

Observation:



Jessica Matheson:

STEAM Streams: Science (chemistry) & art

Rationale: Science in early childhood (and beyond!) should be fun! Instead of sterile instruction it is important for children to be joyfully engaged in hands-on activity that reflects their personal dispositions. We know that shaving cream is a sensory experience that inspires lots of giggles, and we are aware that children love exploring colours in the world around them, so bringing these elements together in an artistic experience is guaranteed to create the kind of positive atmosphere that is vital for triggering a lifelong love of science!

Learning goal: To reinforce awareness of how primary colours mix together to create secondary colours, to promote the use of vocabulary to describe colours and patterns, and to help the child build a positive emotional connection towards experimentation!

Key words: Primary colours, secondary colours, pattern

Materials: Shaving cream, shallow plastic tray, food colouring (red, blue, yellow), mixing tool (eg. a single chopstick), paper, spatula.

Hypothesis: Each child is encouraged to contemplate what will happen when they mix the colours in the shaving cream.

Procedure: The child shakes the shaving cream can and squirts some onto the shallow plastic tray. The child then squirts a few drops of each of the food colourings into the cream. Once all three of the primary colours have been applied the child uses the mixing tool to make patterns in the cream - swirling, whirling, making lines, zig-zags and any other shape their imagination can come up with! Once the colours have mixed together, and some patterns have emerged, the child gently holds the paper above and lets it lightly settle onto the cream (it's very important that the child doesn't squash or push down the paper - just let it drop onto the cream!). The dye should start soaking into the paper naturally but if it needs a little help the child can gently and lightly tap the paper with their fingertips to help the colours soak in. The child then lifts the paper and uses a spatula to scrape off the excess cream. This will take a few tries, with the cream needing to be wiped off each time, but eventually the child will be left with the imprint of their pattern on the paper without any cream.

Outcome: Children love identifying unique features of their artistic creation!



Outcome 3: Children have a strong sense of wellbeing

- Children become strong in their social and emotional wellbeing.

Outcome 4: Children are confident and involved learners

- Children transfer and adapt what they have learned from one context to another.

Outcome 5: Children are effective communicators

- Children interact verbally and non-verbally with others for a range of purposes.
- Children express ideas and make meaning using a range of media.

Walking water colour mixing

Montessori & EYLF

16 Aug 2018

Observation:



Josie DiGirolami:

STEAM streams : Science and art

Rationale: Children love to paint and colour and we can talk about where colours come from and how are they made.

Learning goals: Introducing the Primary colours and how when they are mixed together they make Secondary colours.

Key words: Red, yellow, blue, green, orange and purple. Primary colours, Secondary colours.

Materials: Glasses to hold water and catch the 'walking' water, paper towels, water, food colouring, jug to pour the water and tray to catch any spills and to move the experiment easily.

Hypothesis: The water will soak up the paper towel and 'travel' along it and transfer the the empty glass. When the two different coloured waters meet they will mix and form a new colour.

Procedure: Set up 6 glasses, 3 with water (red, yellow, and blue) and 3 without water. Position them in a circle (this will work best) one full and one empty. Cut paper towel to size long enough to be placed from one glass to the other next to it. Place paper towels all the way around and observe what happens. Be patient!! This is an experiment that takes some time to complete so the children will be able to come back and check on it from time to time.

Outcome: The water is absorbed by the paper towel and 'travels' along the paper towel to the other glass. As the liquid from both glasses combine the colours mix together to form a new colour (Secondary colour).



Outcome 1: Children have a strong sense of identity

- Children develop knowledgeable and confident self identities.

Colour mixing with Ice

Montessori & EYLF

16 Aug 2018

Observation:



Josie DiGirolami:

STEAM streams: Chemistry

Rationale: Children are drawn to bright colours and working with water and ice. This is a fun way of learning the names of colours and also all about primary colours.

Learning goals:

Learning or consolidating their knowledge of colours.

Understanding primary colours and their role in creating new colours.

Key words: Primary colours, secondary colours, solution, mixing, dissolving, ice cubes

Materials:

Glasses (approx 6), water, ice cube containers, food colouring, tray for catching water, tea towel for drying up spills, work sheet for recording results.

Hypothesis:

Ice will melt in the glass releasing colour.

When two or more different coloured ice cubes are added it will result in a range of different colours.

Procedure:

Fill glasses with plain uncoloured water and then place one red, blue and yellow ice cube individually into 3 glasses. Spend some time observing what occurs. Then start to add another ice cube of a different colour and once again observe. The colours will start to blend together to create new secondary colours. The results can be recorded if desired to keep a track of the results, and what certain colours added together will create.

Outcome:

After many repetitions the children are able to identify what will happen and also make accurate predictions of what will occur when specific colours are added together.



Mixing Primary Colours



Outcome 4: Children are confident and involved learners

- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.
- Children transfer and adapt what they have learned from one context to another.

Analysis & Reflection:



Josie DiGirolami:

Lots of excitement and fun around this experiment. The children loved pushing the ice cubes out of the moulds and carefully placing them in the water. The children were very good at predicting the colour combinations and remembering them.

What's Next?:



Josie DiGirolami:

This experiment is good to link in with other colour mixing experiments to help the children solidify their knowledge. The milk experiment, the colour walking experiment and also the skittles experiment just to name a few.

Symmetrical Butterfly Art

Montessori & EYLF

7 Sep 2018

Observation:



Josie DiGirolami:

STEAM streams: Art and Maths

Rationale: The children love working with paint and experimenting with different techniques. This work enables them to use paint in a different way with a surprise result.

Learning goals:

Introduce the children to different art techniques.

Introduce the concept of symmetry.

Key words: paint, spoons, butterfly, symmetry, symmetrical, fold, mid point.

Materials: paper with butterfly template, 3-4 different coloured paints, containers for paints, spoons to scoop out paint, somewhere to dry finished work

Hypothesis:

Paint is going to squash together.

Paper is going to get stuck together.

Going to make lots of different patterns.

Procedure:

Fold the butterfly template in half to show the mid point. Demonstrate how to scoop some paint out of the paint container and place blobs on one half of the butterfly. When happy with the amount of paint carefully refold the paper and then spread the paint around with your hand. When ready, open up the paper and be prepared for a surprise.

Outcome:

There is always surprise and amazement when we open up the butterfly picture. Children love this activity so much that they never just stop at one butterfly. This work opens up many conversations about colour mixing and also about symmetry. The hypothesis was accurate in the fact that the paint did squash together and actually created many different colours and patterns. The paper didn't stick together as long as we opened it up and allowed it to dry. If we kept the paper folded then once it dried they stuck together.



Outcome 1: Children have a strong sense of identity

- Children feel safe, secure, and supported.
- Children learn to interact in relation to others with care, empathy and respect.

Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.
- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.

Analysis & Reflection:



Josie DiGirolami:

This activity can be extended once the art work has dried by having the children cut out the butterfly.

Skittles experiment

Montessori & EYLF

27 Aug 2018

Observation:



Olivia Furner:

STEAM streams: Science & maths

Rationale: Children watch as the skittles transform before their eyes.

Materials:

Skittles

Dish

Warm water

Procedure:

Encourage child/ren to place skittles one at a time around the inside edge of a dish (refining pincer grip)

Slowly pour water into the middle of dish until skittles are half covered and the base of the dish is submerged.

Watch as the colour of the skittles moves into the centre of the dish.

Extensions:

Try making patterns with the skittles to change the outcome.

Alter the temperature of the water and see what happens.

Science behind the experiment:

Skittles are encased in sugar, when they are covered with water the water dissolved the sugars and the dye in the sugar runs into the water.

The colours in the experiment do not mix as each skittles has the same amount of dye within its shell, meaning that the colours stay next to each other rather than merging.

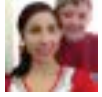


Primary Colour Mixing

Montessori & EYLF

21 Aug 2018

Observation:



Jessica Matheson:

STEAM Streams: Science (chemistry) and Art

Rationale: Children are fascinated by colours and love identifying and naming the various hues in the environment around them. Children also tend to develop emotional connections to colour quite early in life, identifying 'favourites' or relating specific colours to certain memories. Exploring the chemistry of mixing primary colours to make secondary colours is therefore relevant to young children, and intrinsically engaging due to the positive emotional connection.

Learning goal: To develop curiosity about how elements can change when mixed together, to build vocabulary around describing colours, to introduce aspects of early maths (in terms of 'addition'), and to help children identify the combinations of primary colours that make secondary colours.

Key words: primary colours, secondary colours, pipette, transfer, 'add', 'plus' and 'equals' (as in 'red plus blue equals purple').

Materials: A series of containers/jugs/test tubes (at least 4 are needed - one for each of the three primary colours, plus another for mixing - but we use additional vessels as shown in our little laboratory!), a pipette (or syringe) for transferring water, and food colouring or watercolour dye in red, blue and yellow.

Hypothesis: Before combining two primary colours the child is encouraged to guess what they believe will happen when they mix together!

Procedure: The child uses the pipette (or other tool) to transfer two primary colours into an empty vessel so that they mix together to form a secondary colour. The child observes the reaction then repeats the process with other primary colours, or with different ratios of the original two.

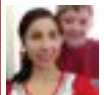
Outcome: It is beautiful to see the look of amazement as the primary colours mix together to form new secondary colours! Children love to announce their outcomes by naming the secondary colour, reflecting on the mixture they used to make it, and even describing features of it such as whether it's 'light' or 'dark'.



Outcome 1: Children have a strong sense of identity

- Children develop knowledgeable and confident self identities.

What's Next?:



Jessica Matheson:

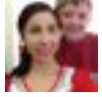
This experiment is a wonderful starting point for the exploration of mixing primary colours to make secondary colours, but there are so many other ways that children can investigate and apply this concept. For example, this experience links to our Shaving Cream Art and our Surface Tension Experiment.

Colour Mixing with the magic of 'surface tension'!

Montessori & EYLF

21 Aug 2018

Observation:



Jessica Matheson:

STEAM Streams: Science (physics)

Rationale: There are many unseen elements and forces around us in the world - by exploring these through simple experiments we help children appreciate these hidden wonders!

Learning goals: To demonstrate the 'magic' of reality by showing an example of something mesmerising and awe-inspiring that can be explained by science.

Key words: Surface tension, force

Materials: Milk (full-cream, not skim, at room temperature not cold), dishwashing detergent, food colouring, a round bowl or dish with a flat base.

Hypothesis: One of the wonderful aspects of science is that it helps children (and adults!) learn to 'expect the unexpected'. We encourage children to make a hypothesis about what will happen when we mix the ingredients together, but the beauty is that almost nobody correctly guesses just how magical it's going to be! The element of surprise is key in this experiment!

Procedure: A small amount of milk is poured into the flat, round bowl and allowed to settle. The adult talks to the children about the fact that even though we can't *SEE* it, there is an invisible force called 'surface tension' holding the milk in place while it's still, and that we can do an experiment to make the phenomenon of surface tension visible. The children drip food colouring into various points on the milk and again it is allowed to settle. Finally a child squeezes the detergent into the centre of the bowl - resulting in the start of an amazing reaction that causes the milk and colours to begin moving and mixing together! This process lasts several minutes, reaching a dramatic crescendo before slowing to a stop, and children love observing this amazing process and talking to each other about what they can see!

Outcome: Every time this experiment is repeated the exact outcome is slightly different. Lots of factors affect the exact motion and results - including the depth and temperature of the milk poured, the positioning of the drops of food colouring, the location that the detergent hits the water. After the children have finished observing the natural mixing and moving they can repeat the task and chat about those features that might have affected the outcome.



Outcome 3: Children have a strong sense of wellbeing

- Children become strong in their social and emotional wellbeing.


Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.


Outcome 5: Children are effective communicators

- Children interact verbally and non-verbally with others for a range of purposes.

Analysis & Reflection:

 **Jessica Matheson:** This experiment never fails to mesmerise the children (and the adults!) There is something hypnotic about the motion of the movement and the resulting patterns are always quite stunning - though they are entirely unique every time which means it can be repeated many times and always remain just as interesting!

What's Next Reflection:

 **Jessica Matheson:** One lovely way of reflecting on this experience, and to help children make a lasting record of their observations, is to provide watercolour paints so that children can attempt to recreate the patterns that emerged in the milk.

Yeast and bread making

Montessori & EYLF

30 Aug 2018

Observation:



Josie DiGirolami:

STEAM stream: Science

Rationale: We make bread almost everyday and the children really take the whole process for granted and don't really understand the science that goes behind making bread.

Learning Goals:

We aim to show the children that yeast is actually living. Give the children the opportunity to observe what happens when we 'feed' yeast. Explain the role that yeast plays in cooking bread.

Key words:

Yeast, living and non-living, dough, rise

Materials: Bowls, dry yeast, warm water, sugar, flour, salt, oven.

Hypothesis:

When yeast is added to the dough mix the dough will double in size and rise creating bubbles.

Procedure:

Show the children the yeast. Ask if they know what it is, what it does, how it works, etc. Is yeast living? Does it need to eat if it is living?

Place yeast in a bowl and add warm water and sugar. Observe what happens. Have the children smell, touch, and continue to observe.

Explain that yeast creates bubbles as it grows and expands, and is used in bread making to raise the bread. Show the children how to make bread and then explain that it needs to be left to rise before it can be cooked. Children can watch as the bread grows. Once the bread is cooked the children can enjoy some nice warm bread.

Outcomes:

The children found it hard to believe that the yeast is actually a living thing. Most suggested that the yeast was non-living. Once we 'fed' the yeast sugar and warm water they could see the reaction occurring as the yeast began to expand and bubble. They could also smell the reaction. Some children were saying that they could smell pizza. The children were also very impressed to see how the dough doubled in size when we left it to rise. As the yeast reacts it makes bubbles in the dough making it become airy and light and also allowing the bread to rise.



Outcome 1: Children have a strong sense of identity

- Children develop knowledgeable and confident self identities.
- Children learn to interact in relation to others with care, empathy and respect.

Outcome 3: Children have a strong sense of wellbeing

- Children take increasing responsibility for their own health and physical wellbeing.

Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.
- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.

Cornflour Goop

Montessori & EYLF

30 Aug 2018

Observation:



Josie DiGirolami:

STEAM streams: Science

Rationale:

The children love sensorial discovery and this is one of their favourites. The unusual texture and properties of this goop makes it extra interesting.

Learning goals:

Understanding that not everything dissolves in water. Talking about solutions and suspensions.

Key words:

Solutions, suspension, dissolving, cornflour

Materials:

Container, cornflour, water, food colouring, fork for mixing

Hypothesis:

When we mix the cornflour and water it will not dissolve to form a solution, but in fact a suspension.

Procedure:

Perform these steps for an easy slime mixture.

Put cornstarch into mixing bowl.

Begin adding water with colouring slowly.

Optional: Mix in glitter for a colorful craft.

Mix with hands, or fork until the mixture is smooth.

Continue adding water until you have achieved your desired consistency.

Store in a plastic bag or airtight container.

PLEASE NOTE when disposing of the goop do not tip down the drain as it will clog up the pipes, throw it away in the bin.

Outcome:

The cornstarch and water mixture acts like a solid sometimes and a liquid at other times. This concoction is an example of a suspension. Sink your hand into the bowl of goop and notice its unusual consistency. Compare what it feels like to move your hand around slowly and then very quickly. You can't move your hand around very fast. In fact, the faster you thrash around, the more like a solid the gooey stuff becomes. Sink your entire hand into the goo and try to grab the fluid and pull it up. It gives the sensation of sinking in quicksand!



Outcome 1: Children have a strong sense of identity

- Children develop their emerging autonomy, inter-dependence, resilience and sense of agency.
- Children develop knowledgeable and confident self identities.

Outcome 2: Children are connected with and contribute to their world

- Children become socially responsible and show respect for the environment.

Outcome 4: Children are confident and involved learners

- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.
- Children resource their own learning through connecting with people, place, technologies and natural and processed materials.

Analysis & Reflection:



Josie DiGirolami:

The children really enjoy this super fun and messy sensorial exploration. Some other things that can be fun is adding objects to the suspension and watch how they sink, a bit like 'quicksand'. The suspension can also be rolled quickly in between your palms to make a ball, but as soon as you stop rolling the suspension will just drip through your fingers.

Fizzy Lemonade

Montessori & EYLF

14 Aug 2018

Observation:



Josie DiGirolami:

STEAM streams: Chemistry

Rationale: The children enjoy juicing oranges and drinking the refreshing juice. As this is not possible with lemon juice we can make fizzy lemonade instead. This work is also an extension of the 'volcano experiment' with bi-carb soda and vinegar.

Learning goals: Children will have the opportunity to refine their juicing skills. Learn how to make homemade lemonade by adding water and sugar and bi-carb. Demonstrate how science can be used with every day applications and not just in specific experiments.

Key words: Experiment, solution, reaction, result, bicarb-soda, hypothesis, acidic.

Materials: Lemons, knife, chopping board, juicer, water, caster sugar, glass and bi- carb soda.

Hypothesis: The juice will be sweeter and taste nice to drink.
Bubbles will be created.

Presentation: This can be divided into two parts.

1) Juicing lemons:

Demonstrate cutting lemon with the 'bridge' cutting method. Once the lemon is cut in half then demonstrate how to squeeze the juice from the lemon half using the juicer, and pouring it into a glass.

2) Fizzy lemonade:

Demonstrate and talk about the ingredients that go into homemade lemonade. So to the lemon juice we add half a cup of water, half a teaspoon of caster sugar and then stir together until the sugar has dissolved.

Finally talk to the children and remind them of when they did the volcano experiment. Can they remember what happens when the vinegar and sugar are added together? Explain that the same will happen when we add bi-carb to lemon juice because the lemon is also acidic. So add a quarter teaspoon to the lemonade, stir vigorously and enjoy a tasty glass of fizzy lemonade.


Outcome: After many repetitions, and lots of delicious lemonade, the children made some important discoveries. If the procedure is followed strictly then the fizzy lemonade works every time. If the ratios are not followed correctly then the lemonade will be too sweet, too salty, not fizzy, etc.




Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.
- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.
- Children transfer and adapt what they have learned from one context to another.

Analysis & Reflection:

 **Josie DiGirolami:** This was a very popular experiment because the children were able to enjoy a fresh glass of fizzy lemonade, and also because the 'fizzing' part of the experiment is always fun and never gets old. On reflection I realise that mathematics is also a very important part of this experiment (if the ingredients are not measured precisely then the lemonade may not always work).

What's Next?:

 **Josie DiGirolami:** A new experiment can be prepared with mystery solutions having bi-carb soda added and then record the results. These solutions could be mixture of 'acidic' and 'basic' solutions. A good way of learning the differences between acids and bases.

Homemade cheese

Montessori & EYLF

30 Aug 2018

Observation:



Josie DiGirolami:

STEAM stream : Science, technology

Rationale: Jethro was interested in learning about how cheese is made. We did some research on the iPad and watched some YouTube videos of how cheese is made in factories. We decided that we would try and make some cheese at pre-school but we had to find a recipe. We researched some more and found a simple recipe.

Learning Goals:

Introducing research strategies.

Demonstrate how cooking incorporates many scientific techniques.

Key Words:

Curds and whey, reaction, heat, thermometer, slotted spoon

Materials:

One litre of milk, two lemons, lemon juicer, thermometer, cheese cloth (or Chux), slotted spoon, saucepan, strainer and bowl.

Hypothesis:

When the lemon is added to the warm milk it will separate to form curds and whey. The curds are collected and strained to form cheese.

Procedure:

Pour the milk into a saucepan and warm until it reaches approximately 38 degrees Celsius which you can measure with a thermometer (or its our body temperature so just until its warm). In the mean time juice the lemons and have them ready to add to the warm milk. Once the milk is warm enough take off the heat and add the lemon juice. Using the slotted spoon stir the mixture together. It will begin to thicken and separate into curds and whey almost immediately. Let this sit for about 30 mins to continue to separate and then using the slotted spoon start spooning the curds into the strainer lined with the Chux. This should be sitting on top of a bowl to catch any liquid. Once all the curd has been collected squeeze any excess liquid from the curd and leave it to drain for another hour or so. The curd will harden during this time and then the cheese will be ready to take from the Chux, or cheese cloth and eat.

Here is a link to view the process:

<https://youtu.be/tHjg1rqaetM>

Outcome:

The children were very excited to see the whole process and asked lots of questions about why the lemon juice made the milk separate. As the lemon is 'acidic' it reacts with the 'basic' milk and forms a reaction and the separation occurs. Some children were keen to taste the cheese, others didn't want to.



Outcome 1: Children have a strong sense of identity

- Children feel safe, secure, and supported.
- Children develop their emerging autonomy, inter-dependence, resilience and sense of agency.

Outcome 3: Children have a strong sense of wellbeing

- Children take increasing responsibility for their own health and physical wellbeing.

Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.
- Children develop a range of skills and processes such as problem solving, enquiry, experimentation, hypothesising, researching and investigating.

Observation:



STEAM Child:

Salt and Ice Science

STEAM streams: Science (Chemistry)

Rationale: Ice is slippery, cold, and fun to hold but the idea of holding it by something other than our hands in winters, definitely seems like a better idea. Also, a general experience and observation is that ice cannot get stuck to anything as it has a slippery surface but it's exciting for children to know that it is possible.

Learning goals:

Children to be introduced to the fact that when salt (ionic compound) is added to ice, it lowers its freezing point on the surface. Essentially, the salt makes it harder for the water molecules to bond together in their rigid structure.

Demonstrate the chemical reaction taking place between the ice and salt which causes a piece of string sitting on top of the ice cube get stuck to it.

Key words: freezing point, chemical reaction, salt, ice cube, dissolve, cold, melt

Material:

Ice cubes

A piece of string (wet)

A small bowl

Salt

Hypothesis:

The piece of string will get stuck to the ice.

"We'll be able to hold up the ice cube with a piece of string stuck to it"

Procedure:

An ice cube to be placed in a small bowl. One end of a wet piece of string to be placed on top of the ice cube for a few seconds. Then, some salt to be sprinkled on top of the string sitting on the ice cube. The string should stay there on the ice cube with salt on it for about a minute. After that, the string can be lifted up slowly from the other end with the ice cube sticking to the wet end of the string.

Outcome:

The hypothesis proved to be correct and the ice cube was lifted up with a piece of string.



Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.

Making Butter

Montessori & EYLF

30 Aug 2018

Observation:



Olivia Furner:

STEAM streams: science

Rationale: Children will experience a liquid separating into a solid form.

Materials:

Glass jar

Cream

Strainer

Jug

Bowl

Procedure:

Pour cream into jar and shake.

Shake until cream separates into butter and butter milk.

Strain the butter milk from the butter.

Extensions:

Try using the cream at room temperature, does this shorten the process?

Increase or decrease the amount of cream used.

Add flavouring to see what happens, eg. herbs, garlic, salt.

Try using light cream, is the result the same?

Science behind the experiment:

As the cream moves and becomes warmer the fat molecules group together, eventually forming butter. The warmer they are the faster they move, because they have more energy.



Observation:



Faryal Azhar:
Observation

STEAM Streams: Science

Rationale: The idea of possessing special and unique powers is a dream come true for children. This is why being able to write something 'almost' magical, that no one but mummy daddy can read, really appeals them.

Learning Goals: Introduction of the concept of organic substances (like lemon, orange, and onion juice, honey, vinegar etc) that oxidize (combine with oxygen) and turn brown when heated.

Demonstrate how diluting the lemon juice in water makes it very hard to notice when applied on paper until it is heated (under the heat of a lamp)

Key words: invisible, dilute, organic, substance, observe

Material:

- Half a lemon
- water
- spoon
- bowl
- cotton bud
- white paper
- lamp

Hypothesis: Magic ink is made by diluting lemon juice in water.

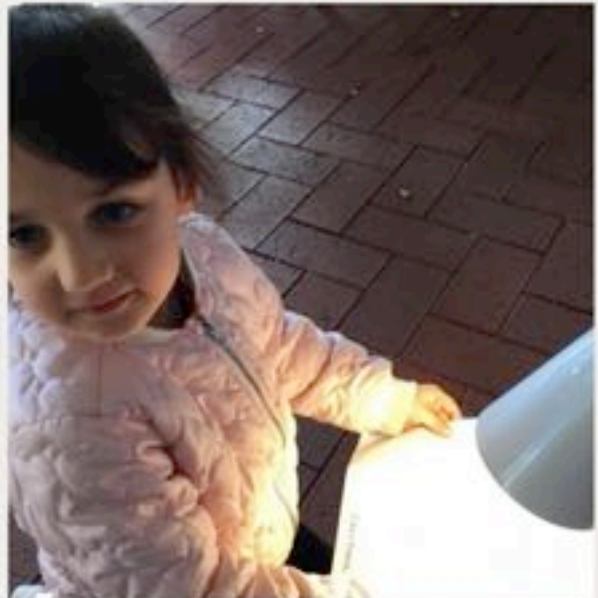
The writing will become visible only if kept under a lamp.

"Only mom and dad would be able to see what we write"

Procedure:

- The children squeeze some lemon juice into the bowl and add a few drops of water.
- Then, they mix water and lemon juice with a spoon.
- After that they dip the cotton bud into the mixture and write a message onto the white paper.
- They wait for the juice to dry so it becomes completely invisible.
- When they are ready to read their secret message or show it to mummy and daddy, they heat the paper by holding it close to a light bulb.

Outcome: After squeezing lemon juice and diluting it in water, children come to know that diluted lemon juice is hard to be noticed when applied to paper. The hypothesis proved to be accurate as the ink became visible only under a lamp by turning brown.

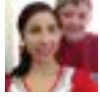


Static & Smiles!

Montessori & EYLF

21 Aug 2018

Observation:



Jessica Matheson:

STEAM Streams: Science (chemistry), Engineering (considering types of energy)

Rationale: It is important for children to develop 'sustainable attitudes' from an early age. There are many strands intertwined when it comes to helping children think sustainably about nature and ecology - from encouraging them to feel emotionally connected to animals to teaching the skills associated with cultivating plants. One aspect of sustainability is considering alternative energy sources - and to do this it is important for children to start understanding how forms of energy work and how it can be charged, transferred, adapted and manipulated.

Learning goal: To develop curiosity about unseen forces and empower children to understand and harness the power in the world around them!

Key words: static electricity, positive charge, negative charge

Materials: Balloons (water balloons work best), small balloon pump.

Hypothesis: This experiment offers another glimpse into the great unknown - unless a child has conducted (pun intended!) the experiment before they tend to have a completely open-mind about what will happen when we rub the balloons. Some guess that they will pop, others hypothesise that the balloons will float away - there's a range of responses that are all indicative of a child's personal pattern of logic and imagination!

Procedure: The children blow up balloons (and, with the help of an adult, tie them up). Then they apply friction to create opposite static charges on the balloon and the surface (such as the surface of our hair, or of our clothing). Once the electrons are charged through the friction the child lets the balloon "magically" cling to their hair or clothing! The children repeat the process of 'charging' their balloons and experiment with a range of surfaces - comparing, for instance, whether all types of fabric charge them or only some.

Outcome: As if by magic (but really through the power of static electricity!) the balloons will stick to the child's hair, clothing, the walls, pretty much everywhere! The adult talks to the children about why this is happening and introduces the keywords to describe the reaction!

Practical Life / Grace & Courtesy: Grace / 'Walks the Line' heel to toe: Mastered





Outcome 2: Children are connected with and contribute to their world

- Children become socially responsible and show respect for the environment.

Outcome 3: Children have a strong sense of wellbeing

- Children become strong in their social and emotional wellbeing.

Outcome 4: Children are confident and involved learners

- Children develop dispositions for learning such as curiosity, cooperation, confidence, creativity, commitment, enthusiasm, persistence, imagination and reflexivity.
- Children transfer and adapt what they have learned from one context to another.

Outcome 5: Children are effective communicators

- Children interact verbally and non-verbally with others for a range of purposes.

Analysis & Reflection:



Jessica Matheson:

This experiment is open-ended and leads to lots of spontaneous discoveries (and bursts of laughter!) as children explore all the different ways they can charge their balloons and all the places it will stick! Each time the experiment is repeated with a new group of children they will find their own unique insights or extensions - such as when Valentina, Gabriella and Cristiana discovered that they could use the balloons as part of our Montessori "Walking the Line" movement game. This is a physical activity that involves taking slow, deliberate 'heel-to-toe' steps around the edge of our circle mat. It is intended to promote balance, grace and physical coordination. The Walking the Line activity can be extended by introducing a range of props - such as a jug that the child holds while trying to walk so smoothly that they don't spill a drop, or a beanbag balanced on their head to encourage upright posture as they take their steps. Valentina, Gabriella and Cristiana realised that once they had charged their balloons, and stuck them to their heads, they could try to walk around the circle so gracefully that they didn't disrupt the balloons!