Home Learning Introduction: Topic 9 Let's Experiment: Whizz, Bang, Pop!

We hope you are all keeping safe and well.

These may be of help to you, particularly if you are trying to manage several children's needs or have limited access to the Internet.

Page 1: activities – no IT needed Page 2: web links - if you have internet access and some extension.

The most important thing is that you are calm for your children and should only do whatever you can manage. Remember that children also learn a lot through play such as Lego and playing games and even through chores such as helping to prepare a meal. Great learning can happen when it's not always adult directed.

Wellbeing and Building Resilience

For resources to support this please click this link to our Padlet: https://padlet.com/HLTWellbeing/jukwcst2scmfbd7t or use this QR code:

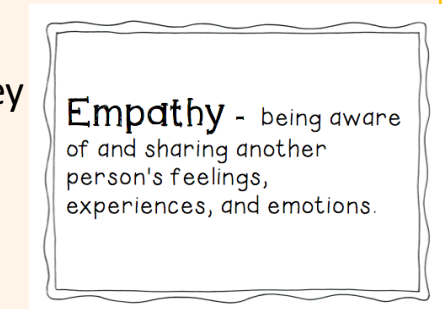
Kindness - Having and Showing Empathy

(please see further website resources for support on the third page)

Empathy Day is on Tuesday 9th June 2020. Empathy is the ability to understand and share the feelings of others. It is like trying to 'step into someone else's shoes' to imagine how that person is feeling. Empathy is an important element in friendships. Even though we have to social distance ourselves during this time, we can still show empathy and care to one another.

Here are some ways you could you show someone empathy:

- Playing a 'recognise my feeling' game! Choose a feeling and then show someone your face with that feeling. Can they guess by your facial features and your body language (open arms or tight fists or crossed arms) how might you be feeling? Take turns in trying to recognise as many feelings as you can from each other!
- If you see someone is sad, what could you say to them to make them feel better? You could say, *'I can see you are feeling angry. What can I do to help you?'* **It is also very important to tell an adult if you see someone and/or your friend feeling sad or angry.**



You can also practise building upon your empathy skills whilst you are reading! You could think about how the character or real-life character (in non-fiction books) might be feeling like! How would you feel in a similar situation as your character? If a friend were to help you, what would you like them to say to you to help you?

Remember to be keep on being kind to yourself – this is called self-compassion. Give yourself another hug!

Topic: Let's experiment: Whizz, Bang, Pop!
Home Learning

Hackney

This week you are a scientist! Your mission is to carry out experiments including making predictions, close observations, measurements and recording data, presenting findings and drawing conclusions. You will find out all about chemical reactions between materials and how these are part of our everyday lives such as in food we eat, medicine and products we use. Some changes are irreversible –we can't change them back again and some are reversible – can you find out which ones? **Do work with an adult and remember to keep washing your hands thoroughly.**

Maths

Number Bonds

Imagine two positively charged atoms make a bond of 10.
What could be the value of each of those atoms? E.g. 1 and 9.
List all the possible bonds to 10.

List all the bonds to 20.

List all the bond to 100.

Is there a pattern?

Now list the bonds to 50. Does the pattern still apply?
Why do you think this is? Try and explain this using vocabulary: tens, and units/ones.

Percentages

When boiling water from a kettle 10% of the water changes state to steam. If there was 50ml of water in the kettle to begin with how much would that be?
Remember 10% is 10/100 or 1/10

10% of 50ml

How much water would have been boiled?
50ml - (10% of 50 ml)

What if there were 60ml of water in the kettle to begin with?

What if there were 75ml of water in the kettle to begin with?

Try working out the same problem if 15% of the water changed from liquid to gas (steam).

Fractions

Is melting chocolate a reversible or an irreversible change? Can you get the solid chocolate back again after you have changed its state to liquid form?

A teacher shared out chocolate bars to her class so the pupils could experiment.
One galaxy bar has eight parts. She spilt the chocolate equally between four tables. How much chocolate did each table get? Can you tell me in eighths? Can you simplify the fraction?

What is 1/8 of 80?
2/8 of 40?
3/4 of 100?
What calculation did you do to work this out?
Would you rather 1/4 of £200 or 1/3 of £180?

Humanities

Whizz Bang Pop scientist quiz!

1. Who discovered radiation?
Marie Curie, Isaac Newton or Ada Lovelace
2. Who was the first woman to win the Nobel Peace Prize?
Rosalind Frankland, Marie Curie or Ada Lovelace
3. Stephen Hawkins is famous for:
his theories on primates, genetics or black holes in space
4. Who invented the glue for sticky notes?
Spencer Silver, Robert Bunsen or Alfred Nobel
5. What is Dmitri Mendeleev most famous for?
Analysing weather patterns, founding the periodic table or inventing the Bunsen burner
6. Who invented wrinkle-free cotton?
Nelson Mandela, Winston Churchill or Ruth Benerito
7. Who invented the traffic light?
Alexander Graham Bell, Charles Darwin, Garrett Morgan
8. What is Alexander Fleming's famous discovery?
Radiation, penicillin, Smallpox vaccine?

Answers on the next page!

Science inventions often come from necessity

People are very resourceful at creating and inventing using science knowledge. Think about these inventions and how young the creators were.

Richard Turere: 9 yrs. old - Lion lights
He created lights that flashed off and on to deter lions away from the goats.

Ann Makosinski: 15 yrs. old - The hollow flashlight
a torch that works through simple body heat (no batteries needed)

Chester Greenwood: 15 yrs. old - Ear Muffs He *created a wire frame and got his grandma to sew fur around the frame to go over his ears*

Stephen Wamukota 9years old from Kenya *designed a hand-washing machine using a foot pedal to stop the spread of Corona.*

Where in the world would these inventions make the most difference?
Can you think of a problem that you would like to solve at home or in the world?
What would your invention be?
How would it work?
What special equipment would you need?
Do you need an alarm on a door?
Do you need a device to hel
a lost remote?

The great debate!

Nobel prizes are given in physics, chemistry, medicine, as well as literature, peace, and economics.
The prizes honour people anywhere in the world who have done outstanding work in one of these areas.
These are considered as 10 of the most important inventions ever made or discovered.
The wheel: 3500BC
The nail: 3400BC
Paper: 100BC
The printing Press: 1440 CE/AD
The light bulb: 1879 CE/AD
The telephone: 1876 CE/AD
Cars: 1885 CE/AD
Penicillin: 1928 CE/AD
The internet: 1990's CE/AD
Which do you think deserve a prize for the MOST IMPORTANT INVENTION EVER ?
Can you explain why you think it is the most important? You could write a letter/an email or have a debate!

Literacy: There are many literacy activities that could come from the science:

You could write up your experiments as an investigation:

What you wanted to find out?
This could be a question or a prediction
What happens when ….
Why does …
I think that …
What you did to find out?
First, I ….
Next, I ….
….. happened when I …
From close observation I saw that
What did you find out?
What might you change? …
In conclusion I discovered that…

Science fiction stories take place in a world that is **different** to our own. The story might be set in space, in the future and about new technology or a scientific innovation. A famous science fiction novel was written by Mary Shelley and is called Frankenstein and it is about a scientist who brings life to his creation, but instead of being perfect, the creature is a horrifying monster!
You could write your own science fiction: What if a robot came to life? What if I could travel back in time or to the future? What if plants grew to be as tall as skyscrapers? What if aliens from space invaded?

Film/record or Write an advert for your lava lamp or slime.

Write a poem using onomatopoeia about your rocket blast!

Write instructions to the Bank of England on how to clean their copper coins!

Write a speech to thank people for the prize you won for your invention!

Creative Arts

Artists inspired by science: George Seurat and pointillism

Georges Seurat was a French artist who experimented in different ways to use colour. Instead of mixing paints together before painting, he used small dots of contrasting colours to look like a new colour. This famous painting, when you look closely is made up entirely of dots! This technique is called pointillism.
Try some of your own!
Look out of your window or choose something you love to draw. Sketch an outline of the shape.
Choose the colours you will use to shade in your picture.
Use paints/felt-tips/colour pencils/crayons. Make small dots with different colours and shades to create your picture. You could finger paint it too!

Top tip! It took George Seurat 2 years to paint his picture so the smaller you make your picture the quicker you will be!

The quickest ice cream ever! Can you make 5 minute ice-cream?

½ cup whole milk
½ cup **cream**
¼ cup sugar
½ teaspoon vanilla extract
1 cup of salt
1-2 cups ice
Pour milk, cream, sugar and vanilla into the small zip lock bag. Seal it.
Fill the larger sip lock bag ¾ full of ice, then add the salt to the ice.
Place the smaller bag inside the larger bag and close the seal. …
Now shake the bag good and hard for 5 minutes.

What would you call your ice cream? What packaging would it have?

Chromatography art!

The science of colour mixing has inspired artists all over the world. You only need 3 colours to create others: red, yellow and blue. But how do we now. There is a science technique called chromatography which separates colours. You can find out what colours are used in felt tip pens!
Get a piece of kitchen paper/towel. Cut it into strips.
Make a small dot at the bottom of the strip. Carefully lower just the bottom of the paper into water and watch the water spread up. What colours do you see?!
Could you use your chromatography to make a kindness rainbow?

The great dilemma, questions to think about (Philosophy for children: P4C)

It a scientific discovery can be used to cause harm as well as do good do you think it would be better to have never discovered it?
Historically, many of the scientists we learn about are white males. Why do you think that is? How could this be changed?
If you had to choose one invention in your house that you could not live without what would it be and why? Does everyone else in your family agree? What would be the impact of never having the other things invented?

Science

Density of volumes

Can it mix up?

The density of water can change when other liquids are added to them. Some liquids have polarity meaning they can't mix.
You will need:
Runny honey, Milk, Washing up liquid, Water coloured with food colouring, Vegetable oil
A tall, straight sided glass,
A turkey baster (if you have one) or a teaspoon.
Layer up your liquids in the glass carefully by dribbling over the back of the spoon. Add the densest liquid first so honey, then milk, the washing up liquid, then water, then oil.

Wash your spoon or baster between each liquid and don't dribble them on the sides!

Now drop in a few small objects e.g. a screw, a piece of Lego, a bead, a grain of rice, a piece of pasta, a cherry tomato, a ping pong ball.
Which level do they all fall to?
Why?

Use density to make a lava lamp!

You need: an empty bottle(transparent!), vegetable oil, water, food colouring, alka seltzer tablet (ask a grown up as this has aspirin in it).
Pour water into 1/3rd of the clean bottle.
Add a few drops of food colouring
Fill up the rest of the bottle with vegetable oil but leave at least 2cm gap at the top.
Break the Alka seltzer tablet in half and drop it into the bottle, then the other half.
What can you see happening? Why?
(If you don't have Alka seltzer put a straw in and blow bubbles. What can you see happening? (don't swallow any!)
Water and oil do not mix because water is denser than oil and sinks to the bottom. The food colouring mixes only with the water, so the oil stays its normal colour. The Alka-Seltzer tablet falls through the oil and when it reacts with the water it creates tiny bubbles of CO2. This gas floats to the surface because it is much lighter (less dense) than both the water and the oil, carrying drops of coloured water with it. When the bubbles pop and the gas is released, the denser water sinks back down again.

Reversible and irreversible changes

Can you make cornflour slime? It's messy, so wear an apron!

Put 4 tablespoons of cornflour into a bowl. Slowly, add water a small amount at a time until it becomes a thick, viscous liquid. Now try stirring it – is it a solid or a liquid?
Now roll it into a ball – what happens when you stop rolling it?

Cornflour does not dissolve because it has millions of tiny particles of starch . The water makes the mixture runny by helping the particles slip over each other. When force is applied (your hand) the starch grains jam together, squeeze out the water and it starts to behave like a solid. As soon as you leave the cornflour for a while, it starts to behave like a liquid again.

How to get the shiniest coins!

Getting a brand-new shiny coins is always great but the older the coin gets the duller it looks. This chemical reaction should make old coins look like new!
You will need:
A glass or plastic bowl (not metal!)
60ml vinegar
5ml salt
Plastic spoon
an even amount of old, dirty 1p or 2p coins (try to find your oldest coins by looking at the date!)
Pour the vinegar into the bowl, add the salt and stir with the plastic spoon until the salt dissolves.
Put in the pennies and leave for 5 minutes.
Take half of the pennies and rinse them under water, then let them dry.
Leave the other half to dry without rinsing. Leave them for 1 hour.

Which look the shiniest? Why do you think there is a difference? Does this work on silver coins? Why?
Did you notice any difference between when the coins were made?
Can you try it with coins that are not from the UK – any differences?

Chemical reactions

Making a homemade rocket

Please ask an adult to help you. You will also need a space outside to safely launch your rocket!

You will need:
- An empty plastic bottle (1 litre)
- White vinegar
- Bicarbonate of soda
- 3 x pencils for the rocket's legs
- A cork that fits in the top of the bottle
- Sticky tape
- A piece of kitchen roll
- A spoon

1. Stick with tape your 3 pencils around the bottom of the bottle. When you turn the bottle over, the pencils should have a stand on which to sit with the bottle at least 2cm above the ground.
2. Add 2 x spoons of baking soda onto the sheet of kitchen towel. Roll up the kitchen towel and twist the ends to hold the soda (like a sweet).
3. Fill the bottle 1/4 with vinegar.
4. Take the bottle outside. Now work quickly. Add the paper with soda into the bottle. Pop the cork into the top. Turn the bottle over. Place it down flat on the floor and **run and stand a good distance back from the bottle.**

What happens? Why does this happen?

Soluble or insoluble?

Which of the following are soluble (can be dissolved in 100ml of water?) Add in 1 level teaspoon of sugar
(try granulated, caster and icing if you have), salt, coffee, rice, pasta – make a table and record how long it takes for them to dissolve? You have created a solution.

Material	Time sec	Hot water
sugar		
caster sugar		
salt		

What happens to the solid?
Make it a fair test by changing one element at a time – does it make a difference if you use hot/cold water, how much you use? If you stir it? How long you leave it? Can you reverse any of these changes – how? Can you make salt crystals from a solution?

Topic 8: Let's Experiment: Whizz, Bang, Pop!

These are links to websites – please practise Internet safety with your children whilst accessing these websites.

Hackney

Useful websites for parents and carers:

1. In response to the coronavirus lockdown and backed by the Government, **The Oak National Academy** website, is a new collection of high-quality lessons and online resources. For more information for parents and carers: https://www.thenational.academy/information-for-parents-pupils/
2. Bitesize TV continue to update their website with further home learning: https://www.bbc.co.uk/bitesize/primary

Wellbeing, building resilience and PSHE: Kindness – Having Empathy

1. Sesame Street: Mark Ruffalo: Empathy https://www.youtube.com/watch?v=9_1Rt1R4xbM
2. Family Activities for Empathy Day 9th June 2020: https://www.empathylab.uk/family-activities-pack

Books that explore Empathy:


Wonder by R.J. Palacio


Katy by Jacqueline Wilson


Cloud Busting by Malorie Blackman


Charlotte's Web by E.B. White


A Wrinkle in Time by Madeleine L'Engle


The BFG by Roald Dahl

Talking to children who are worried about coronavirus:
NSPCC talking to children about Coronavirus

Resources for families around anxiety and stress:
http://www.safehandsthinkingminds.co.uk/covid-anxiety-stress-resources-links/

Looking after children and young people during the coronavirus outbreak:
https://www.nhs.uk/oneyou/every-mind-matters/looking-after-children-and-young-people-during-coronavirus-covid-19-outbreak/

Joyful June calendar: Being joyful even during difficult times
https://www.actionforhappiness.org/joyful-june

Films and TV shows

BBC Famous Scientists
Cbeebies Nina and the Neurons
BBC Bitesize Scientists
Charlie and the Chocolate Factory, Harry Potter, Big Hero 6, Dream Big: Engineering Our World, Back to the future, Honey I shrunk the kids, The Iron Giant, Doctor Who, A wrinkle in time, Thomas Edison's Secret Lab

Maths

Number Bonds: https://www.bbc.co.uk/bitesize/topics/zwv39j6/articles/zx3982p
Chocolate fractions: https://nrich.maths.org/34
Introduction to fractions: https://www.mathsisfun.com/fractions-menu.html
Introduction to percentages: https://www.mathsisfun.com/percentage.html
Fractions of amounts: https://www.youtube.com/watch?v=E2QvVicQcMo

Literacy

Science Fiction https://www.bbc.co.uk/bitesize/topics/zx339j6/articles/zy3g7p3
Science fiction story starts: https://www.eduplace.com/activity/pdf/starters.pdf
Science fiction films: https://www.literacyshed.com/the-sci---fi-shed.html
Writing up an experiment: https://www.youtube.com/watch?v=qAJ8IF4HI20
Onomatopoeia: https://www.bbc.co.uk/bitesize/topics/z4mmn39/articles/z8t3g82
Nobel Prize: https://www.bbc.co.uk/newsround/50015972
Writing to persuade: https://www.bbc.co.uk/teach/class-clips-video/english-ks1-ks2-how-to-write-a-persuasive-text/zkcfbdm

Rock Candy treats https://mommypoppins.com/kids/how-to-make-rock-candy-with-kids

Books

EYFS N and R	Queen of Physics: How Wu Chien Shiung Helped Unlock the Secrets of the Atom *T. Robeson* 	Little Blue and Little Yellow: *Leo Lionni* 	Roaring Rockets: *Tony Milton* 
KS1 Y1-Y2	Science experiments can eat: *Vicki Cobb*  The Science Squad: *Robert Winston* 	Little Heroes: Inventors Who Changed the World: *Heidi Poelman* 	Ada Twist, Scientist: **Author:** Andrea Beaty **Illustrator:** David Robert 
KS2 Y3-Y6	Mr Shaha's Recipe for wonder: *Alom Shaha*   Bright Sparks: *Owen O'Dogherty*	***Science fiction:*** The Boy in the tower: *Polly Ho-Yen* *Strange Star:* Emma Carroll  	100 steps for science: ***Author:*** *Lisa Jane Gillespie* ***Illustrator:*** *Yukai Du* 

Children's magazines that are useful for science:

Whizz Bang Pop Magazine
NatGeo Kids Magazine
Science and Nature magazine from The Week
Okido magazine for 3-7 yr olds

Religious Education

The smoke of burning incense rising high is a symbol of the prayer rising to a higher being. Incense doesn't need to be seen to be sensed – Christians and people of other faiths believe that God is invisible but is still with us. Do you like the smell of incense? https://www.assemblies.org.uk/pri/609/incense
Candles are also used by many religions – do you use candles at home or in your faith? What do they symbolize for you and your family? How do they make you feel? Remember to never light a candle without an adult.
http://www.bbc.co.uk/religion/religions/christianity/holydays/candlemas.shtml

Science

Separation: https://www.bbc.co.uk/bitesize/topics/zcvv4wx/articles/zw7tv9g
Experiments for home: https://www.stem.org.uk/resources/elibrary/resource/25416/do-try-home
Chemical reactions to try at home: https://www.crick.ac.uk/whats-on/discovery-week-2020/chemical-reactions-to-try-at-home
Kitchen science: https://learning.sciencemuseumgroup.org.uk/resources/kitchen-science/ including slime making
Dissolving: https://www.nfer.ac.uk/media/3096/timss_lesson_plans_dissolving.pdf
Making your own homemade rocket (with videos): https://www.bbc.co.uk/teach/terrific-scientific/KS2/zr63d6f
Making crystals: https://www.wikihow.com/Make-Salt-Crystals
Making bread https://www.bbc.co.uk/bitesize/topics/zypsgk7/articles/z39rmsg

Humanities

https://www.dkfindout.com/uk/science/famous-scientists/
History of boots the chemist: https://www.boots-uk.com/about-boots-uk/company-information/boots-heritage/
Nobel prize: https://www.bbc.co.uk/newsround/50015972
Richard Turere: https://www.ted.com/talks/richard_turere_my_invention_that_made_peace_with_lions?language=en
Ann Makoniski https://www.youtube.com/watch?v=V_7VkL0CUB4
Inventions of the future: https://www.bbc.co.uk/programmes/articles/1m1GhStmcsrGRllX39Wyxcj/inventions-eureka-moments-that-changed-our-world
What is an invention: https://www.bbc.co.uk/teach/class-clips-video/design-and-technology-ks2-what-is-an-invention/zrf92sg
Invention by kids: https://www.cbc.ca/kidscbc2/the-feed/kids-have-great-ideas-6-famous-kid-inventions

Creative Arts

Georges Seurat: https://www.youtube.com/watch?v=DfooLqTTJ0w
https://www.nationalgallery.org.uk/artists/georges-seurat
Body percussion from Hackney music service: https://www.youtube.com/watch?v=653Lu96opj4
Ice Cream: https://www.bbcgoodfood.com/recipes/instant-vanilla-ice-cream
Fabric Painting: https://www.royalacademy.org.uk/article/family-how-to-fabric-painting

Spanish:
Learn the colours in Spanish for your chromatography experiment:
https://www.bbc.co.uk/teach/class-clips-video/spanish-ks2-painting-and-colours/zbcb47h
https://www.youtube.com/watch?v=ypUqEIUW2i8

Answers to Wizz Bang Pop Questions:
1. Marie Curie, 2. Marie Curie 3. black holes in space 4.Spencer Silver 5. founding the periodic table 6. Ruth Benerito 7. Garrett Morgan 8. Penicillin

Take the DK quiz: https://www.dkfindout.com/uk/quiz/science/famous-scientists-quiz/