pass through the red filter and appears darker – thus revealing the hidden words! Watch the video on SSERC TV [here](#) to show you how to make this type of mystery message.

### You need:

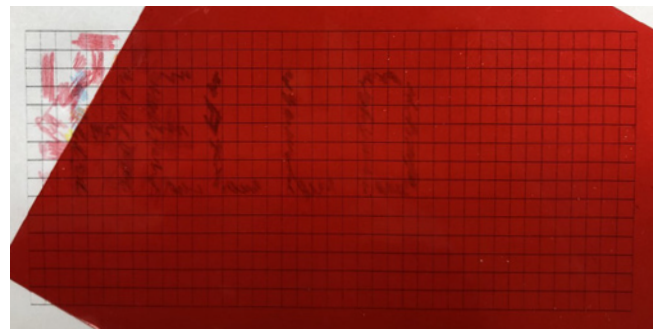
- Blue colouring pencils (for the message).
- Red, pink, orange, yellow pencils (to disguise the message).
- A piece of red cellophane – you could try using sweet wrappers or try colouring a small piece of transparent plastic using a marker pen.
- Paper – we found it easier to use squared paper to write and disguise the message.

First, experiment on a small scale to find out which combinations of colours work best with your filter or cellophane.

Once you are ready write your message in blue colouring pencil – try using the lines of the grid to help you (Figure 6). Now disguise the message using red, orange, pink and yellow colours. Make sure you break up the outline of the message with >>>



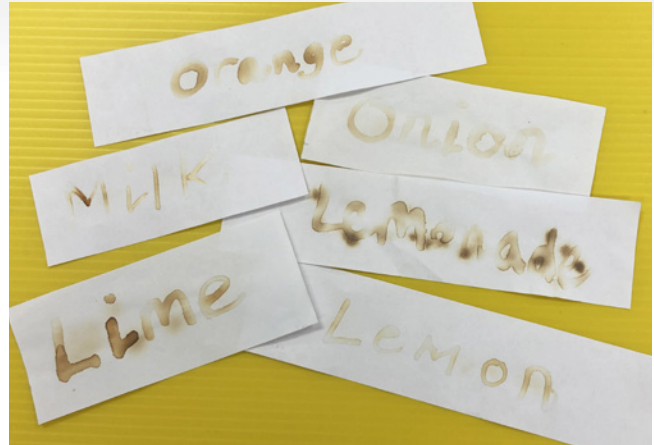
**Figure 5** - Message revealed with a red filter - Hello from SSERC!



**Figure 6** - A grid helps to break up the letters of the message.



**Figure 7** - Tray with sand, tealight and metal tin.



**Figure 8** - Messages revealed, written in orange, onion, lime and lemon juice, lemonade and milk.

a mix of lines and shapes, you can even write letters over the top of the blue letters in red, pink, orange and yellow to really obscure the original message. It can help to leave parts of the sheet uncoloured. Be aware that photocopying the disguised message doesn't always result in a successful outcome.

Provide a red coloured filter or piece of cellophane for the recipient to use to read your message. We found that writing the message in blue and covering it with red based colours worked best, using a red filter to reveal the message. Feel free to try other colour/filter combinations but always try out on a small scale to make sure your combinations of colours work before embarking on a massive missive!

### Chemical Correspondence

A few other ideas for secret messages rely on some principles of chemistry and link with CfE Sciences, specifically the materials organiser. In this activity we explore the properties of materials and use chemical changes to reveal a message using different "inks".

### Juicy Jottings

This activity has been around for a long time, but it is still amazing to see it in action!

### You will need:

- A small volume (around 20 ml) of a range of liquids – for example milk, lemon juice, lime juice, distilled white vinegar, lemonade, water.
- Cotton buds, fine paintbrush, toothpick, a clean twig or feather - to use as a pen.
- Strips of paper – standard photocopying paper works well.
- Tealight and lighter.
- Metal tray with a layer of sand.
- Small metal tin e.g. a 142 g tomato puree tin emptied and washed out. We cut the top and bottom of the tin off and made sure there were no sharp edges.

Cut the strips of paper so they are slightly narrower than the diameter of the tin you are using – ours measured 21 cm x 4 cm. This means that oxygen can still reach the flame even when you hold the paper over the tin.

Take a strip of paper and write a short message using one of your inks. You can use a cotton bud, fine paint brush, a clean twig or feather as a pen. Make a separate message using each ink. You might want to write on the corner of each piece of paper the ink that you used, so that you can compare the different results. Use a different cotton bud for each ink or wash your "pen" between inks.

Leave the message to dry – once the ink is dry the message should be hard to read. Watch a video clip of this activity [here](#).

To reveal the message, place the tea-light on the sand filled tray, light it and place the tin on top – to act like a funnel (Figure 7). Make sure the wick of the tealight is long, we found it best to use a new tealight. If the tealight wick was too short it took a very long time to reveal the message.

Hold the paper by the edges so that the part of the paper with the message on is over the heat given off by the flame. Before too long the message will appear, as the paper you marked starts to turn brown in the heat of the flame. Learners might wish to write a "fake" message in pencil and write the hidden message between the lines in the invisible ink – only to be revealed when heated. We experimented with different liquids and found that those liquids that are acidic produced a good result (Figure 8). Using water alone did not produce any result. You can see this activity in action [here](#).

The acidic liquids damage the cellulose fibres of the paper. When the paper is placed in the heat of flame the damaged parts change >>>

colour before the undamaged paper fibres – thus revealing the message (Figure 9). This change is an irreversible chemical reaction.

See our additional safety advice for heating and burning. We found the use of the small tin meant that the paper did not ignite easily, plus the coating of the tin keeps the metal cool.

### Red Cabbage Reveal

Many chemistry fans will know that red cabbage acts as an indicator – changing colour when coming into contact with chemicals of differing pH. This change in colour can be used to reveal a secret message and learners can explore and make predictions while finding out about more about the chemicals around us.

Make up some “invisible ink” to use to write a message. We suggest trying some of the following as separate inks – lemon juice, lime juice, vinegar, milk, water, bicarbonate of soda mixed with water or transparent liquid soap.

Write a message using your chosen ink onto paper – you can use a cotton wool bud, fine paintbrush, clean twig or feather to write your message. Leave the message to dry.

Make up some red cabbage indicator by adding hot water to finely chopped red cabbage leaves and

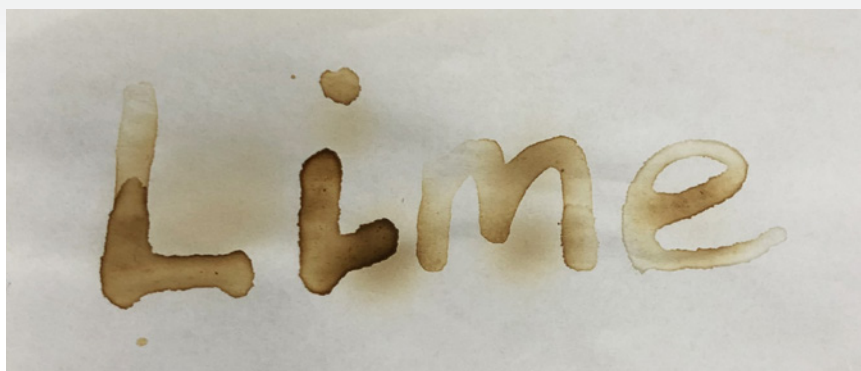


Figure 9 - Message written in lime juice, revealed with the heat from a tealight.

leave to cool – you will find the water goes a deep purple colour. Strain off the liquid. You will need to use the indicator fairly quickly as it will start to smell quite unpleasant after a day or two, however you can freeze the indicator for use later. We have a video clip explaining how to prepare red cabbage indicator [here](#).

Take your secret message and paint the indicator over the surface – you should see the message appear in a different colour against the purple background (Figure 10). The colour of the message depends upon the pH of the liquid used. We got the best results using inks made of either lime juice, milk or bicarbonate of soda (we mixed a teaspoon of bicarbonate of soda with 20 ml of water). Learners might observe a difference in the colour revealed, depending on whether the liquid “ink” was acidic or alkaline.

### Safety advice

When investigating with indicators ensure any household chemicals provided are safe to use – avoid bleach, washing soda, dishwasher and washing tablets/gels/powders and oven cleaners.

### Curcumin Code

Another idea for a secret message, linked to chemistry, uses turmeric as an indicator. Curcumin is the key chemical component in turmeric – its chemical structure alters when in acidic and alkaline solutions. In acidic solutions it retains the familiar yellow colour, but when in contact with alkaline solutions (above pH8) it appears red or orange (Figure 11).

To write the message we used bicarbonate of soda mixed with water (to make an alkaline solution of sodium hydrogen carbonate) >>



Figure 10 - Message written in lime juice revealed using red cabbage indicator.



Figure 11 - Message written in bicarbonate of soda and revealed using turmeric.





**Figure 12** - Message written in milk and revealed with carbon powder from a pencil.



**Figure 13** - Message written in wax and revealed using water colour paints.

as the ink. You could use a cotton wool bud or paintbrush to write the message.

Curcumin is insoluble in water, so a small volume of alcohol is required to form a solution. Care is needed when using alcohol in the primary classroom. We used surgical spirit (obtained from a local pharmacy).

#### Safety advice

Undiluted Surgical spirit is flammable and so should not be used near any source of ignition e.g. a flame. Surgical spirit is also harmful if swallowed, so the age, stage and maturity of the learners should be taken into account if you are planning to carry out this activity. Check the label on the bottle. Close adult supervision is required and the surgical spirit should always be stored away from learners, in a safe place to prevent unauthorised access and away from sources of heat. Please contact SSERC if you need any further advice.

We used half a teaspoon of powdered turmeric and added a teaspoon of surgical spirit to form a solution, then we added four teaspoons of water to the solution to dilute the alcohol and reduce the hazard.

Brush the turmeric solution over the paper to reveal the message. Learners might like to try using lemon juice as an “ink” next, explaining any differences in the results. Rinse any of the unused turmeric solution down the sink with plenty of water. You can watch a video clip of this activity [here](#).

#### Milky Message

Using full-fat or semi-skimmed milk write a message on plain paper using a paint brush or cotton wool bud. Let the message dry completely. Once the message is dry, take some sandpaper and rub it over the sharpened end of a pencil, allowing the graphite (carbon) powder to fall onto the paper. Gently rub the graphite powder over the message to reveal the writing using a cotton wool ball or paper towel (Figure 12). The water evaporates from the milk as it dries, leaving some of the fat content behind on the paper, the fine graphite powder sticks to these areas and reveals the hidden message - you can watch this activity [here](#).

#### Waterproof Words

This message uses paraffin wax to waterproof sections of paper. When water-colour paint is applied to the paper the parts coated in wax resists the water and the message is revealed.

Use a white candle or tealight to write a message on a sheet of paper. Paint over the surface of the paper with watercolour paints to reveal the message (Figure 13) - you can see the message revealed [here](#).

The wax makes the paper resistant to water – learners might like to suggest other materials that are waterproof and could research the work of inventors like Charles Macintosh – the Primary Science Teaching Trust (PSTT) has a free to download resources based on the work of this Scottish inventor.

#### Make your Mark

Take two pieces of paper (we used two pieces of A5 white paper) dip one of the pieces of paper into a bowl of cold water. Place the wet piece of paper underneath the dry piece of paper. Leaning on a hard surface use a pencil to write your message on the dry paper.

Discard the top piece of paper and allow the wet paper to dry out – the message will no longer be visible. When you are ready to reveal the hidden message, dip the paper back into the water and the message will appear as the water saturates the original indentations made by the pencil - you can watch this happening [here](#). >>

### Safety advice for heating and burning materials

- Heating and burning materials can provide opportunities for learners to observe and explore chemical change at first hand. However, there are certain precautions that you should consider when planning this type of activity.
- Always take into account the age, stage, maturity and experience of the learners and provide appropriate adult supervision at all times.
- Check that surroundings are clear of obstructions and the activities take place well away from flammable materials - for example artwork on walls.
- Ensure there is a clear route to the fire exit.
- Learners should stand up when heating materials so that they can move away from the area safely.
- Learners should have long hair tied back and loose clothing tucked in.
- Learners should not walk around with hot or burning materials or lean across areas where heating or burning is taking place.
- Use a tealight as a source of heat – tealights are much more stable than a candle.
- Heating and burning activities should take place over a metal tray of sand to enable learners to place burning items safely onto this non-flammable surface. Make sure the sand tray is large enough to allow pupils to place the burning/heated samples on the sand.
- An adult should light the tealights and always store matches or lighters away from learners.
- Check location and operating instructions for classroom fire extinguisher.
- Ensure that materials are not heated directly under heat sensors – ask for advice when planning the activity.
- If burning materials as part of an investigation do not burn synthetic fibres – as harmful fumes may be produced.
- Only heat or burn small pieces of the material being investigated. You should use tongs to hold the material.
- Allow materials to cool before clearing up. Do not touch hot equipment or objects. Be aware that metal tongs may not appear hot.
- Ensure you and the learners know what to do if a burn to the skin is sustained.

### CfE Experiences & Outcomes

- Through creative play, I explore different materials and can share my reasoning for selecting materials for different purposes - *SCN 0-15a*.
- Through exploring properties and sources of materials, I can choose appropriate materials to solve practical challenges - *SCN 1-15a*.
- By contributing to investigations into familiar changes in substances to produce other substances, I can describe how their characteristics have changed - *SCN 2-15a*.
- I have collaborated in activities which safely demonstrate simple chemical reactions using everyday chemicals. I can show an appreciation of a chemical reaction as being a change in which different materials are made - *SCN 2-19a*.
- By exploring reflections, the formation of shadows and the mixing of coloured lights, I can use my knowledge of the properties of light to show how it can be used in a creative way - *SCN 2-11b*.
- I can recognise a variety of materials and suggest an appropriate material for a specific use - *TCH 1-10a*.
- I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task - *TCH 2-10a*.
- I can compare aspects of people's daily lives in the past with my own by using historical evidence or the experience of recreating an historical setting - *SOC 1-04a*.

# Five reasons to start the Young STEM Leader Programme in your centre

The Young STEM Leader Programme is being delivered to learners in over 200 primary schools in Scotland. In completing the programme, young people plan and lead STEM activities, events and interactions to others, developing important skills and consolidating STEM knowledge in the process. As a curriculum-linked leadership award using STEM as a context there are lots of opportunities to make a real impact in improving STEM capital by delivering the award.



Young STEM Leaders in Primary 6 (rear) at Dalmarnock Primary School leading a STEM activity to younger pupils (front).

Here are some of the reasons that you should start delivering the programme in your school.

## 1) Your whole school will benefit

Despite being a leadership opportunity for a particular cohort of young people, Young STEM Leaders will be involved in delivering STEM-based activities, events and interactions to their peers and other pupils in your primary school. The participants will benefit in extra STEM learning beyond the classroom, making STEM even more accessible and relevant to them when delivered by peer role models. The Young STEM Leader Programme can be a vehicle for improving STEM awareness and appreciation across the whole school and wider learning community.

## 2) Links to existing frameworks

Young STEM Leaders in primary schools usually complete YSL2 or YSL3, linked to Curriculum for Excellence Second and Third Levels. As well as linking to the Scottish Government's Strategy for STEM Education and Training, the programme makes explicit references to Learning for Sustainability, the Career Education Standard and Skills 4.0, allowing it to fit in with your existing teaching. Your associate secondary school may also be delivering a higher level of the programme which makes Young STEM Leader a great vehicle for collaborative, STEM based transition projects. Additionally, if YSLP seems similar to projects your learners are already working on, the badges or levels can be "auto-awarded" through consultation with SSERC.

## 3) Building leadership and communication skills

By becoming a Young STEM Leader, pupils can be in charge of their own learning in a creative and fun way, building towards leading a STEM activity, event or interaction that interests them and that they can be proud of. YSLs will gain valuable skills in confidence, communication, employability and resilience and, in the process, they will consolidate knowledge and understanding of STEM concepts.

## 4) Professional Learning opportunity for staff

Becoming a Tutor Assessor for the Young STEM Leader Programme is a great networking opportunity for teachers and practitioners. After >>



completing a short two-hour Tutor Assessor training session, you will gain access to a wide variety of resources and networks to support you in delivering the programme. Running YSLP in your school is a great way to improve staff confidence in leading STEM learning. Building these relationships with SSERC and beyond will open up new opportunities for your learners.

### 5) It's free!

The Young STEM Leader Programme is funded by the Scottish Government and all professional learning, training and resources are provided free of charge to schools and community settings across Scotland.

### Drawing stereotypes

One of the key themes of the Young STEM Leader Programme is challenging stereotypes, misconceptions and outdated views in STEM. This short activity is adapted from the Young STEM Leader Activity Pack, a resource pack that trained Tutor Assessors



Young STEM Leaders at St Marnock's Primary School leading a lesson to younger pupils dressed up as famous STEM people in history, including Marie Curie and David Attenborough.

can use to support delivery of the award. It is a great way to open up discussions surrounding stereotypes and kick start the Young STEM Leader award.

- Ask your pupils to draw or describe images of different STEM jobs, for example: pilot, nurse, builder, engineer or scientist.

- After sharing their drawings or findings, identify any similarities or themes that are being represented, for example:
  - Are these drawings based on any stereotypes, misconceptions or outdated views like gender, race, culture, class or age?
  - Do any of these stereotypes exist in our school?
  - Why are stereotypes a problem?
  - Could these stereotypes be challenged?
- You may then wish to ask pupils to research inspirational people in STEM that have challenged some of the stereotypes that were discussed at a local, national or international level. <<



A Young STEM Leader (left) at Moorfoot Primary School leading a paper plane challenge with early years pupils.

### Find out more

[www.youngstemleader.scot](http://www.youngstemleader.scot)  
[youngstemleader@sserc.scot](mailto:youngstemleader@sserc.scot)  
 @YoungSTEMLeader

# Explorify at home: supporting science teaching during school closures



Explorify, the award-winning, free digital resource for science teachers from the Wellcome Trust is here to help during this difficult period of school closures.

Explorify at home is a special series of science activity collections for children who are now learning at home. Based on the primary science curriculum, it is designed for teachers to share with parents and carers to do with their learners at home. The specially-selected activities are available without needing to create a login, so are easily accessible for all.

In each activity collection, we define activities by age and curriculum topics, but these collections are also suitable to do all together as a family of mixed-aged children. Or if your little scientist just wants to explore further, pick something from the other age sections for inspiration!

There are 11 activity collections linked to the primary curriculum and two bonus collections. Explore the natural world with collections on [Plants](#), [Habitats](#), the [Human body](#), [Classification](#) and [Fossils and evolution](#). Materials are covered in two collections, [Materials and their uses](#) and [Materials and their properties](#). And the physical world is covered by the [Sound](#) collection and the [Light](#) collection, by [Forces](#) and by Earth, seasons and time.

As a bonus, we have also created two collections to get your learners outdoors. Robbie Kirkman put together a wonderful collection on [Learning outdoors - living things](#), and our most recent collection, published to coincide with the RSPB's Big Schools' Birdwatch, is on [Birds](#).

## #ScienceFromHome

The Explorify team is proud to have been involved in promoting the [#ScienceFromHome](#) campaign, which has support from our colleagues across the primary science community. We regularly post simple and thought-provoking questions and science challenges that can be undertaken by children wherever they are, with everyday objects at home or just by taking a walk outside.

## What else is available?

[Explorify at home](#) and [Science From Home](#) have simply added to the core offering from Explorify: our collection of primary science activities that help teachers spark pupils' curiosity and to develop their thinking skills. Explorify now houses over 400 activities, with more being added each month. Once you have signed up (for free!) all of the activities are quick and easy to use and can slot into lesson plans for science or even be interspersed with other subjects (they're that fun!). >>

Image credits: Shadow Puppets by Klevo via Shutterstock SL. Rainbow by Paweł Fijałkowski, Prism by Dobromir Hristov from Pexels.com



## Support for teachers on Explorify

As well as the activities, there are a number of resources available on Explorify's website to support primary teachers and science subject leaders in their professional journey. The [blog](#) provides regularly updated posts on teaching ideas and links to resources and CPD, the [teacher's](#)

[toolkit](#) is a source of useful resources for teachers to download and use in class and the [science leader toolkit](#) provides guidance and resources on how to lead science successfully.

There's no better time to have a look at the product and make the most of the resources there to support science learning in your school.

Get involved, sign up, and share the love of science with your class today!

<https://explorify.wellcome.ac.uk/>

Teachers can join the [Explorify Staff Room](#) and all can follow us on [Twitter](#) or [Facebook](#).



# Starters for Science

Starters for Science is a series of five-minute videos to support teachers to get started with practical science enquiry.

They require minimal resources and can be used in school or at home. This means that teachers can do science enquiry with a class and any children who are at home can do the same lesson.

Each video is presented by a PSTT Fellow and includes:

- A question or scenario related to the real world
- Time for children to think about what they already know
- A demonstration of a starter practical activity
- Time for children to think of their own questions
- Ideas about what they could find out for themselves
- Encouragement to share what they found with others



The videos are intended to give children valuable practical experiences that they will then be able to draw on once they meet the relevant concepts in a more formal learning situation. As such, they are not age specific, nor directly aligned to any particular curriculum unit.

The videos are all available to watch on the [PSTT website](#). An overview of the video content and resources needed, and some supporting notes for teachers (including some of the science behind the video starters) are also available to download. Both

these documents, and the videos themselves are also available in Welsh language versions.

For further information, please visit <https://pstt.org.uk/resources/curriculum-materials/Starters-for-Science>.

Starters for Science were created by PSTT Outreach Director, Ali Eley and PSTT Regional Mentor, Kate Redhead.





# WHISTLESTOP SCIENCE WEEKS

Ready-to-go mini science events to liven up lockdown



Whistlestop Science Weeks are:

- \* **ready-made themed daily suggestions** for short science activities, questions and challenges that children can do at home or in school
- \* **completely adaptable** – schools can choose to:
  - do a whole week or just a day
  - switch the days round
  - add or swap in some of the additional activities
- \* **science conversation starters** for children, their parents, carers and families

## WHISTLESTOP SCIENCE WEEK THEMES – CHOOSE FROM:

PAPER	BUBBLES	SPACE
ICE	TIME	COLOUR
MUSIC	OCEANS	SPORT

Click [here](#) to download the theme sheets or visit [www.pstt.org.uk/resources/curriculum-materials/Whistlestop-Science-Weeks](http://www.pstt.org.uk/resources/curriculum-materials/Whistlestop-Science-Weeks)

What science conversations will happen during your Whistlestop Science Week? Why not share them @pstt\_whyhow or at the [Great Science Share for Schools?](#)



# WHISTLESTOP SCIENCE WEEK



A ready-to-go mini science week based on **paper**

	ACTIVITY	DETAILS AND LINKS TO RESOURCES
MONDAY	<b>Investigate</b> the strength of different shapes	PSTT's Starters for Science Video 1. <b><u>Paper Towers</u></b> <a href="http://www.pstt.org.uk/resources/curriculum-materials/Starters-for-Science">www.pstt.org.uk/resources/curriculum-materials/Starters-for-Science</a>
TUESDAY	<b>Question</b> of the week: Which paper is best for ...?	Set the question - Tell the children that they can decide what they mean by 'best', e.g. they could explore what kind of paper is best for: Wrapping a present? Mopping up a mess? Writing a letter? Encourage them to explain what they think and how they decided.
WEDNESDAY	<b>Challenge</b> of the week: Build the tallest paper structure	Set the challenge - What is the tallest structure you can build using only newspaper, magazines or other waste paper? Encourage them to measure the height and take a picture to share.
THURSDAY	<b>Explore</b> Paper and Friction	PSTT's Starters for Science Video 5. <b><u>Falling Paper</u></b> <a href="http://www.pstt.org.uk/resources/curriculum-materials/Starters-for-Science">www.pstt.org.uk/resources/curriculum-materials/Starters-for-Science</a>
FRIDAY	<b>Make and test</b> a paper spinner	PSTT's Science Fun at Home 2. <b><u>Spinning Science</u></b> <a href="http://www.pstt.org.uk/resources/curriculum-materials/Science-Fun-at-Home">www.pstt.org.uk/resources/curriculum-materials/Science-Fun-at-Home</a>

## WHAT TO DO

- \* **Choose your activities** - for the week, for a day, or for anything in-between
- \* **Add or swap** in any extra activities from the list overleaf
- \* **Download the resources** and share with teachers, children and families

**Encourage the children to share what they have been doing and finding out**

*draw pictures, take photos, make voice recordings, film videos, create a scrap book, keep a diary, make a model, phone a friend or relative*



# Great Science Share 2021

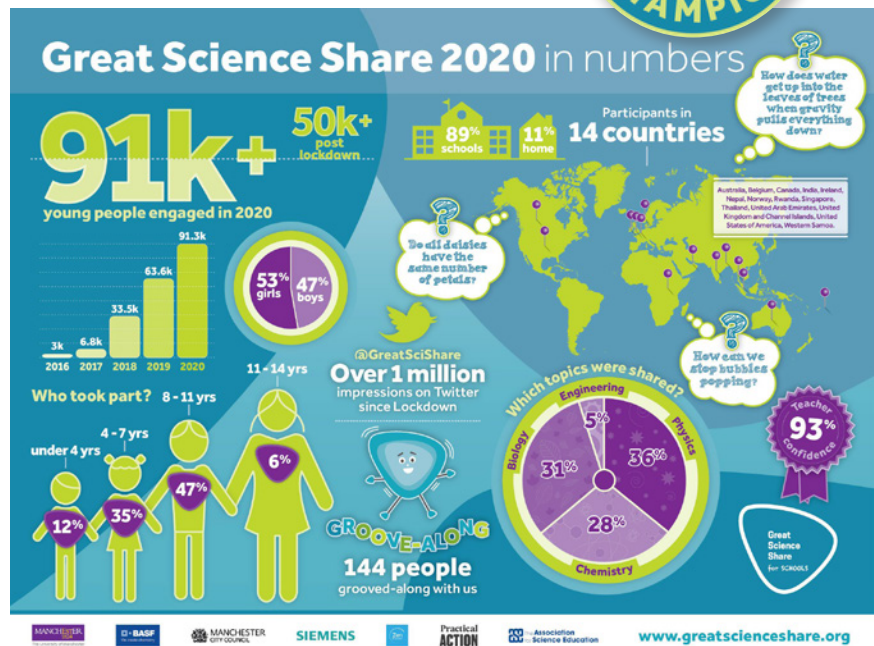


SSERC is delighted to be one of the Great Science Share for Schools Regional Champions for Scotland in 2021 – working alongside Jayne Quoiani, Education & Engagement Officer at Roslin Institute, University of Edinburgh.

The formation of this new network of GSSfS Regional Champions stems from the amazing growth of this award-winning annual campaign (see info graphic). GSSfS invites 5-14 year olds to share their own scientific questions and investigations, to raise the profile of science in schools and communities and inspire young people into science and engineering.



SSERC has long been a supporter of GSSfS. The live SSERC\_Meets, led by the fabulous STEAM Team at Thornton Primary in Fife, proving a bit hit with learners around Scotland. You can watch a recording of last year's live lesson online [here](#).



Once again GSSfS has an action-packed programme of events leading up to the culmination of this year's campaign on 15th June 2021, with weekly themes, live lessons and the chance to get creative! The GSSfS theme for 2021 is climate change.

You can find out more about support for GSSfS in Scotland on pages 24 and 27 of the recently published edition of ASE Primary Science [here](#) (Figure 1).

New for GSSfS this year is a series of professional learning webcasts for science educators – some of you might even recognise one or two of the presenters!

To get involved register at The Great Science Share for Schools and follow on Twitter to keep up to date with the latest news @GreatSciShare, @SSERCprimary and @EBSOClab.<<

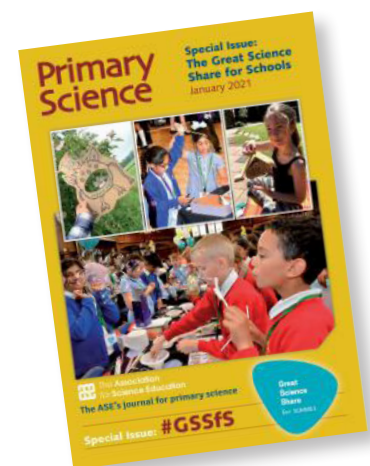


Figure 1 - ASE Primary Science edition [1].





# STEM Ambassadors in Scotland Week

STEM Ambassadors in Scotland Week – a celebration of STEM in Scotland – took place 1–5 February 2021 and involved over 60 STEM Ambassadors from across the country. The three Scottish STEM Ambassadors Hubs wanted to use this week to showcase the amazing and innovative careers and opportunities available to young people. Over 180 schools registered to take part in the event.

Even though the week is over the resources will always be available to school to access whenever they need them.

## Celebrating Scotland videos

Learn more about the amazing, innovative and unique STEM projects, careers and industries happening across Scotland with our Celebrating Scotland videos aimed at Second & Third level pupils.



There are 17 videos in total spanning a wide variety of topics, each around three minutes in length. There is also an accompanying activity sheet with suggested tasks and questions. You will find the videos and activity sheet [here](#).

## Careers carnival

A series of sector focused recorded presentations followed by Q&A. Each presentation is from a STEM Ambassador about their career journey and lasts around 5 minutes. All videos are around 30 minutes, but it's easy to watch a single presentation to suit you.

These videos were aimed at secondary-aged pupils, but some videos will be suitable for older primary pupils. You can watch the videos [here](#).

STEM Ambassadors are volunteers from a wide variety of STEM backgrounds and are available to support your STEM activities online and in-person (when appropriate). Register as a teacher on the STEM Learning website [here](#) to access STEM Ambassadors as well as free resources. You can also download the Teacher Handbook [here](#) to help you get started. <<



# Treehouse - a fun digital solution to support mental health & wellbeing of pupils and staff

With the continued uncertainty for nursery & primary school staff, teachers, pupils and parents, it's becoming clear that children and adults alike are feeling the effects of social isolation. Increased anxiety, loss of confidence or deteriorating mental wellbeing - both children and adults need a more nurturing than ever before.

That's where Treehouse comes in! Designed by the team of psychologists, teachers and motivation experts at Tree of Knowledge, it's a fun digital solution to support the mental health & wellbeing needs of staff and pupils. Jam packed with age-appropriate modules, it covers everything from self-confidence, helping others, emotional intelligence, resilience and managing negative feelings, in a digestible, engaging, and simple-to-use format.

Whether you are a hub school, or managing distanced or blended learning, this intuitive platform can be used within a classroom or by pupils as home learning, homework or extra-curricular study. Treehouse works alongside GLOW, Microsoft Teams, and other online platforms.



SSERC will be hosting Treehouse demos this year with more information coming soon – if you'd like to learn more in the meantime, email [happy@treeof.com](mailto:happy@treeof.com).

## TREEHOUSE FAQs

### Who is Treehouse for?

Treehouse is for pupils and staff of primary schools, secondary schools and nurseries.

### Does it support the curriculum?

Treehouse has been designed to support schools to deliver a wide range of the Curriculum for Excellence: Health and Wellbeing Experiences and Outcomes.

### What themes does it cover?

Treehouse covers a range of topics, but focuses mainly on developing resilience, mental health & wellbeing, self-confidence, kindness & empathy, inspiration, motivation, creativity and nurture. It's a lot of fun, and we hope that it will help your pupils and staff rediscover that "wee piece of magic".

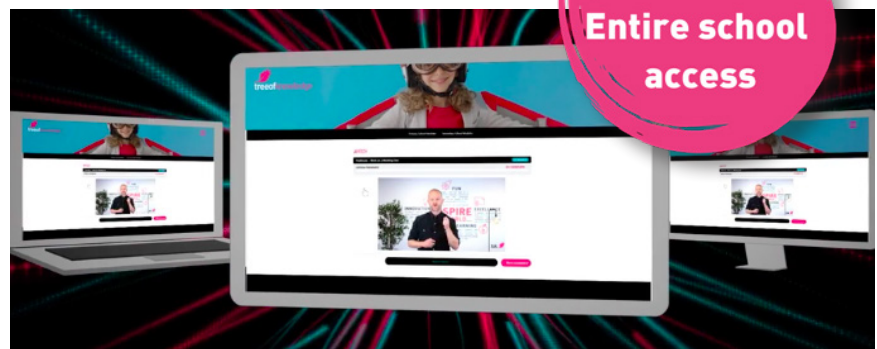


### How does Treehouse work?

Treehouse is an online education platform which is built using a learning management system called Learn Dash. This system is used and trusted by companies, universities and training organisations all over the world. Once you sign up to Treehouse, there is a simple process to create log-ins for all of your staff and pupils. Your whole school will then have access to 50+ educational modules specifically designed to support the mental health, wellbeing and soft skills development of your pupils and staff. Better still, with new modules being added throughout the year, skills will just keep on developing. Modules will include a combination of video, reading and writing tasks. >>

£499

Entire school access



### Can this be used in the classroom?

Yes. This has been designed with ultimate flexibility in mind. It can be beamed onto whiteboards or projected onto screens, as well as used on laptops or PCs. It can also be used for independent learning or in groups to stimulate discussion.

### Can this be used for blended learning?

Yes. Like you, we're not sure what's going to happen over the next wee while, so this platform can be used at home, by pupils, and in the classroom. It's been designed with ultimate flexibility in mind.

### Does it track progress?

Yes. Each pupil will have their own log-ins and can be assigned to a "class", and teachers will be able to see how their pupils are progressing through the modules.

### TREEHOUSE Use Cases

As we talk to schools, we're learning more about how TREEHOUSE is being used. We want to share ideas, to inspire you to get the most from it!



Photo: Max Fischer / Pexels.com

#### Classroom

Whether it's on individual screens, in small groups or projected onto a screen or board, TREEHOUSE can form parts or, or full lessons, hitting key topics from the Curriculum for Excellence: Health and Wellbeing Experiences and Outcomes. The activities can be done individually and then discussed within a group setting.

#### Peer-to-peer

TREEHOUSE can be used as a resource to be delivered by Mental Health Ambassadors to other pupils. All of the modules include an introduction, an activity, and a discussion - they're a great resource to help pupils build confidence in delivering content and facilitating discussion.

#### Self-isolating

For self-isolating or vulnerable pupils, TREEHOUSE can be a lifeline and crucial support for mental health to combat loneliness. Teachers can set the work and track the progress of each pupil, plus it's a great way to start difficult conversations with pupils who may be struggling.

#### Staff wellbeing

TREEHOUSE directly addresses the current need for support for staff wellbeing during this unprecedented time. Staff modules offer time for reflection, gratitude and reignite the passion. It will also help them to unpick stress and anxiety, to help them to understand and handle negative emotions. <<

#### At home

TREEHOUSE can be used for homework or can be used from home as part of a blended learning approach. This can be done with the support of parents (for Primary) or independently (for Secondary). Teachers can set the work and track the progress of each pupil.

#### Dinner table

The activities on TREEHOUSE are actively encouraged to be used as dinner table discussions. Not only does this encourage opportunity for children and their parents to connect, but it also allows parents to see and be involved with their child's learning around mental health & wellbeing.



Photo: Julia M. Cameron / Pexels.com

**TOK Website: <https://treeof.com/> • Treehouse: <https://treeof.com/tok-education/treehouse-modules/>**

**Exclusive 10% SSERC discount. Use code SSERC10 at checkout.**

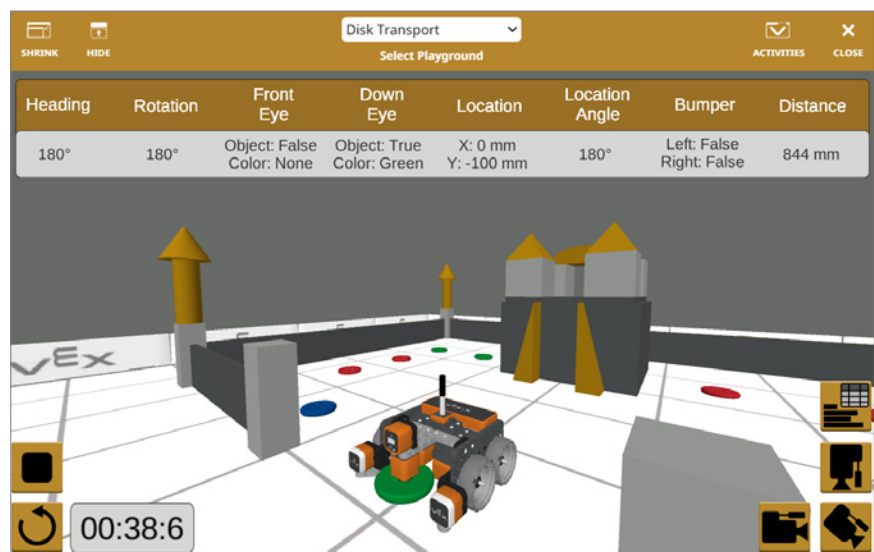


# VEX CODE VR

VEXcode VR is a free coding tool that lets students program a virtual robot using both a block-based coding environment powered by Scratch and/or a text-based environment using Python. VEXcode VR is based on VEXcode, the same programming environment used for VEX 123, VEX GO, VEX IQ and VEX V5 robots which means it can be used as a stand-alone tool or to support teaching with VEX physical robots.

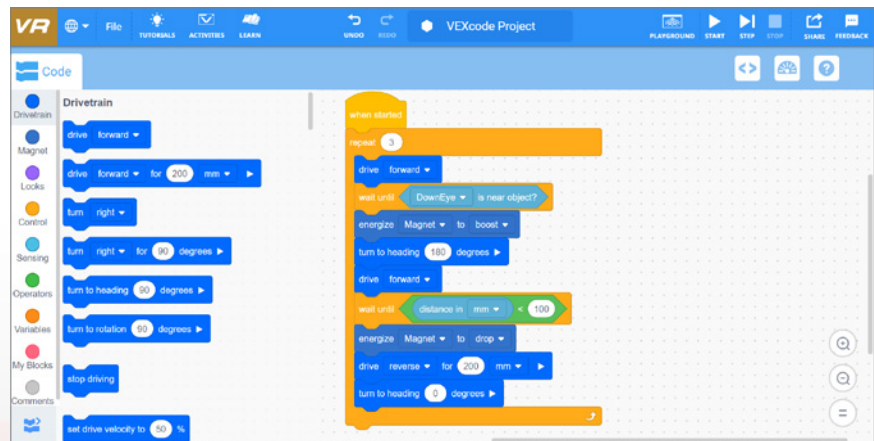
The software runs in your browser Window on almost any PC, Mac, Chromebook or tablet device making it ideal for use during remote learning. The integrated activities and curriculum are mapped to the Curriculum for Excellence Benchmarks to help you evidence the computing concepts that students are learning.

- Free to use
- Runs on most devices
- Free curriculum and activities linked to Curriculum for Excellence Benchmarks
- Blocks and text coding options
- Ideal for P4 through to S6



There are 13 3D Playgrounds to explore.

Use VEXcode VR free now at [vr.vex.com](http://vr.vex.com)



Code in Scratch blocks or Python text environments.