Discover Primary Science and Maths Award Log Book 2017 - 2018

Bishop O'Brien National School

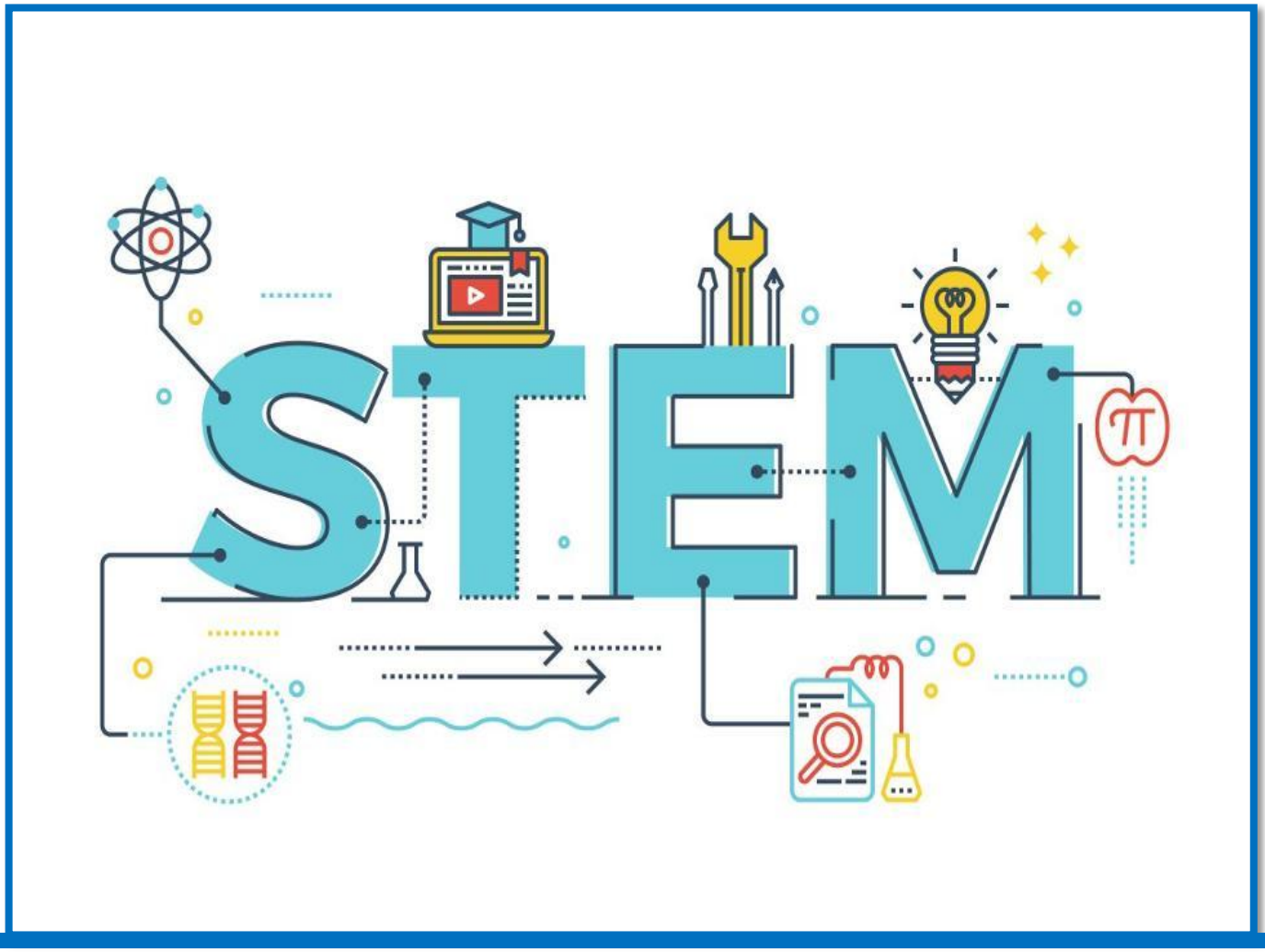
Award Number: C036

Discover Primary Science and Maths Award Application 2018

This is our application for the Discover Primary Science and Maths awards for 2018. We are applying for the Plaque of STEM excellence.

All classes in the school have participated in the award this year and we have all really enjoyed the experience.

Our Award Number is: C036



Content

Step 1	Science
Step 2	Technology (ICT)
Step 3	Engineering
Step 4	Maths
Step 5	STEM Showcase

Step 1 – Science

Requirement:

1) Complete six hands- on investigations with at least one from each of the four strands – living things, Energy and forces, Materials and Environmental Awareness and Care.

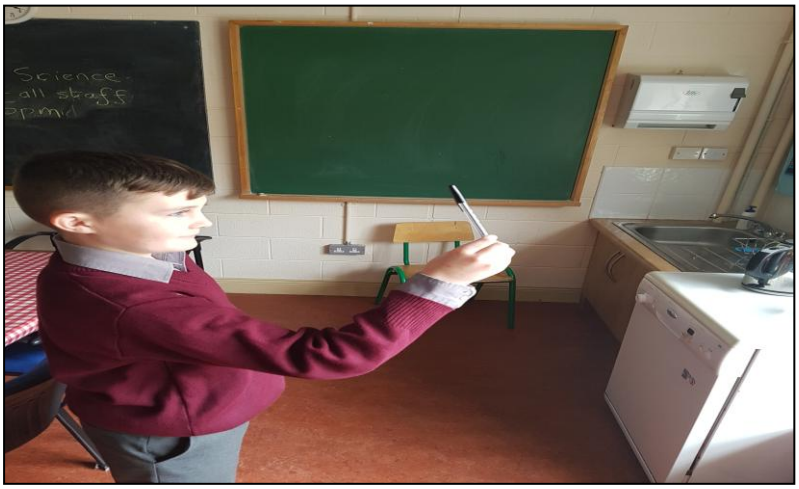
2) Host a Science Week Event

Living Things

Dominant Eye

In 5th and 6th class we investigated the dominant eye. We learned that everyone has a dominant eye. This makes sure that the brain does not get confused as to where the object actually is or does not see double.

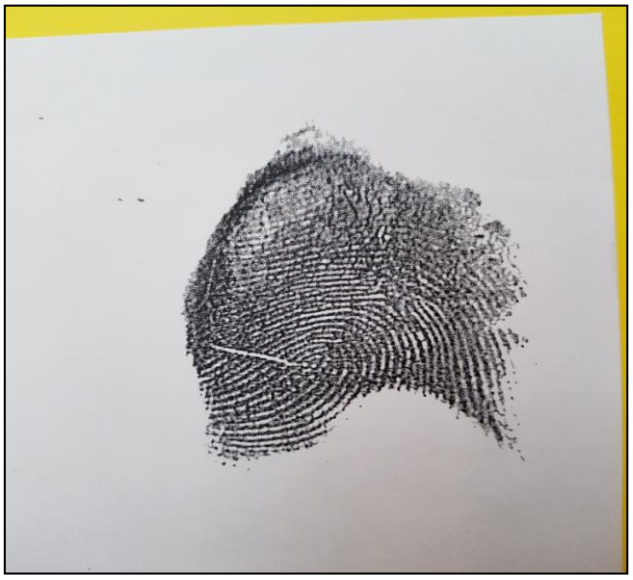
To investigate our dominant eye we picked out a vertical object in the distance e.g. the edge of a door. We then held a pencil vertically in front of us, lining it up with the vertical object. We then closed each eye in turn. We saw that whichever eye saw the pencil in the same place as when our two eyes were open is the dominant eye.



Fingerprints

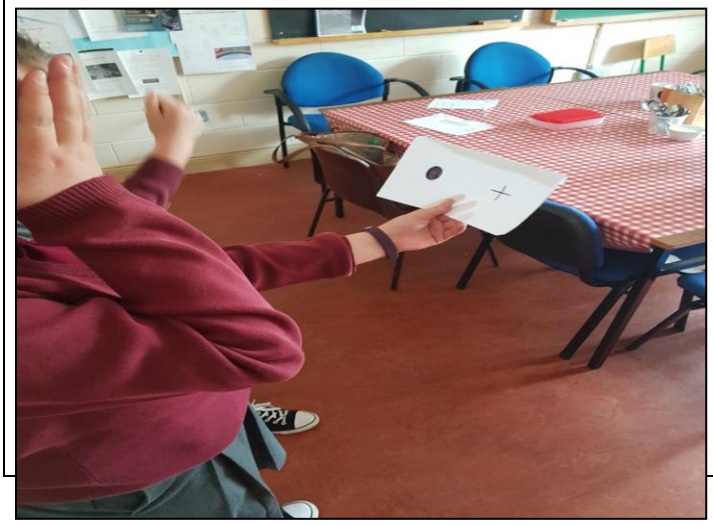
In Junior Infants we learned about how everybody's fingerprints are different.

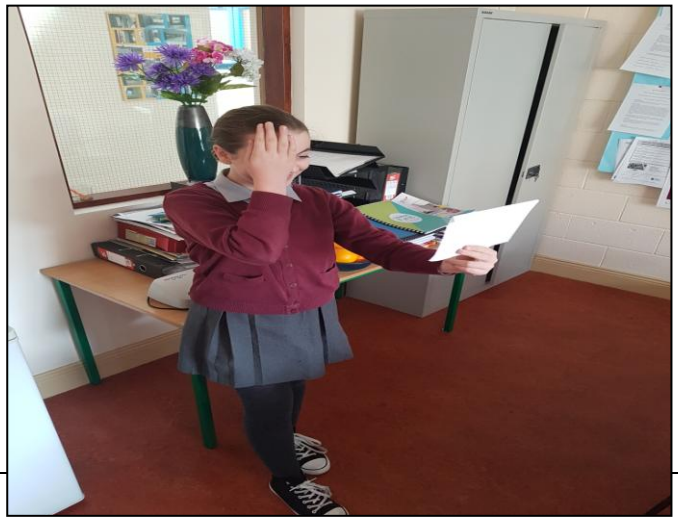
Using a dark pencil scribbled thickly on white paper, each child rubbed a finger all over the scribble. When their finger was black they then pressed it firmly on to the sticky side of the piece of sellotape, pressing hard so that the ridges were transferred. They then stuck the sellotape onto a piece of white paper to see their print. The fingerprints were enlarged using the photocopier so that the children could see their individual prints more clearly. The children compared their prints with each other.



Our blind spot

In 5th and 6th class we learned that everyone has a blind spot – the place where the optic nerve joins the retina. We learned how you are not usually aware of this with two eyes as this does not happen at the same time with two eyes. To investigate our blind spot we drew a spot and a cross on a page (see below). We then held the page at arm's length with the cross in the right and closed our right eye. While only looking at the cross we gradually brought the page closer to our face. At a certain point we saw that the spot disappeared because the light from it was falling on the blind spot of our left eye. Similarly when focusing on the spot on the left while closing our left eye there was a certain point where the cross on the right disappeared.

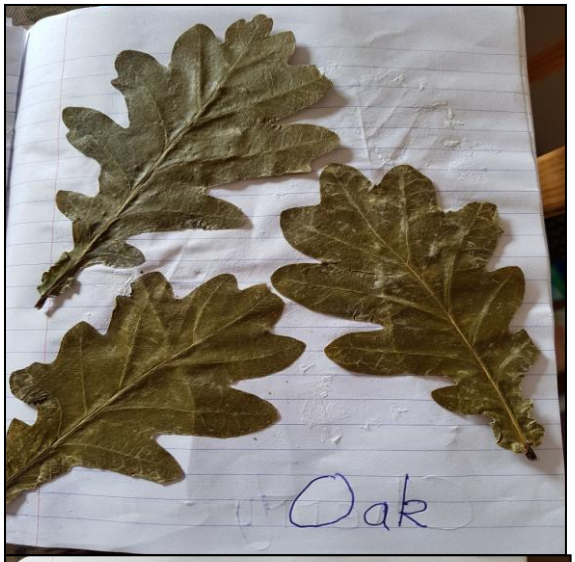


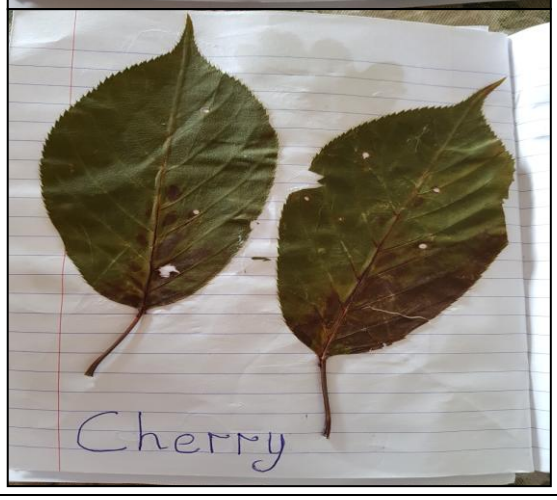


Autumn Leaves

In Junior Infants we had great fun on our autumn trail looking for signs of autumn around the school. We collected lots of different types of autumn leaves and used them to make some leaf characters in art.

In 5th and 6th class we collected lots of different autumn leaves, we sorted them into groups and identified which trees they belonged to.





Teeth

In 1st and 2nd class we learned about taking care of our teeth. We wondered which drink was the healthiest for our teeth.

We learned that teeth are made of calcium which is also found in the shell of eggs. We decided to test the effect that coke, Mi Wadi, orange juice and water have on our teeth. Our prediction was that coke would be the worst drink for our teeth.

After making our predictions we began to set up our experiment.

Firstly we hard boiled 4 eggs, cooled them down and placed each egg in a glass.

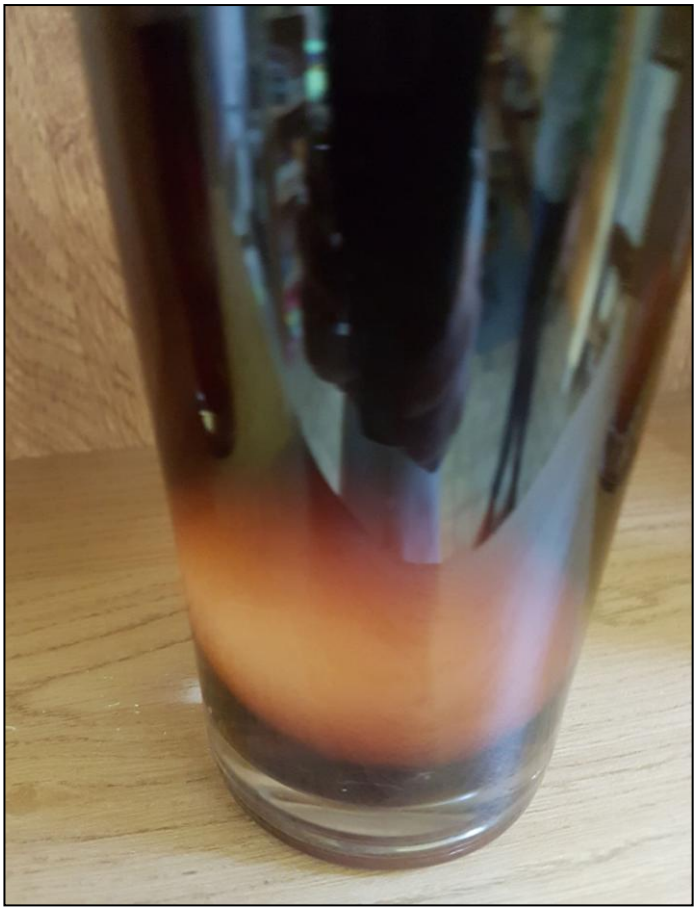
Next we measured out 200ml of each liquid and poured it into each glass.

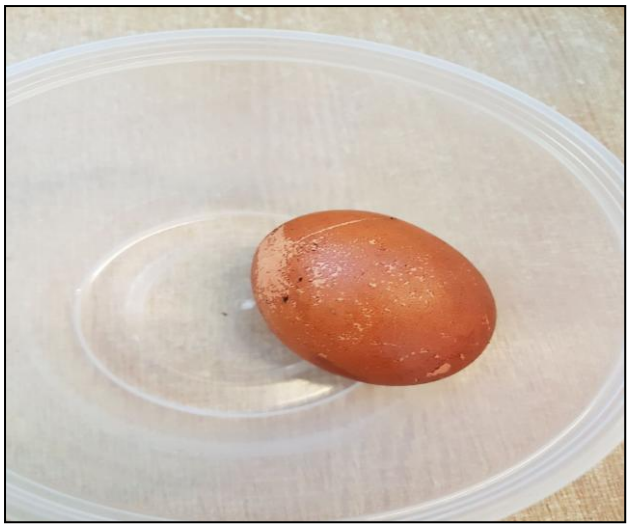
Then we observed the glasses over a few days and noted changes in the appearance and texture of the eggs.

Finally we drained the liquid from each glass and recorded what we saw.

We discovered that Mi Wadi caused the most damage to the egg as the shell cracked and wore away leaving just the white of the egg.

Maths Alert: We measured out 200ml of each liquid to make sure it was a fair test.





Investigating breating rate

In 3rd and 4th Class the children became aware of how air is drawn in through your mouth and nose and passes through the windpipe to your lungs when you breathe. A race involving cotton wool where each child had to breathe out to move the cotton wool to get it to the finish line lead to a discussion about the respiratory system.

The children investigated their breathing rate before and after exercise.

Maths Alert: The children worked in pairs to measure the amount of breaths each child took in a minute. Then each child did two minutes of exercise and their partner measured the amount of breaths they took again in the next minute.

Environmental Awareness and Care

Planting Spring Flowers

Junior and Senior Infants investigated conditions required for growth of bulbs. We talked about what flowers needed to grow – sunlight, water and soil. The children were delighted to see the bulbs planted in autumn flowering in spring.

Spring planting in our raised beds

All classes were busy in March planting various fruits and vegetables in our raised beds, We planted lettuce seeds, potato seeds, onion bulbs, rhubarb plants and strawberry plants. We are looking forward to a hopefully great harvest very soon.

Science and the Environment
(Link with engineeing)

(Lego Workshop)

In 3rd & 4th Class the children worked in pairs to build road yachts with small, medium and large sails using lego. This helped to develop their scientific enquiry skills.

They followed a design brief as part of the engineering process.

They investigated and worked through observations, reasoning, predicting, reflecting and critical thinking.

The children tested each yacht to see how far it could go on a track marked out on the floor.

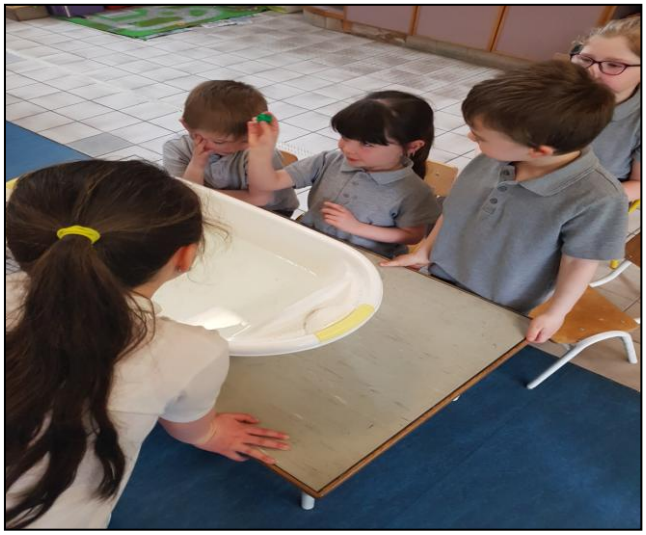
After the children had tested their yachts with the small, medium and large sails, they were given time to modify and/or enhance their yachts in any way that they liked.

Maths Alert : The children measured the distance travelled by the yachts.

Energy and Forces

Floating and Sinking

In Junior Infants we investigated floating and sinking. We completed this as part of our autumn theme. We tested items collected both at home and during our nature walk around the school. We began by predicting whether or not the items would float or sink and then tested each item individually. We tested autumn leaves, conkers, pine cones and apples. We investigated floating and sinking again during our 'Showcase' where we investigated various items from around the classroom. This time it was our visitors who had to do the predicting.



Maths Alert: (Classification) : The children sorted items into those that floated and those that sank.

Investigating Sound (3rd & 4th Class)

Through investigation the children were enabled to learn that sound is a form of energy.

To see sound, the children in groups cut a piece of cling film which was bigger than the top of a bowl. They stretched the cling film over the top of the bowl and sprinkled a few grains of rice on top. They made loud sounds near the bowl which caused the rice to jump up or 'dance'.

To feel sound, the children in pairs had a balloon. One child blew it up and held it against the other's ear. They pressed their lips against the balloon and said something and they took turns.

The children were allowed to explore the classroom for 'weird sounds'.

The children brought in a wide range of materials to make their own instruments, creating a variety of different sounds.

The Force of gravity

(Designing parachutes)

1st and 2nd class designed and made parachutes. They learned about air pressure and the force of gravity.

In small groups they worked together to experiment with different materials including tissue paper, bubble wrap, card and plastic to see which would best make their 'Warm Fuzzy' float to the ground.

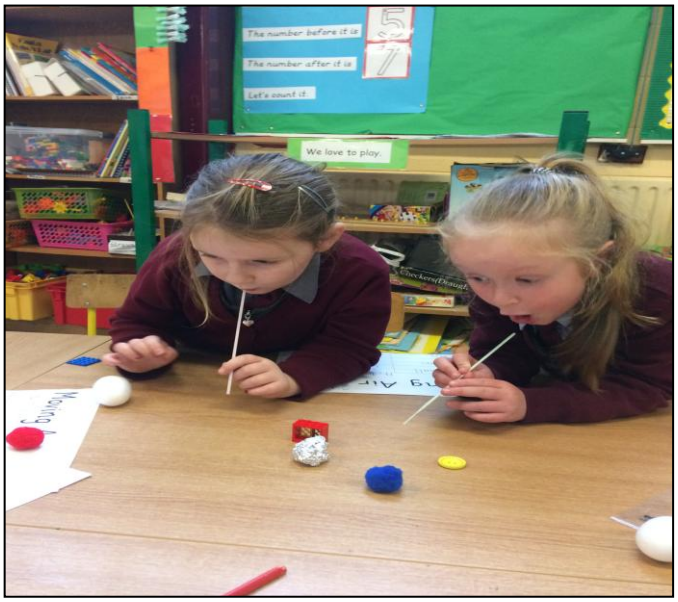

Writing
Gaeilge
Lón
Science
Music


Gaeilge

Moving Air

In Senior Infants the children investigated moving air. They examined a number of materials(tin foil ball, a piece of lego, a pom-pom, a polystyrene egg and a button) to see how easily they move when they are blown with a straw.

Maths Alert: (Classifying) .The children classified items into those which were easy and those which were hard to move.



Magnetism

In Senior the children investigated the force of magnetism. The children used magnets of different shapes and sizes in purposeful play to explore their effects on different materials. They investigated the fact that magnets attract certain materials. The children tested plastic, glass and metal objects.

Maths Alert: (Classifying) .The children classified items into those which were attracted to the magnet and those which were not.

Materials

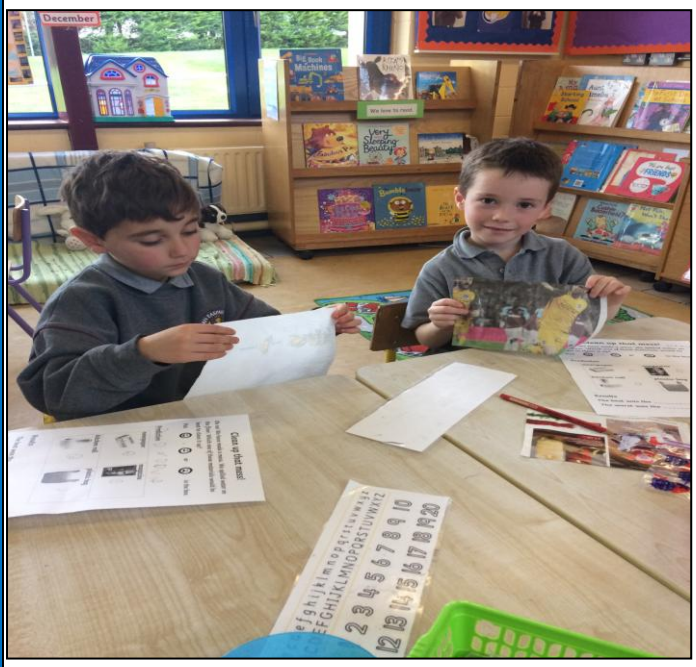
Absorbency

Junior Infants and Senior Infants investigated a range of materials. They investigated absorbency. After a spill of water in the classroom the children wanted to investigate which materials would work best for cleaning it up.

We began by discussing how we could make the investigation fair. We discussed the importance of making sure that all materials were the same size and also that the amount of water we used for each material was the same. The children began by making their predictions and then tested the materials. They tested a piece of newspaper, a piece of magazine, a piece of kitchen roll, a piece of plastic, a piece of tinfoil and a piece of greaseproof paper. The children found that the tissue worked best at absorbing the water and that the tinfoil and the plastic were the worst.

Maths Alert: We made sure that the amount of water used for each material was equal. We used a teaspoon to measure the amount of water used.


Clean up that mess!


December
Clean up that mess!

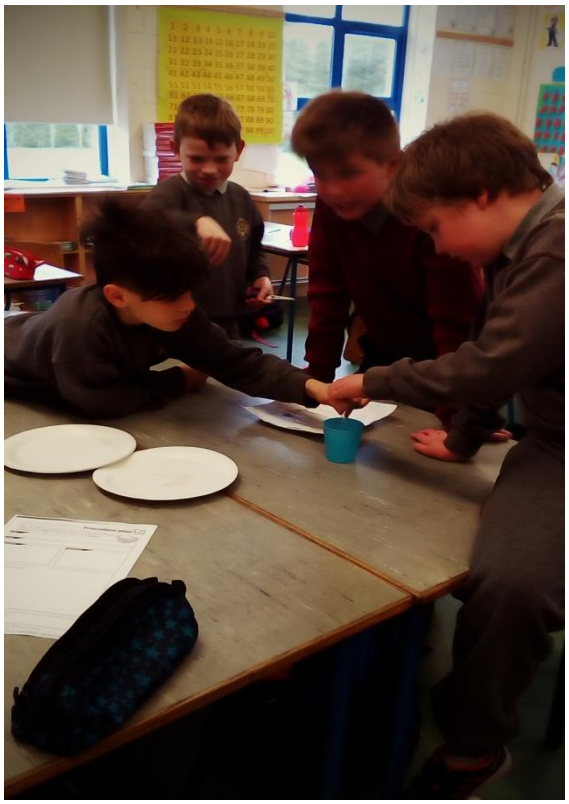

Clean up that mess!


Clean up that mess!
Prediction
sweetpaper
plastic bag
kitchen roll
Results


Clean up that mess!

In 3rd and 4th class the children also investigated absorbency. They investigated which brand of kitchen paper absorbed the most water. The children began by predicting which paper the thought would absorb the most water, giving reasons for their predictions. They felt the paper to help them with their predictions. The brands tested were the Super Valu brand, the tesco brand, the Aldi brand and the Regina brand.

The children made sure that each piece of kitchen paper was the same size to allow for fair testing. They used water droppers to put water on each piece, ensuring that the same amount of water was put on each piece of paper.



Maths alert: The children measured the kitchen paper to ensure that each piece was the same size.

They also measured the amount of water added to each piece of kitchen paper.

Design a waterproof Jacket

After investigating absorbency in Junior Infants we discovered that the worst materials for cleaning up a spill of water would be plastic or tin foil. We discussed how these materials were waterproof. With this in mind we decided to make some waterproof suits for our teddy bears. We paired up with the children from 4th class who helped us with designing and making the suits. Junior Infants discussed the results of our investigations with 4th class and in groups they got working on their suits using tinfoil and plastic.

When the waterproof suits were completed we invited 3rd class to come to our classroom and we showcased our work for them. In front of them we tested how waterproof each suit was by pouring some water over each one. We got our independent judge to see which suit she felt was most effective in keeping the teddy dry. We used a measuring jug to make sure that the same amount of water was poured over each teddy to ensure fair testing.


Rebcca

Science Week 2017

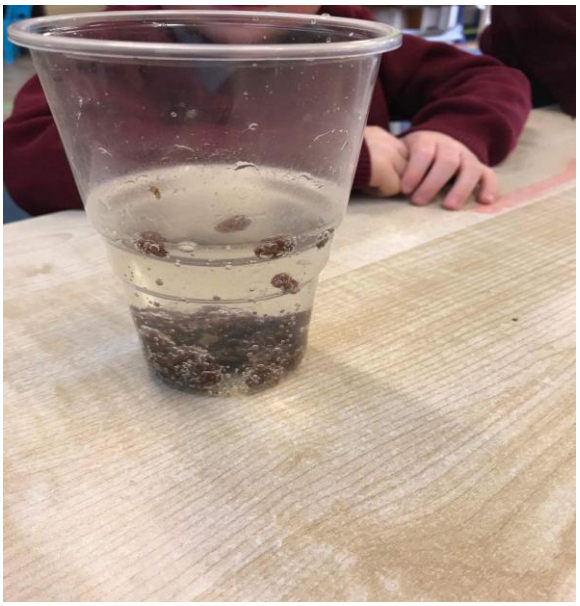
We held science week in our school on November 12th – 19th. As part of this we help a Science Week quiz in our school. (See Appendix 1)

We also completed a number of fun science experiments in all classes throughout the week. The following are examples of some of the investigations completed.

In Junior Infants we created a rainbow with skittles

Dancing Raisins

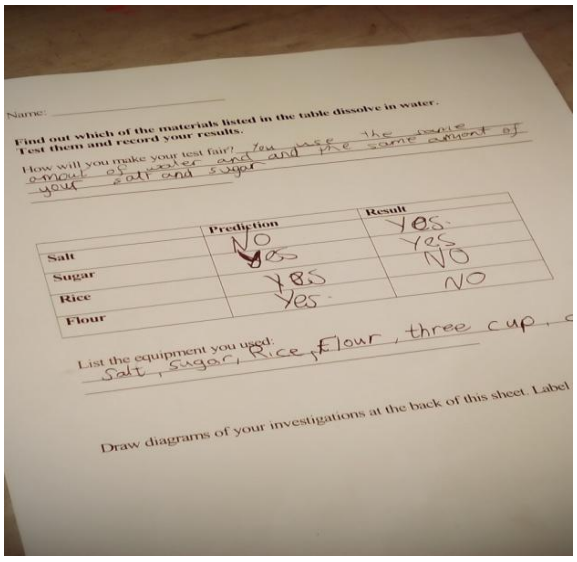
In Junior Infants and Senior Infants we investigated floating and sinking. The children began by making predictions as to whether the raisins would sink or float in 7up. We observed the raisins initially sinking to the bottom and then being carried to the top with the bubbles in the 7Up. We then saw the bubbles burst as they reached the top and the raisins sank back down again. We put on some salsa music and watched as the raisins appeared to dance in the 7Up



Dissolving Materials

In 3rd and 4th class the learned about dissolving materials, what helps materials to dissolve and that when something dissolves in water it forms a solution.

The children experimented with sugar, salt, rice and flour to see which materials dissolved in water. The children's results showed that salt and sugar dissolved in water and the rice and flour did not.



Name:

Find out which of the materials listed in the table dissolve in water. Test them and record your results.

How will you make your test fair? You must use the same amount of water and the same amount of salt and sugar

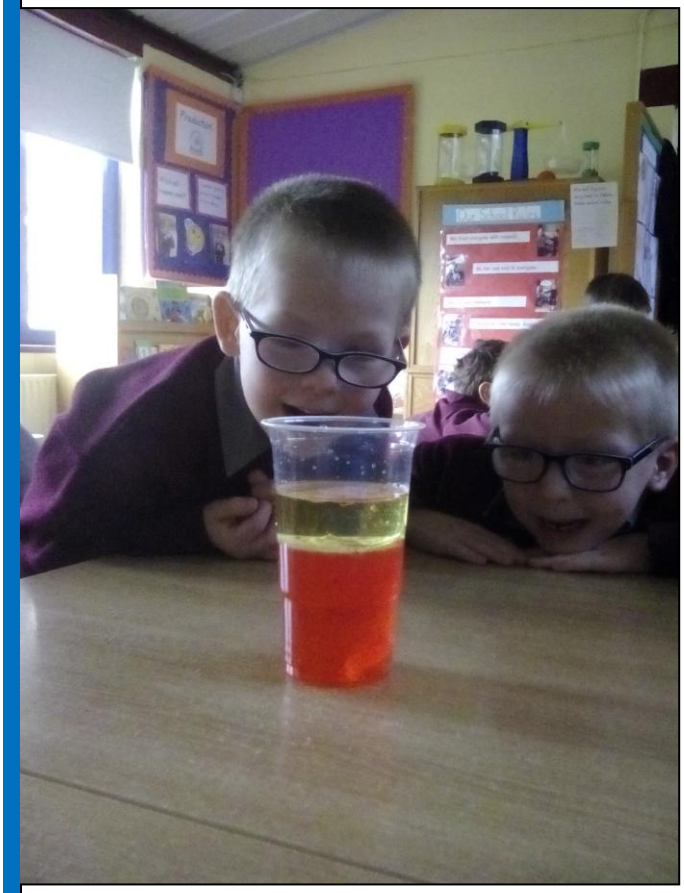
	Prediction	Result
Salt	NO	YES
Sugar	YES	YES
Rice	YES	NO
Flour	YES	NO

List the equipment you used.
Salt, Sugar, Rice, Flour, three cup,

Draw diagrams of your investigations at the back of this sheet. Label

Lava Lamps

In Junior Infants, Senior Infants and 3rd and 4th class the children created lava lamps. The children added oil to coloured water in a tumbler cup/ plastic bottle observing how these materials did not mix but instead the oil stayed on the top. We then added Alka- Seltzer tablets to the mixture and observed the results.



Sound

In 1st and 2nd class we explored sounds during Science Week. We were kept guessing by our 'Secret Sound' competition. By shaking the boxes we heard loud, and soft sounds, high and low sounds, rattling, clanging, tinkling and clattering!

We learned that sounds are created by vibrations. Vibrations in the air reach your ear and make your ear drum vibrate. This is how we can hear sounds.

We discovered how this occurs using a chiming fork. We tied a piece of string around the middle of a fork. When the fork hit the table, it vibrated. This make the air around it vibrate and so we heard a dull clink. It also made the thread vibrate. By wrapping the thread around our fingers and bringing it closer to the sound sensors in our ears we heard the vibrations make a clear chiming sound.

We also experimented with the vibrations caused by different types of music. We made predictions about which type of music would cause the paper to dance the quickest; jazz, classical or dance music?

To test our predictions we stretched some cling film over a bowl.

Next we placed some tiny balls of tissue paper on the cling film and put the bowl beside the sp eaker of the CD player.

In turn we played different types of music, starting with a low volume and then gradually turning it up.

We learned that different styles of music have different speeds of vibration. Some made the cling film vibrate at lower volumes than others. The dance music made the paper dance the quickest!

Step 2 – Technology

Requirement : Show two or more examples of children using technology (ICT) as part of their school work.

Work completed :

- Use of ICT
- Participate in 'Safer Internet Day'

Last year our school was awarded the 'Digital Schools of Distinction award'. We continue to make great of technology throughout our school. All classrooms have an Interactive whiteboard which is used daily. For many of the investigations completed in science children were introduced to topics being explored by being shown images or videos on the Interactive whiteboard.

In the older classes the children make regular use of their classroom laptops when researching information for projects in S.E.S.E.

In 3rd and 4th class the children completed projects based on a number of topics. They have recently completed projects on the Titanic and projects based on animals from their class novel. The children used their laptops to create PowerPoint presentations to present their work to their classmates. (See Appendix 2 for an example of a PowerPoint presentation created by them.)

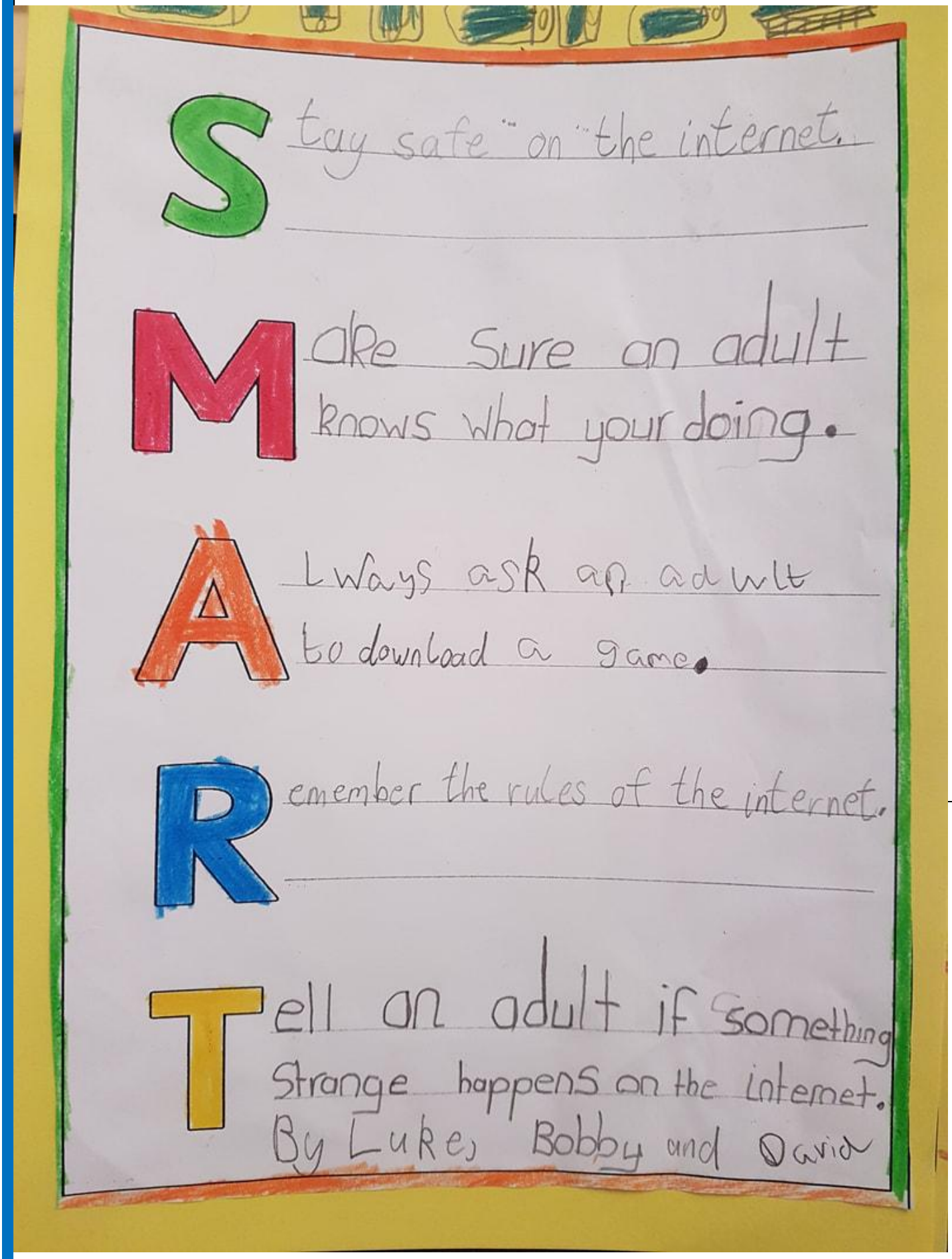
In 5th and 6th class technology was used throughout their participation in the Junior Entrepreneur project. The children used laptops to create PowerPoint Presentations to present their business ideas to the dragons. They created data research graphs to present feedback from their market research. They used Microsoft word to create posters to advertise their products. They used the camera application on tablets to collect a range of photographs throughout the project. They used video software to create a video of their journey which they used during their Showcase day to present their work to visitors. They also created a PowerPoint presentation of their Junior Entrepreneur Journey (See Appendix 3).

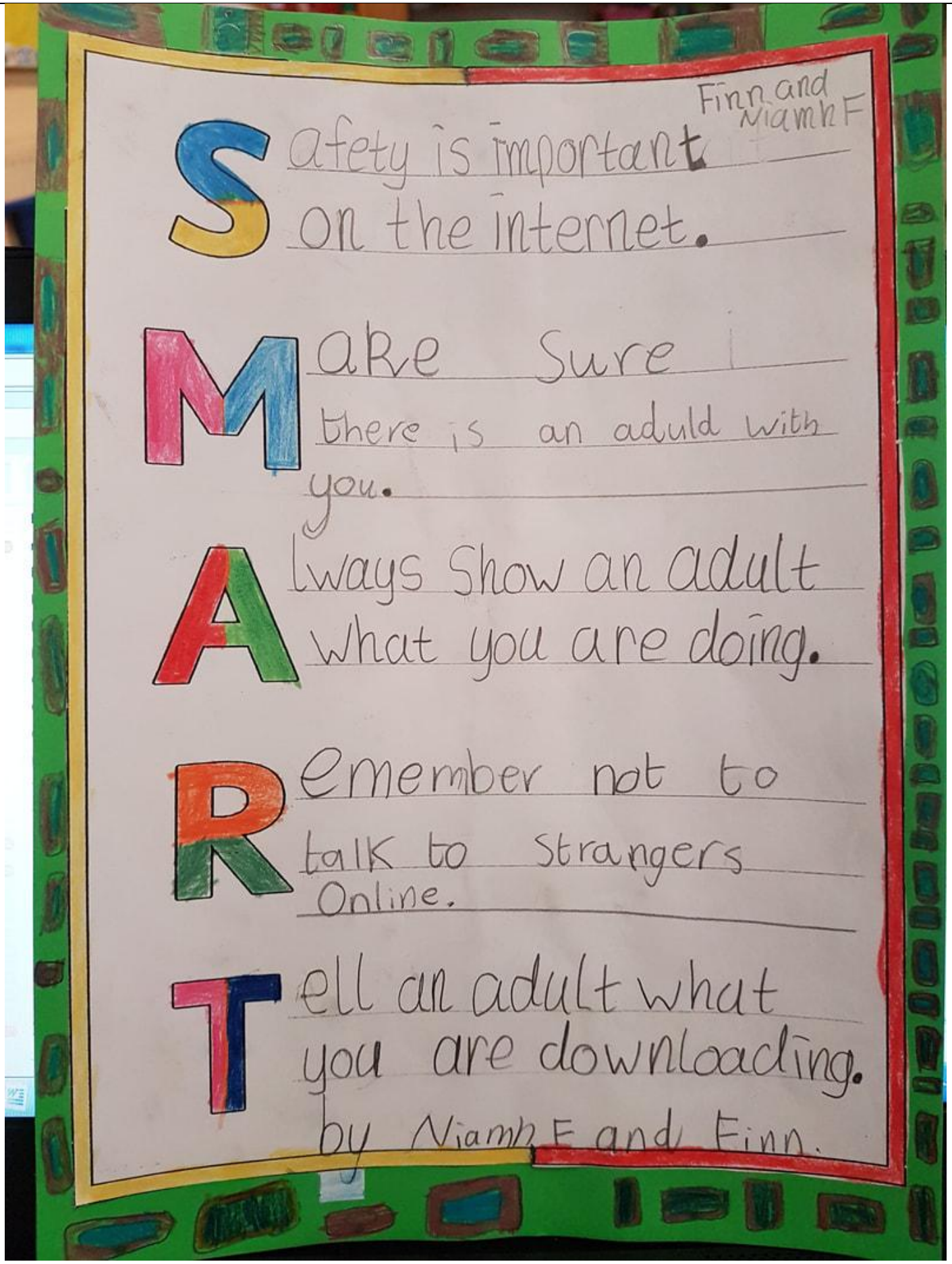
In 1st and 2nd class the children used tablets to record sounds during their investigation of sound. They also used tablets to photograph shapes found around the school on their shape hunt.

In all classrooms tablets are used regularly for Literacy and Numeracy. The school have a subscription for the Maths section of the IXL website and we make regular use of this.

Safer Internet Day 2018

In our school we completed a number of activities to highlight Internet Safety during Internet Safety Day 2018. After discussion on Internet Safety in all classrooms, the children from 3rd to 6th class participated in a poster/slogan competition on the theme of internet safety. In 1st and 2nd class the children created acrostic poems with the word SMART. During the day Brian Murray, a local guard came to the school to talk to the children in 3rd to 6th class about the importance of staying safe on the internet. Wed set up a display on the corridor to remind the children of the rules for Internet Safety.


S tay safe on the internet.
M ake Sure an adult knows what your doing.
A lways ask an adult to download a game.
R emember the rules of the internet.
T ell an adult if something Strange happens on the internet.
By Luke, Bobby and David


Finn and NiamhF
Safety is important on the internet.
Make Sure there is an aduld with you.
Always Show an adult what you are doing.
Remember not to talk to strangers Online.
Tell an adult what you are downloading.
by NiamhF and Finn.

Step 3: Engineering

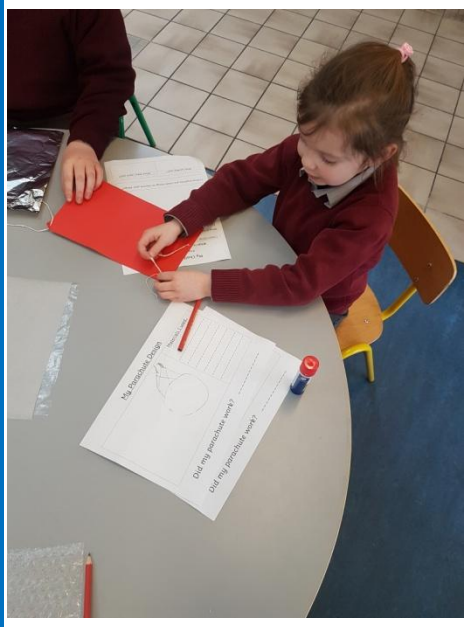
Requirement : Show two examples of children using engineering in class or in the local area

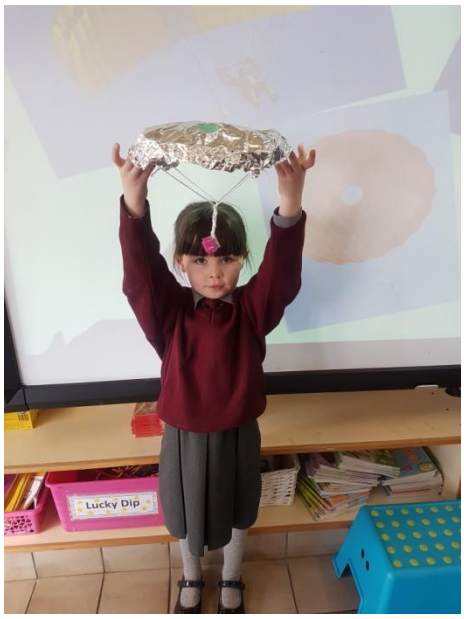
Engineers Week 2018

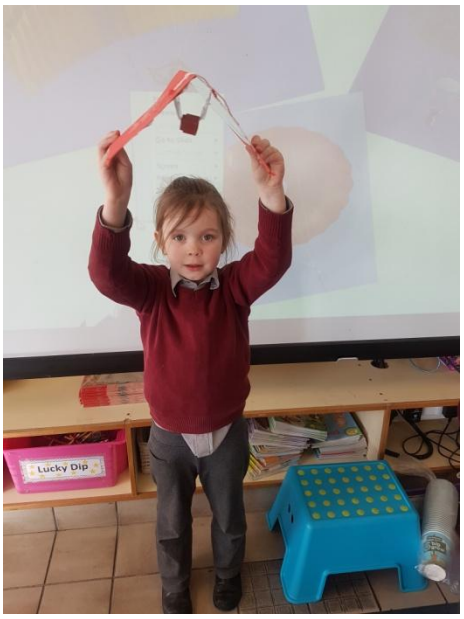
We took part in Engineers week in the school. As part of this week, two Engineers visited all of the classes to talk about their careers. The children were very interested and learned so much about engineering.

During Engineers week a number of design and make activities were completed by the children throughout the school.

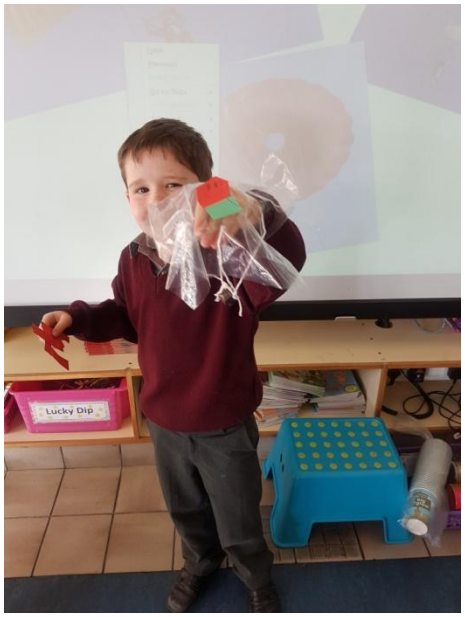
Junior Infants joined up with 5th class to investigate the force of gravity on objects and designed parachutes to try and reduce the effect of gravity on falling objects (cubes).

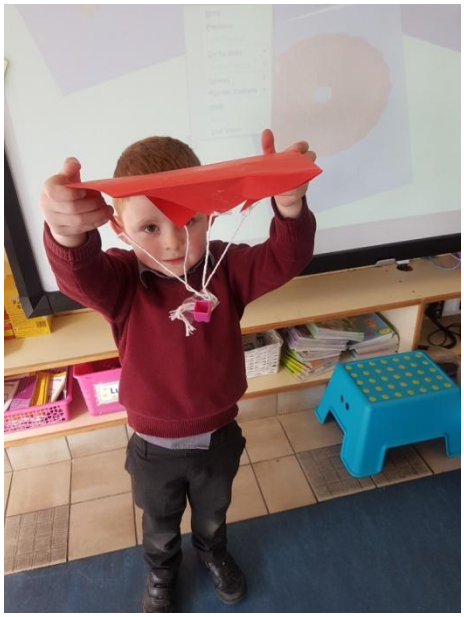

My Parachute Design
Did my parachute work?
Did my parachute work?


Lucky Dip


Lucky Dip


they
go


Lucky Dip

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Lego Workshop

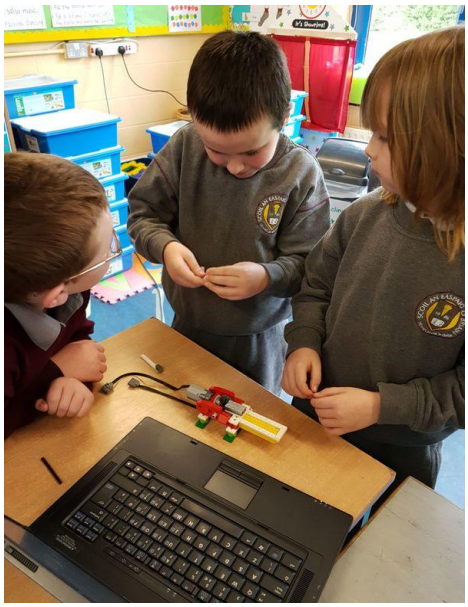
On Wednesday the 14th of February 2018, all the children in the school became junior engineers as they took part in a Lego workshop with Learn IT.

Each class was given a project to completed and great teamwork and problem solving skills were evident in all classes. Junior and Senior Infants created a hockey play and a racing car.

1st and 2nd class built an alligator and used coding software to make the alligator's mouth move.

3rd and 4th class had to design a yacht on wheels with different sized sails , they had to test which sail worked best in helping the yacht to sail.

And finally 5th and 6th class built a race car with gears. They had both a fast and a slow race with their cars.




CAMPS
SCHOOLS
WORKSHOPS
EVENTS


Learnit

Step 4: Maths

During our science investigations we utilised our maths skills wherever possible. For example:

In the Infant classrooms classification was used for a number of experiments. During their investigation of floating and sinking, the children classified objects into those that floated and those which sank. During their investigation of magnetism they classified objects into those which were and those which were not attracted to magnets.

In Junior Infants the children compared and ordered materials according to their ability to absorb water. They classified materials into those which were waterproof and those which were not. They also used their maths skills when they ensured that the same amount of water (1 teaspoon) was used to test each material.

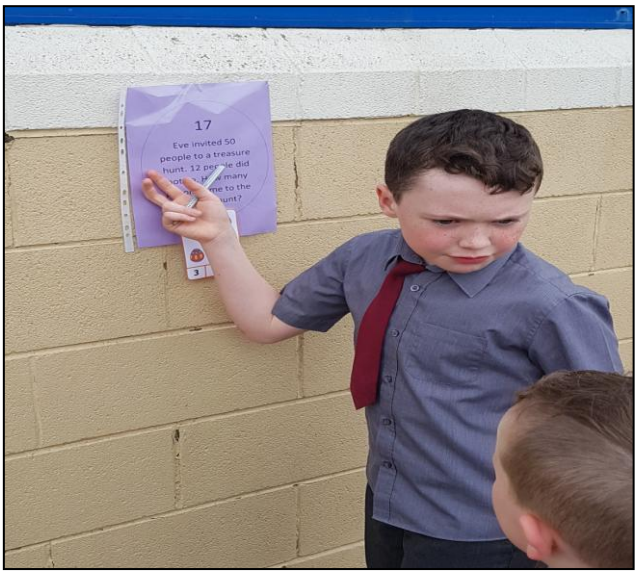
In 1st and 2nd class while the children were investigating the effects that different drinks had on teeth they used maths as they measured out exactly 200ml of each liquid to ensure fair testing.

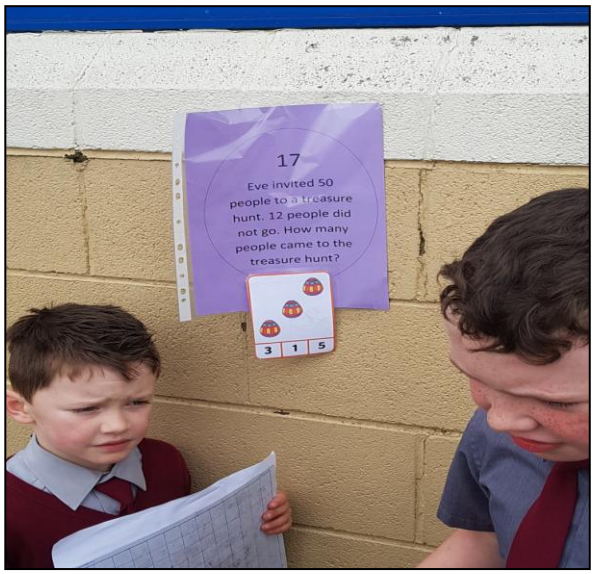
In 3rd and 4th class the children used maths while investigating their breathing rate. The children worked in pairs to measure the amount of breaths each child took in a minute. Then each child did two minutes of exercise and their partner measured the amount of breaths they took again in the next minute

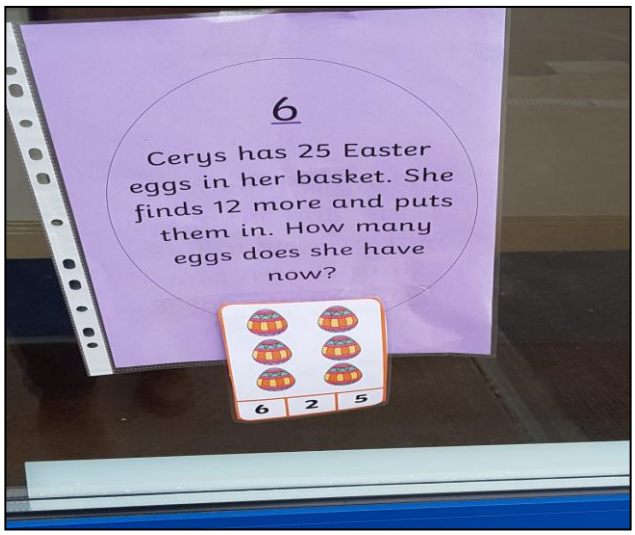
In 5th and 6th class the children used maths when measuring their reaction time.

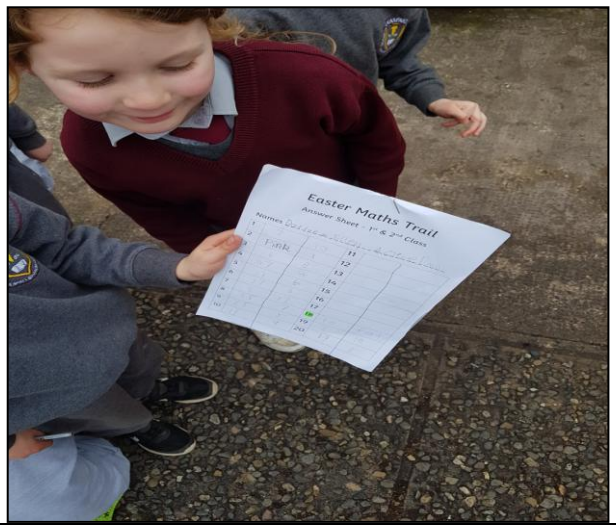
Maths Trail

Junior Infants partnered up with the children of 1st and 2nd class to complete a maths trail around the school. We had great fun.









STEM Showcase

The children shared their work with others whenever possible. The Junior Infants held a science 'Showcase' for the children of 4th, 5th and 6th class in their classroom. Below are some of the pictures from the event.


Rebcca

Thank you for taking the time to read our application. We hope you enjoy it.