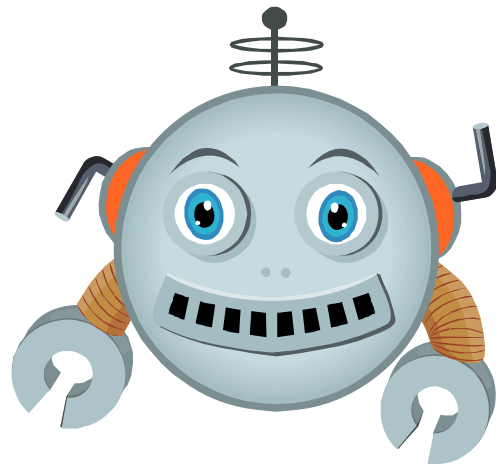


How-to-Kit



Science Fun

Other How to Kits & Literacy Activities

This How to Kit was developed to help organizations celebrate literacy in the NWT. It is one in a series of How to Kits that you can download from the NWT Literacy Council website at www.nwt.literacy.ca. You are welcome to photocopy and use the activities in your programs, or adapt them to your needs.

Other How-to-Kits you will find on our website:

- 1-2-3 Rhyme with Me
- Community Book Swap
- Family Reading Party
- Games Night
- Literacy Treasure Hunt
- Pyjamas and Book Party
- Reading Circles and Story Extenders
- Scattergories
- Storytime on the Radio
- Family Literacy Activities Night
- Book Making
- Literacy Games for Adults
- Get Caught Reading & Other Promotion Ideas
- Election
- Environmental Print Games
- More Literacy Games
- Read for 15
- Writing and Publishing Children's Books
- Literacy Survivor
- Involving Families in Children's Learning
- Literacy Activities for Holidays – Thanksgiving, Halloween, Christmas, Valentine's Day, Easter, Birthdays
- Puppet Making
- Writing Contest
- Culture and Traditions
- Books in the Home
- Facilitating a Workshop
- Talking Books
- Family Math
- Family Cooking
- Readers Theatre
- Family Literacy Activities Night 2
- Word & Picture Bingos
- Plan a Family Literacy Fair
- Storysacks

You are welcome to download and use these kits.

NWT Literacy Council

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Yellowknife, NT X1A 2N6

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Email: nwtliteracy@nwtliteracy.ca

Website: www.nwt.literacy.ca





Science Fun Overview

Science is a fun way to introduce pre-schoolers to the world around them. Science activities allow children to ask questions, expand their vocabulary, use their five senses to explore different things, and most of all, have fun doing it. We can prepare children for positive learning experiences in school by exposing them to fun science experiments at an early age.

Science activities for children are not the white lab coat experiments you might think of. They are fun hands-on activities that encourage children to expand their knowledge and thinking skills. Science activities encourage:

- Doing activities and playing games.
- Working and talking with others.
- Thinking skills.
- Taking a risk.
- Solving problems.
- Multi sensory exploration (using their sense of touch, smell, taste, hearing and vision to explore).

Research shows that students do better at school when their parents are involved in their education. This How-to-Kit provides an opportunity to engage families in developing positive attitudes towards science. The activities are easy, fun and hands-on. Families work and learn together to have fun with experiments.

Included in this kit:

- How to use the science fun kit
- Family Science Night
- Group Activities
- 11 Science Experiments
- Science Bingo
- Handouts for parents to take home (throughout)



How to use the Science Fun Kit

There are many ways that you can use this kit. You can use it in your classroom or use it at a family science fun night. Parents can also use many of the activities with their children at home.

If you choose to do a community event, below are some helpful hints to getting organized.

Get the community involved

Meet with other people and organizations in your community that are interested in supporting and celebrating literacy. Work together to plan the event. Ask businesses and organizations to sponsor your Family Science Night. They can donate money to buy prizes and provide snacks.

Decide the date

Family Literacy Day is a good time to do a community event. Choose a different date if these dates don't work for your community. Choose a date that will not clash with other community events so more people can attend.

Find a location

Find a space in the community to hold the event – the school, band office, friendship centre, youth centre, nursing station, library, or community hall.

Advertise

Begin advertising well in advance!

- Put up posters around the community.
- Advertise on the local radio station or green screen.
- Hand out invitations at school.
- Tell everyone about it.
- Advertise at least one week before the event.
- Ask families to sign up for the event.



Invite the local newspaper

Tell the local paper about the event. Invite them to attend and to do a story about the event.

Prepare the activities

Prepare all of the materials and things you'll need ahead of time. Check that you have everything, and then check again!

Plan and prepare snacks and drinks

Keep it simple with cut up veggies or crackers and cheese. Or you may decide the time is right for a community feast. You decide.



Have prizes

Collect prize donations. Have draws throughout the event for prizes and give prizes to individuals as well as the winning team. Be sure to have paper and pens ready for people to enter their name.

Take pictures

Take pictures of the event. After the event make posters using the photos and hang them around town so everyone can see what a great time it was. Share your pictures with the NWT Literacy Council. We like to report on literacy events in communities and would love to include photos in our newsletter.



Contact the NWT Literacy Council

In the Northwest Territories, the NWT Literacy Council can provide free books for prizes, share some ideas, and help you plan your event.





Family Science Night



Here are some suggestions for a Family Science Night.

- Choose the activities you want to do.
- Set up stations around the room and have families go to each station. There are eleven experiments included in this kit. This is probably too many for one event, so choose which experiments you want to do at your event.
- Consider starting your event with a group activity. Gather everyone around and read one of the stories suggested at the beginning of this kit. Then, let families go to the stations they are interested in.
- Circulate around the room helping families at each station. If possible, have a volunteer at each station to help families.
- Invite an elder or a trapper to explain the fur activity.
- Most experiments have an explanation at the end of them. This is for the person who volunteers at the booth in case people ask them questions. Many of the concepts will be too much for participants to fully understand, but if the volunteer understands them, it will be easier for them to answer any question.
- End your event with a group activity, such as the family science bingo, which we have included at the end of this kit.

What do children learn from early science experiments?

Children learn:

- To use their five senses to gather information.
- To use descriptive words for their observations: I see... I hear... I smell... I feel
- To identify the shape, texture, feel of an object (squishy, soft, sharp, bumpy, round, square, etc.)



- To make connections between what they are learning and what they already know.
- To compare results using measurement terms – bigger, smaller, wider, etc.
- To talk about what they are observing.
- To share and work with others.
- To begin to use their hypothesis skills when they guess or anticipate what will happen next.
- To ask questions such as “I wonder why”.

From www.kindergarten-lessons.com



Group Activities



Reading about Science

Read a book about science to begin your family literacy night. There are many books that incorporate science ideas and concepts. Some suggestions are:

- *Ice Cream Larry* by Daniel Pinkwater
- *My 5 Senses* by Alike
- *The Tiny Seed* by Eric Carle
- *The Very Hungry Caterpillar* by Eric Carle
- *Bartholomew and the Oobleck* by Dr. Seuss
- *50 Below Zero* by Robert Munsch
- *Spring Blizzard* by Diane Brookes
- *Who Sank the Boat?* by Pamela Allen
- *In the Small, Small Pond* by Denise Fleming
- *Science With Water* by Helen Edom
- *Jack's Garden* by Henry Cole

After you have finished your science experiments, play Science Bingo with the game at the end of this kit. There are also activities included with some of the experiments. You could photocopy these sheets and have them ready for families to take home, or have a special table set up with the sheets and craft supplies for families to work on that night.



Amazing Ice Cubes

This experiment will allow you to lift up an ice cube with a string.

What you need:

- A drinking glass of cold water
- Ice cubes (one or two per person)
- Salt (regular table salt)
- String



Instructions:

Do you think that an ordinary string will be able to lift an ice cube out of the glass? It will, if you follow these steps.

Place an ice cube into a glass of cold water.

1. Put a little bit of salt (a pinch!) on top of the ice cube. Be careful to keep the ice cube upright in the glass.
2. Hang the string over the ice cube.
3. Place a little more salt over the string.
4. Wait about 3 minutes. Try lifting the ice cube out of the glass. The string should be attached to the ice.

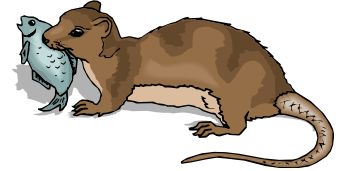
How it works:

This experiment works because the salt will melt the ice and cause some water to form on top of the ice cube. This water will then re-freeze around the string, causing the string to be attached to the ice cube. Water becomes ice at a temperature of 0 degrees Celsius (32 degrees Fahrenheit), which we call the freezing point of water. Adding salt to water lowers the freezing point, and prevents the formation of ice.

Whose Fur Is This?

What you need:

- About 5 fur frames (instructions follow)
- Blindfold



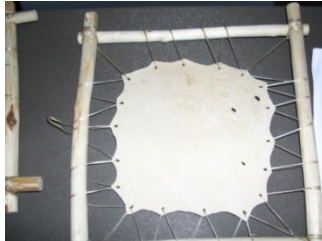
Instructions:

- 1) Talk about the different types of fur. Which kinds belong to which animal? Why do different animals have different kinds of fur?
- 2) Let the children feel all the different types of fur. Talk about which one is the softest, which one is the longest, which one is the shortest, etc.
- 3) Feel the long guard hairs and the softer underhairs. Explain that the long guard hairs protect the animal from things like dirt and insects, while the short, fluffy undercoat helps the animal stay warm. Some animals, like wolves, shed their undercoats in the summer to stay cool.
- 4) Blindfold one child at a time and let her feel and identify the different furs.



Fur Frame

You will need to make several frames with different types of fur to do the previous activity.



What you need:

- Small scraps of different types of fur
- Synthetic sinew or string
- Sewing awl or large nail
- Tree branch, about 2 cm in diameter
- Knife
- Hacksaw

Instructions

- 1) Strip the bark off the branch.
- 2) Cut the branch into four equal lengths, depending on the size of your fur scrap. Each length should be about 5 cm longer than one side of the fur.
- 3) Use the sinew to tie the branches together into a square.
- 4) Use the awl to punch holes around the edge of the piece of fur.
- 5) Lace the string or sinew through the holes and around the frame. Pull it tight and tie off the end.

Instead of doing this activity with fur from different animals, you may want to try doing it with hide in different stages of preparation.

From: *Mary Rose Sundberg, Goyati Ko*

We All Scream for Ice Cream!

This experiment will make some yummy ice cream from scratch.

What you need:

- 1 tablespoon sugar
- $\frac{1}{2}$ cup of milk or half and half
- $\frac{1}{4}$ teaspoon of vanilla
- 1 sandwich size ziplock baggie
- 1 larger sized ziplock baggie
- 2 tablespoons rock salt
- duct tape
- towel



Instructions:

1. In the smaller ziplock baggie, mix the milk, vanilla and sugar.
2. Squeeze out the extra air and seal the baggie with duct tape so it won't leak.
3. Put the small baggie into the larger baggie and fill it with ice, and salt. Adding salt to the ice will help make the ice cream get colder faster.
4. Squeeze the air out of the large baggie and seal it closed with duct tape, so the baggie won't leak.
5. Now, gently massage the baggies or throw them gently into the air for about 10 -15 minutes. You can wrap a towel around the baggies so that your hands won't freeze.
6. Discard the larger baggie and the ice/salt mixture.
7. When ready, eat the ice cream directly from the baggie.

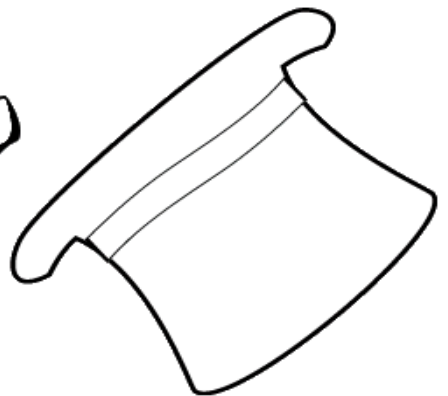
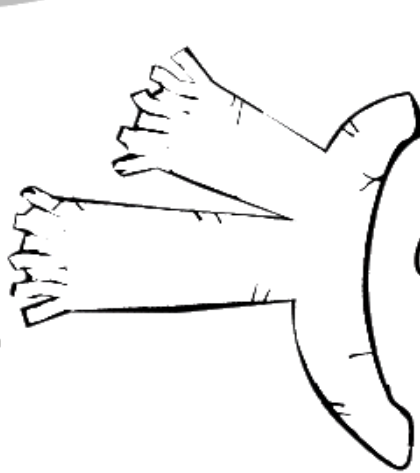
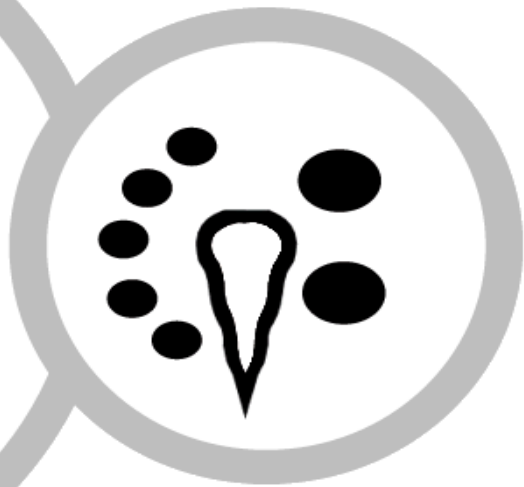
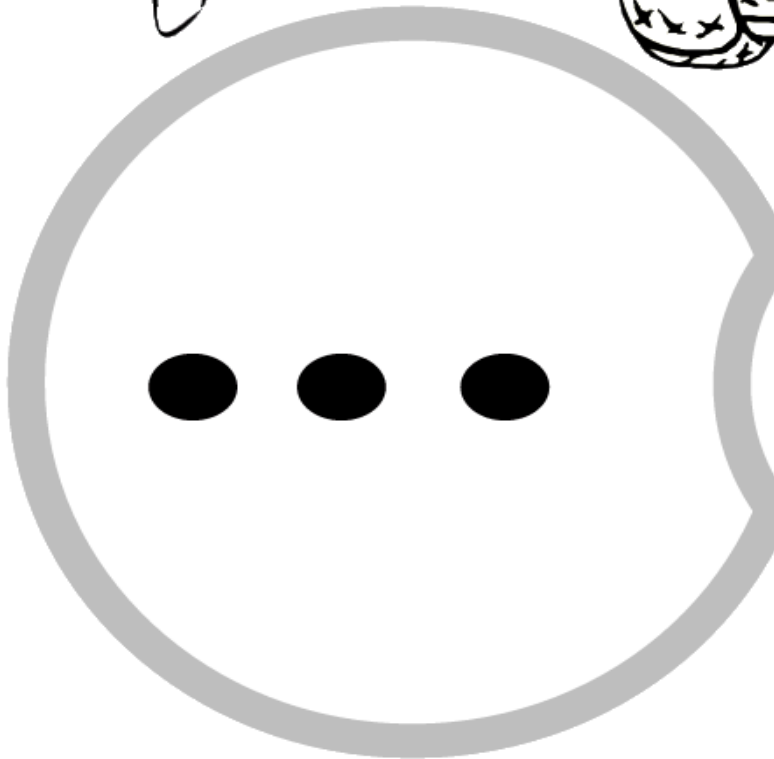
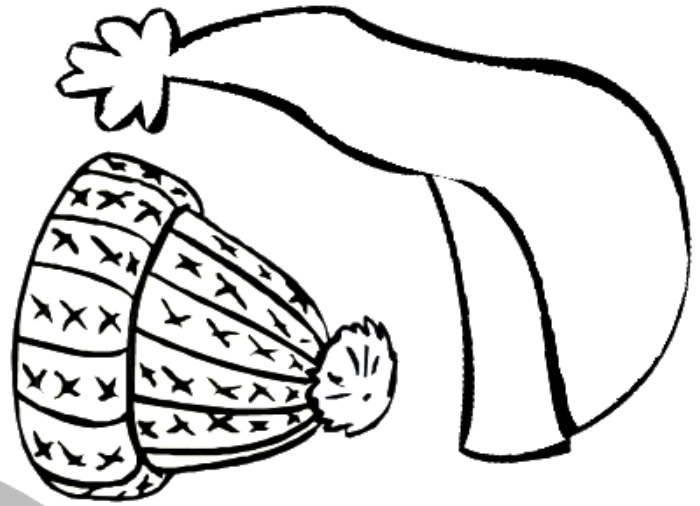
From: <http://pbskids.org/zoom>



How it works:

- Rock salt forces the ice surrounding the ice cream mix to melt.
- The "brine solution" or liquid that forms absorbs heat from the mix and gradually lowers the temperature of the mix until it begins to freeze.
- If there were no salt added to the ice, it would melt at 0 degrees Celsius (32 degrees Fahrenheit) and eventually the ice water and mix would come to equilibrium at 0 degrees Celsius (32 degrees F)
- The ice cream mix, however, does not begin to freeze until its temperature falls below 2.7 degrees. Therefore, in order to freeze the mix, we need a salt concentration, or a ratio of 5 cups of ice to 1 cup of salt. At this concentration, our brine temperature should remain constant at -11 to -13 degrees Celsius.
- This will give the rapid cooling and freezing that is essential to making smooth creamy ice cream.

On the next page is an activity that you can photocopy as a handout for families to take home.



Sink? or Float?

This experiment will allow you to think about why some things sink in water and why others float.



What you need:

- Large plastic tub (clear works best)
- Water
- A variety of items (enough for 1 for each child) such as:
 - an orange
 - plastic action figures
 - toy boat
 - dinkie car
 - ball of aluminum foil
 - rubber ball
 - empty drink container (water bottle)
 - a coin
 - playdough (2 equal sized pieces, 1 rolled in a ball and 1 flattened out)

Instructions:

1. Allow the children to choose an item to place in the water.
2. Before they put their items in the water, ask each child to guess whether her item will sink or float.
3. Drop the items one at a time into the water.
4. Why do some sink, and some float?
5. Why does the ball of playdough sink and the flattened piece float?





Why do some items sink, and some float?

There are three factors that tell you whether an object will sink or float: density, buoyancy and displacement.

Density refers to how much stuff is packed into a space. If an object is less dense than water, it will float. If it is denser than water, it will sink. This is why a sponge will float, but a rock will sink.

Buoyancy is the force of water pushing upwards on an object. Floating is like a pushing contest between water and objects in the water. Lighter, less dense objects do not push down as hard as water pushes up, so they float. Denser, heavier objects push down harder than water, so they sink.

If you spread the weight of an object out over a larger area, you spread out its downward force. If you spread it out enough, it will be less than the force of water pushing up. This is why humans float when stretched out in the water, but sink when curled up in a ball. It is also why the spread-out playdough floated, and the ball of playdough sank.

Displacement is the amount of water an object pushes aside. An object will float if it weighs less than the amount of water it pushes away.



It's Getting Foggy Out!!!

What you need:

- A large jar or wide mouth bottle
- Hot water
- Ice cubes
- A strainer



Instructions:

1. Fill the large jar/bottle with hot water all the way to the top.
2. Pour most of the water out, leaving about 2 centimeters in the bottom.
3. Set the strainer over the mouth of the jar and put ice cubes in the strainer.
4. Watch what happens!

How it works:

Fog is created from water. In this experiment, the cold air from the ice cubes will cause the warm, moist air in the bottle to condense. This forms fog.

From: http://www.dfo-mpo.gc.ca/canwaters-eauxcan/bbb-lgb/sandbox-sablire/experiments-experiences/index_e.asp

On the next page is an activity that you can photocopy as a handout for families to take home.



Mad Libs

Play this game with 2 people. Without letting the other person see the story, one person asks the other for the words listed below. Then she fills in the blank with the same number and reads the wacky story back to the first person. Switch roles for the second mad lib.

The Wacky Science Lab

1. Person's Name: _____
2. -ing Word: _____
3. -ing Word #2: _____
4. 2 Ingredients: _____
5. Action Word: _____
6. Toy: _____
7. Toy # 2: _____
8. Action Word # 2: _____

(1) _____ was a scientist who was always
(2) _____ her experiments. For example, one day,
(1) _____ was (3) _____ some (4)
_____ when all of a sudden it started to (5)
_____. From that day on, (1) _____
promised to only work on (6) _____ and (7)
_____ and to never (8) _____
blindfolded in the lab again!



Do You Feel What I Feel?

Introducing a feely bag to children will encourage their thinking, predicting, sorting and analyzing skills. Feely bags will also encourage the use of enriched language skills as children describe what they feel.



What you need:

- A fun bag that can be closed at the top. A fabric bag such as a pillowcase with some ribbon or cord to close it is ideal.
- Various objects that the children are familiar with such as: a ball, comb, small car, puzzle piece, book, a piece of fur, sunglasses, a padlock, a crayon, a stuffed animal, Kleenex, etc.

Instructions:

1. Allow children to take turns putting their hands into the bag and feeling the object.
2. Ask them to describe the object using words such as hard, soft, flat, round.
3. Record their ideas.
4. After a child has described what she feels, allow her to guess what the object is.

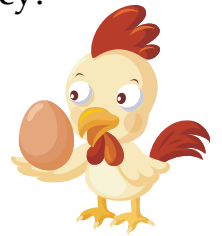


The Incredible Floating Egg

The incredible floating egg is another lesson in density and buoyancy.

What You Need:

- A drinking glass or another similar container
- Water (room temperature)
- A teaspoon
- Table salt
- One egg (uncooked)



Instructions:

1. Fill the glass with water (leave enough room so that it won't spill when the egg is added and when stirring takes place).
2. Add the egg to the water.
3. Make note of what happens (the egg will sink).
4. Explain that you are going to add some salt to the water. Ask the children to estimate how much salt it will take to "hold up" the egg.
5. Add salt, one teaspoon full at a time, stirring after each addition.
6. Place the egg in the water after each addition of salt to see if it floats.
7. Record your findings. The egg will eventually float.

How it works:

Eggs are denser than fresh water, so they sink. Adding salt to water increases its density by squeezing more molecules into it. This is why a cup of saltwater will weigh more than a cup of fresh water even though they take up the same amount of room. If you add enough salt, the water will become denser than the egg, and the egg will float.

Taste Test # 1

This is a fun game for adults and children to do together, and is a good way to get kids to try new foods.

What You Need:

- Fruit (cut into bite sized pieces)
- Other familiar foods such as cheese and vegetables
- Blindfold
- Knife and cutting board

Instructions:

1) An adult should cut a variety of familiar foods into bite-sized pieces.

Good foods to use are apples, cucumber, tomato, banana, onion, marshmallow, cheese etc. Try to avoid round foods, such as grapes, which can be choking hazards. You can also include 1 or 2 unfamiliar foods.

2) Blindfold the child. Feed him or her a small bite of food.

3) The child should try to guess what kind of food it is.

4) The parent can ask questions to help the child guess:

- Was it hard or soft?
- Was it sweet, sour, spicy or bitter?
- Was it yummy or yucky?
- For an even bigger challenge, try guessing the food while blindfolded and holding your nose.



**This experiment is taken from the Books in the Home Kit, *Green Eggs and Ham*



Taste Test #2

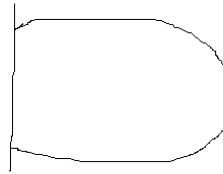
This slightly more involved taste test is a good Saturday project for elementary-aged children. It helps you discover which parts of the tongue can taste which flavours.

What You need:

- Water
- Sugar
- Cocoa
- Salt
- Lemon juice or vinegar
- 4 markers/crayons of different colours
- Q-tips
- Paper and pencil
- 4 cups or small bowls
- Blindfold

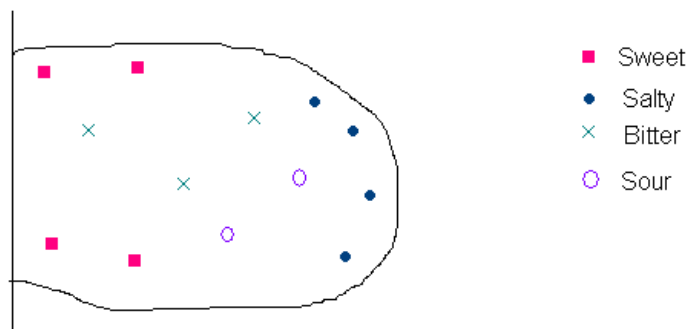
Instructions:

- 1) Talk about the words sweet, salty, bitter and sour. Think of foods that fit in each category.
- 2) An adult should add about $\frac{1}{4}$ cup of water to 3 of the 4 bowls. Mix about 1 tbsp of sugar, salt or cocoa into each of the three bowls.
- 3) Put a small amount of lemon juice or vinegar in the 4th. You may need to label the bowls.
- 4) Assign a coloured marker to each bowl.
- 5) Draw a picture of the tongue. Something like this will do:



- 6) Blindfold the child.
- 7) The adult should choose one of the cups and dip the q-tip in it. Touch the q-tip to the child's tongue.
- 8) She should say whether it is sweet, salt, bitter or sour.
- 9) Using the shape that corresponds to the taste, make a dot on the tongue map on the tip of the tongue. If she can't identify the taste, don't make a dot.
- 10) Try each of the four tastes on the tip of the tongue. Then try the side, the middle and the back of the tongue. Record the results on your tongue map.

Your finished map might look something like this:



Let's Make a Mess!



GOOP (also known as Oobleck) is a fun substance to make with children. Since it is made with common kitchen ingredients, it is safe for kids of all ages. Be prepared with smocks for the children to protect their clothes.

What You Need:

- Water (room temperature) about 1 cup
- 1 ½ - 2 cups cornstarch
- Food coloring (optional)
- Mixing bowl
- Spoon

Instructions:

1. Pour the water into the mixing bowl.
2. Begin to add the cornstarch to the water. Start with 1 cup of cornstarch.
3. Stir the water-cornstarch mixture with the spoon.
4. Continue adding the extra ½ cup of cornstarch. You will need to use your hand to mix it.
5. If you think you have too much water, add some more cornstarch, and if it seems too thick, add some extra water.
6. There is no set rule for making goop; you will have to play with it to get the right consistency.
7. When the goop is still it will seem like a solid, and when you try to grab it, it will act like a liquid.
8. When you have the desired mixture, it is time to add your food colouring. Slowly mix the colors around with your hand.
9. Play with your goop.



10. If children seem to be afraid to touch it, you can put some in a ziplock bag for them to squish and play with.

How it works:

Goop is considered to be a Non-Newtonian fluid. This means that it is in between a liquid and a solid. Goop is a fantastic learning experience for children. They can use their vocabulary to describe how it feels, eg: slimy, squishy, runny, jiggly, soft.

Colour Mixing

Children love to experiment with mixing colours. Older children can find out the answers to the questions on the next page.

What You Need:

- 3 mixing bowls
- 6-10 clear glasses
- Water
- Red, yellow and blue food colouring
- Measuring cups
- Apron or painting smock
- Old newspapers or plastic for covering your work surface

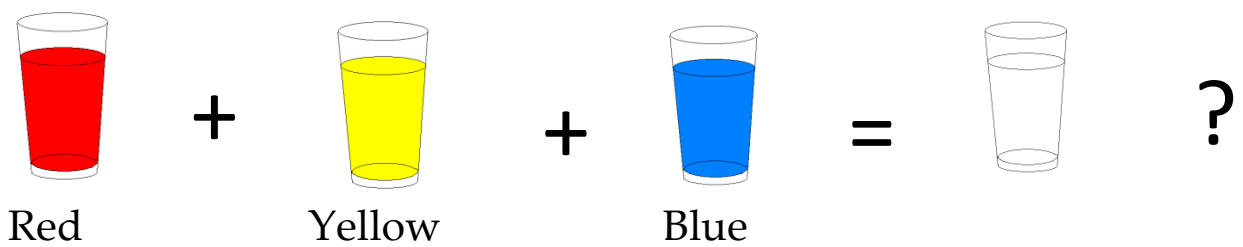
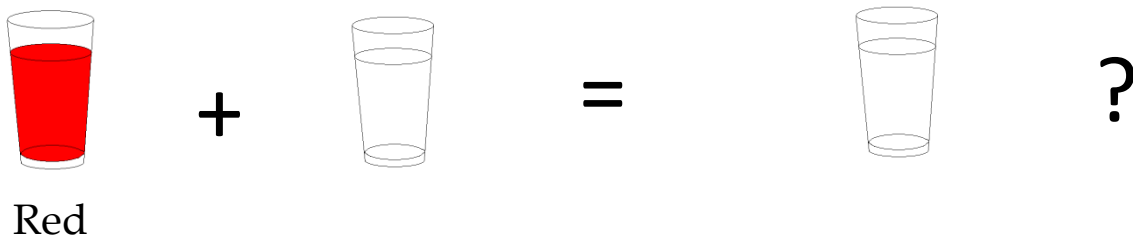
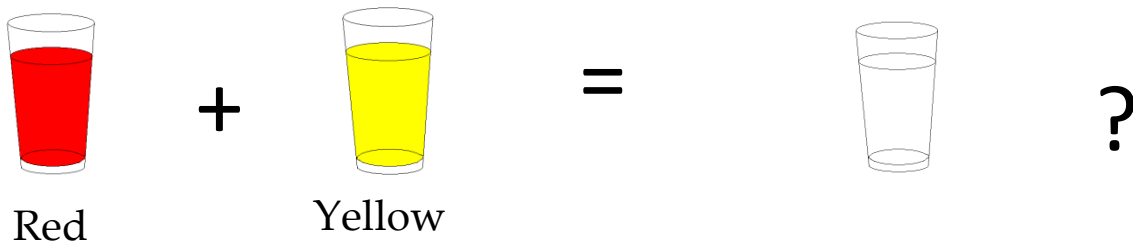
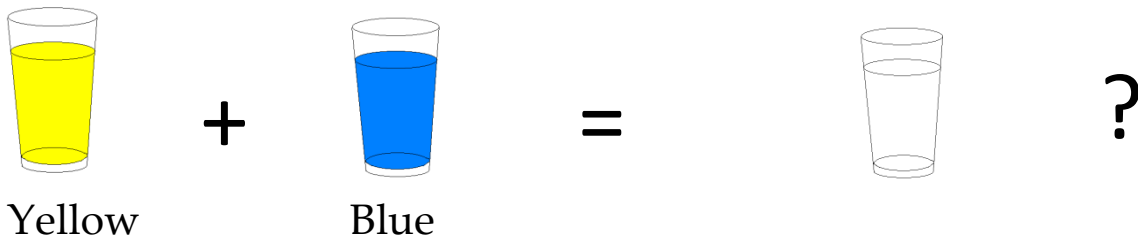
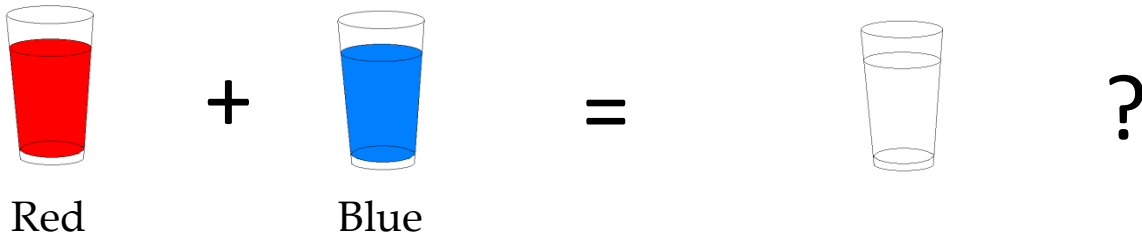
Instructions:

- 1) Fill each mixing bowl with water. Add a few drops of food colouring to each one (adult).
- 2) Spread newspaper or plastic over the table or counter.
- 3) Experiment with mixing the colours together in the glasses. Measuring cups are useful for transferring colours from the bowls to the glasses.
- 4) Older children may want to write out “recipes” for the colours they create. Include specific measurements and a name for the colour. An adult can help younger children write out recipes.



*This experiment was taken from the Books in the Home Kit, *Brown Bear, Brown Bear What Do You See?*

Use markers or crayons to colour in the answers.





Here We Grow Again!



Planting seeds allows children to see up close the way we grow our food.

What you need:

- Egg carton (break egg carton into individual “eggs” if using), styrofoam cup, margarine tub, etc.
- Potting soil
- Seeds
- Water
- Spoon
- Small rocks or gravel

Instructions:

1. Poke a hole in the egg carton or cup to allow for proper drainage.
2. Scatter a few rocks in the bottom. This will allow the water to come out without taking all the soil with it.
3. Fill the egg carton or cup about $\frac{1}{2}$ full with potting soil.
4. Plant your seed by placing it on the soil in the middle of the cup.
5. Place a small amount of soil on top of your seed until your cup is about $\frac{3}{4}$ full.
6. Water your plant, but don't use too much water.
7. Place your plant in a sunny window.

On the next page is an activity that you can photocopy as a handout for families to take home.

Plant Colouring Sheet.

Can you find:

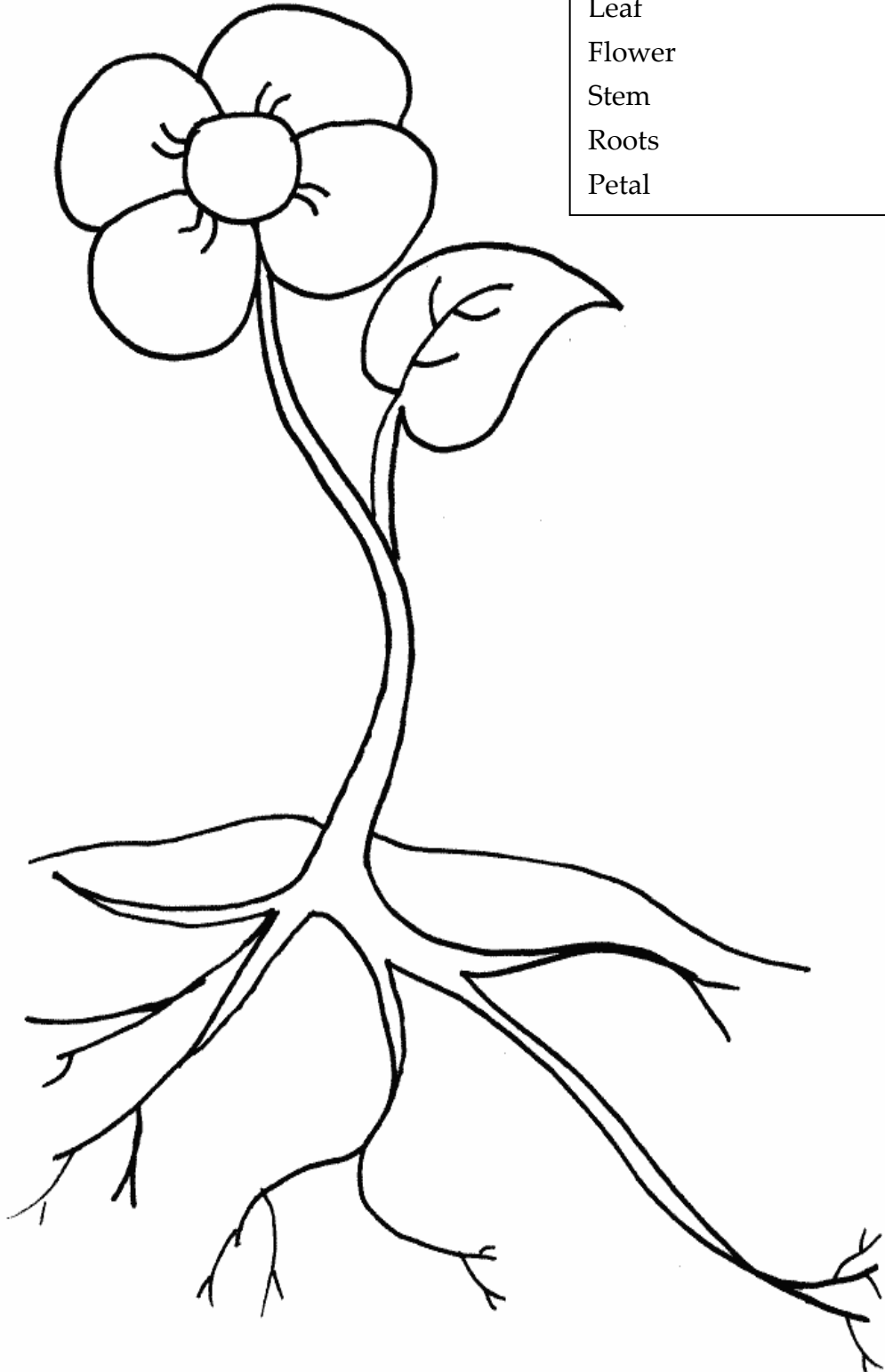
Leaf

Flower

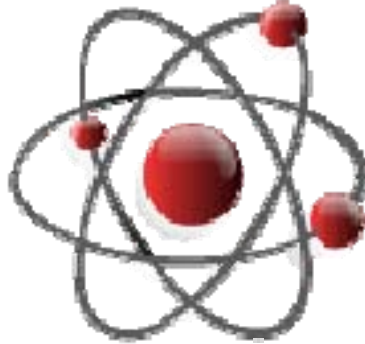
Stem

Roots

Petal



Science Bingo



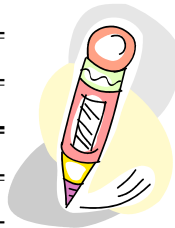
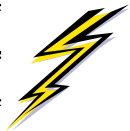
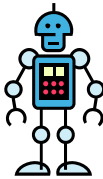
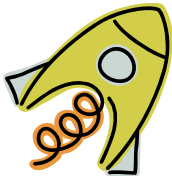
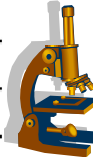
Science Bingo is a great game to end your family literacy night.

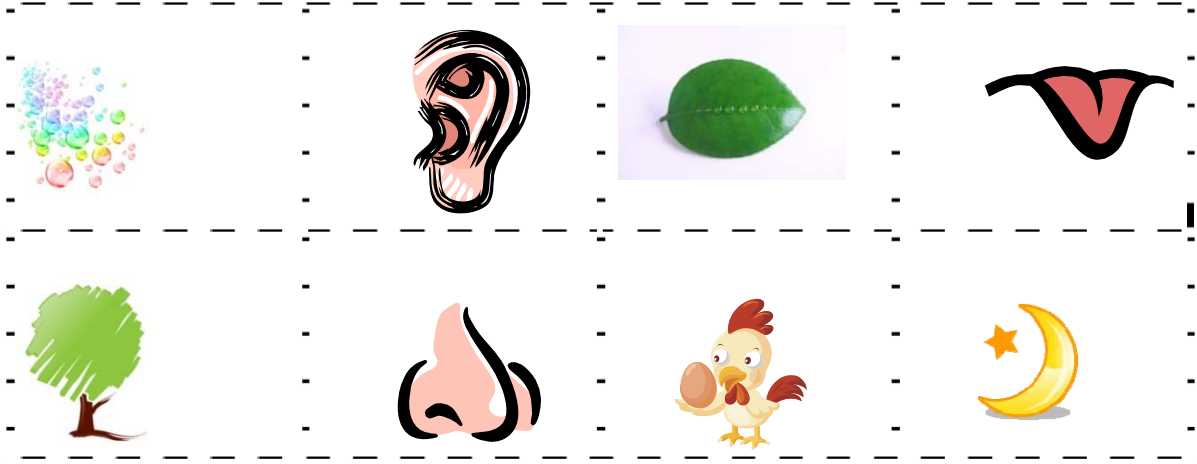
Copy the calling cards on the next page and cut them out. Put them in a hat or an envelope. You will use these to call your Bingo game.

We have also included 20 Bingo cards. They are all different. If you have more people at your family literacy night, you can photocopy some of the cards over again...but you will have more winners!



Make sure you have a variety of prizes available. People will want to play more than one game. You can buy fun prizes at the store, or get them donated, and you can even ask the Literacy Council for some book prizes for your special family literacy night.

Calling Cards - Cut out and put in a hat





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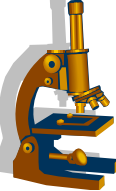
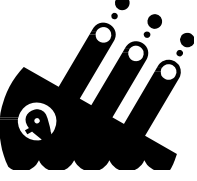

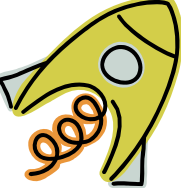


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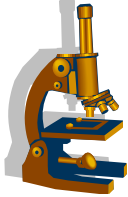








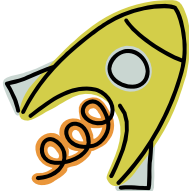




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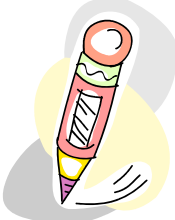



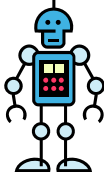


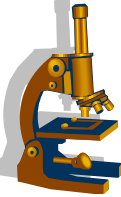














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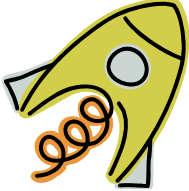





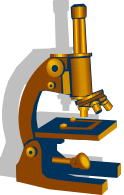
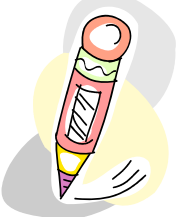












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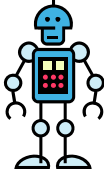









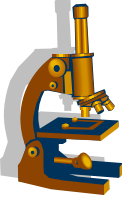











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