THE RABBIT'S MAGICIAN TEACHING NOTES

Author: Shae Millward
Illustrator: Andy Fackrell
Publisher: Ford Street Publishing

Themes:

Love, loss and comfort. The Moon. Magic. Science, physics.

Key points:

Themes of love, loss and comfort.

A gentle story on a sensitive subject.

Inspired by a scientific principle: The Law of Conservation of Energy.

Contains references to and representations of the moon and its phases.

The Rabbit's Magician is a children's picture book, but offers comfort to anyone of any age who has lost a loved one – person or animal.

Includes Australian animals.

The story at a glance:

The Amazing Albertino makes things disappear and reappear. He changes one thing into another. One day, Ziggy wakes to find the magician himself has disappeared!

Ziggy waits for him to reappear.

And waits some more. He worries something went wrong with the trick.

Ziggy's new friends help him realise his beloved Alby has died. Ziggy is comforted to learn that Alby is still around because his last trick wasn't disappearing – it was changing from one form into another.

From the Author – Story inspiration

The story of The Rabbit's Magician was inspired by *The Law of Conservation of Energy* – a fundamental law of nature. This law states: *energy cannot be created or destroyed, but it can change from one form into another.*

I had long known of this scientific principle, however more recently, I came across an incredibly moving speech by Aaron Freeman about why you want a physicist to speak at your funeral. It resonated profoundly on an energetic level. Later in the year, a scene appeared in my mind of a rabbit looking up at the moon. I sensed he was waiting for something. Night after night, he waited. *What are you waiting for?* I wondered. And then, he told me his story.

Fast forward to a finished book, and now, (t)his story offers comfort through the knowledge that our loved ones who have passed are not gone because energy cannot die. Their energy remains around us in this vibrant universe, just in a different form.

From the illustrator

Because the book's locations change between exterior to interior – from the Aussie outback to a theatre stage, from outside to inside Alby's house – I needed to find common elements that smoothed the transition. The easiest way was to use a common colour throughout. The purple/blue night sky gave me a vibrant base. So the colour theory was basically 'What looks nice with deep, moody, purple?' Purple looks good with bright green, and also vibrant red. So these three colours are dominant. Some of the details also use complementary colours that sit well with purple; the bunch of carrots (red and green), the bouquet of flowers (pale purple and yellow).

I was definitely influenced by Henri Matisse, especially the scene when Ziggy opens Alby's bedroom. Flame red walls, apple green door, pale plum carpet and bright purple bed.
I felt Alby would be a vibrant character with an unrestrained taste in colour.
The moon phases also provided a motif that I could repeat throughout the book. For instance, when Alby appears from his room, the door is slightly ajar – mirroring the slither of moon in the phase sequence at the top of the page.
Other examples are the door frames being half-moons, the circular window being separated by four sections (phases) and Ziggy's most important animal friend, the owl, being perfectly round like the full moon.
The most important aspect of illustrating The Rabbit's Magician was how to keep it bright and fun while telling a heartfelt story that happens in the dark of night.

Linking to the Australian Curriculum: These teaching notes offer activities and suggestions suitable for a wide range of year levels. A variety of Australian Curriculum codes have been listed, mostly for Foundation – Year 3, however, many of the following activities and suggestions can be simplified for younger children and extended upon for higher year levels, including secondary.

English – Guided Discussion, Activity Suggestions and Worksheets

ACELY1646, ACELY1656, ACELY1660, ACELY1666, ACELY1676, ACELA1433, ACELT1578, ACELT1582, ACELT1584, ACELT1586, ACELT1783, ACELA1786.

Before reading:

Look at the front cover, back cover and the title page. Can you identify the title, the author, the illustrator and the blurb? What do you think this book could be about? Why do you think that? Who do you think the characters could be?

Read out the blurb. What do you think might happen in the story?

<u>During reading:</u>

Why doesn't the rabbit want to play with or join the other animals?

What do you think the rabbit is waiting for?

Why do you think the rabbit decides to tell his story?

How do you think the story will end?

<u>After reading – story comprehension:</u>

The story begins with Ziggy waiting. What is he waiting for? (He is waiting for Alby to reappear.)

Which trick does Ziggy think Alby has performed? (He thinks he has performed a disappearing trick.)

Why does Ziggy think that? (Because 1. Alby is gone. 2. He had been spending a lot of time in his room just like when he practises new tricks. 3. He was tired as if working hard on a trick.)

Which trick did Alby actually do? (He changed from one form into another.)

Caution: The next few questions relate to the death of a character and might be a sensitive subject for some students. What does Owl mean when he says Alby's last trick was changing from one form into another and he can't change back? (This is Owl's way of telling Ziggy that Alby died.)

Discuss how the moon is used in the storytelling, e.g. In the opening scenes when Ziggy is looking up at the moon and waiting, its changing phases show the passing of time. When Alby is spending a lot of time in his room, the moon phases again show time passing, and the waning phases also represent Alby's life-force waning.

People don't need a reason to enjoy gazing at our glorious moon, but do you think the way Alby talks about the moon reveals why it is special to him? (Alby's affinity for the moon is revealed through his description of it as a 'master of illusion.' Alby is a magician, and magicians are masters of illusion. He appreciates that the moon has a lot of cool "tricks!")

What things remind Ziggy of Alby and why? (The Moon: Alby loved to gaze up at the Moon. He described it as a 'master of illusion,' and a magician is also a master of illusion. The Moon seems to perform tricks as a magician does.

The stars: stars remind Ziggy of the magic that sparkled out of Alby's wand.

Rainbows: rainbows remind Ziggy of Alby's colourful silk scarves.

Flowers: flowers remind Ziggy of the beautiful bouquets that Alby would make appear.

The breeze: when the breeze blows against Ziggy's fur, it reminds him of Alby gently stroking him.)

Does the moon make any light of its own? (No, it reflects sunlight.)

Does the moon really change shape? (No. Learn more about moon phases further on in these notes.)

What are the five types of animals in this story? (Rabbit, owl, koala, echidna, quokka.)

How do you think Ziggy is feeling in each picture?

If someone who hasn't read this story asked you what it is about, how would you describe it to them?

What were your favourite pages? Why?

If the story continued, what do you think might happen next? Talk about it, write about it or draw a picture about it.

<u>Other discussion points:</u>

Have you ever held a rabbit?

Have you ever had a pet rabbit?

Have you ever seen a magic show? If so, would you like to tell us about it?

Do you have a pet you love so much that they are like a best friend or family to you? Would you like to tell us about your pet and why you love them?

Do you know any magic tricks?

Alby and Ziggy often gazed at the night sky. Have you looked up at the night sky? Have you ever observed it through a telescope? What did you see? Have you ever seen the surface of the moon up close? What did you see? Astronomical sights differ depending on where we are on Earth. Discuss the constellations and celestial bodies that can be seen in your location.

In the scenes where Alby and Ziggy are gazing at the moon, do you recognise any of the famous landmarks in the illustrations? Do you know what they are called? Do you know where they are? Find their locations on a map or globe of the world. Have you visited any of these landmarks in person? Have you visited any other landmarks? Can you think of any other famous landmarks?

Alby and Ziggy travelled to many wonderful places to perform their shows. Where have you travelled to? Draw a picture of Alby and Ziggy on holiday somewhere. It can be a place you've been to or a place you haven't – even an imaginary place. Where are they? What are they doing?

<u>Alliteration:</u>
ACELA1439

Explain what alliteration is (when words next to each other or following closely start with the same letter or sound in a sentence or phrase). Ziggy describes Alby as a ‘Marvellous, magnificent magician.’ Can you make some three-word alliteration examples of your own? e.g. Ten tiny tacos, big blue banana, friendly furry foxes, etc. Draw a picture of one of your alliteration phrases.

What would your magician stage name be? Try using alliteration like The Amazing Albertino does. e.g. The Amazing Adam! The Great Gabriella! The Magnificent Madeline! The Spectacular Samuel! You can use your first or last name. Try shortening your name or using a nickname and adding ‘ini’ or ‘ino’ at the end for some extra flair.

<u>Literature and visual arts:</u>

In The Rabbit’s Magician book, some pages have very few words, how do the pictures help tell the story?

How do you think these pictures were made? (Ink, pencil, paint, computer-generated/digital, etc.)

How is colour used?

How has the illustrator incorporated moon phase imagery? (For insight, please refer to the ‘From the illustrator’ section earlier in these notes.)

Did you notice that the crystal ball Alby makes disappear and reappear is a white sphere, reminiscent of a Full Moon? Did you notice that the bowling ball Alby transforms is a black sphere, reminiscent of a New Moon?

Symbolism: Alby transforms a bowling ball into a balloon. This could be seen as symbolic of his transition from dense heavy matter to a light and free ethereal nature.

<u>Phonemes / Hard and soft sounds:</u>
ACELA1439

‘Magnificent magician.’ Notice how the letter g in each word sounds different. Magnificent has a hard g. Magician has a soft g that sounds like a j. Think of other words containing the letter g and identify whether they have a hard or soft g.

For further learning, explore if there are any rules to help us know which way to pronounce a letter ‘g.’ (Yes, but they are only general rules and there are exceptions.)

Are there any words containing more than one ‘g’ in which they are pronounced different ways? (Yes, some examples are: gigantic, geography, gorgeous.)

<u>Moon poetry:</u>
ACLARC143

The moon often inspires poetry. Write a short poem about the moon. It can be a rhyming poem, a haiku, an acrostic poem, a rap or free verse.

WORKSHEET ACTIVITIES:

Worksheet no. 1: Can you complete this crossword themed to The Rabbit's Magician?

Worksheets no. 2A and 2B: Wordsearch puzzle – how many words from The Rabbit's Magician can you find? Two word-search puzzles with different degrees of trickiness.

Worksheet no. 3: The Amazing Albertino changes one thing into another. Draw a picture of something in the first box and then, in the second box draw what you wish you could change it into? e.g. brussels sprouts into ice-cream, a stone into a gold nugget, a spider into a puppy.

Worksheets no. 4A and 4B: Can you help Ziggy through the maze to reach the carrots? Two mazes with different degrees of trickiness. Mazes test spatial reasoning and problem-solving skills.

Worksheets no. 5A, 5B, 5C, 5D, 5E, 5F: Six whole pages of spot the difference fun – can you find the odd one out in each row? Tests visual perception skills.

Worksheet no. 6: Words Within Words. How many smaller words can you make using only the eleven letters of MAGNIFICENT or ASTONISHING?

Worksheets no. 7A, 7B, 7C: Split Words. Words related to the story have been split into two or three pieces. Can you draw a line to re-join them?

Worksheet no. 8: Spell-ing Fun. Can you fill in the missing letters of these words related to the story?

Worksheet no. 9: Word Unscramble. How many of these words related to the story can you unjumble?

Moon Facts and Phases
ACSSU019, ACSSU115, ACSSU020, ACSSU048.

What is a moon? (Moons are natural satellites that orbit planets (or asteroids).)

The Moon and the Sun look about the same size to us here on Earth. Are they really? (No)
How big is the moon compared to Earth? (The moon is about a quarter of the size of Earth.)

Why do the Moon and Sun look the same size to us? Because the Moon is closer to us and the Sun is much further away. The Sun is about 400 times bigger than the Moon, but it is also about 400 times further away.)

Does the Moon make its own light? (No, it reflects sunlight.)

Does the Moon have more, less or the same gravity as Earth? (Less.)

What is the surface of the Moon like? (The Moon's surface has crater pits, powdery dust, rocks, hardened lava plains, mountains and valleys.)

Does the far side of the Moon look similar to the near side that we see? (No, it looks quite different.)

Do other planets have moons? How many? (Some planets have no moons, others have more than 50!)

How does the size of our Moon rank in comparison to the other moons in our solar system? (Our moon is the fifth largest moon in the solar system.)

The Moon orbits around Earth in an elliptical shape. What does elliptical mean? (An oval shape.)

How long does it take for the moon to orbit the Earth? (27.3 days.)

Does the moon change shape? (No, it is always a whole sphere.)

What are the 8 phases of the moon? The 4 principal or primary phases are: New Moon, First Quarter, Full Moon and Third or Last Quarter. The 4 intermediate phases are: Waxing Crescent, Waxing Gibbous, Waning Gibbous and Waning Crescent.

Altogether, the 8 phases of the moon's cycle – also known as the lunar phases – appear in this order: New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Third or Last Quarter and Waning Crescent (refer to Worksheet no. 11A).

How long does it take for the moon to cycle through all of its phases? (About 29.5 days.)

Sometimes the Sun, the Earth and our Moon move into a position that causes an astronomical event called an eclipse. What is a lunar eclipse? (A lunar eclipse happens when Earth comes between the Sun and the Moon and blocks sunlight from shining on the moon.)
What is a solar eclipse? (A solar eclipse occurs when the Moon comes between Earth and the Sun and blocks sunlight from shining on Earth.)

Do people in the Northern and Southern hemispheres see the phases of the moon in the same way? (No. The order of the phases is the same, but people in the Southern hemisphere see the moon oriented differently to the people in the Northern hemisphere, and vice-versa. In the Southern Hemisphere, people see the lit part of the moon grow and recede from left to right. In the Northern Hemisphere, people see the lit part of the moon grow and recede from right to left.)

What does WAXING mean? (The half of the moon's cycle when the lit part appears to be growing or increasing – New Moon to Full Moon.)

What does WANING mean? (The half of the moon's cycle when the lit part appears to be receding or decreasing – Full Moon to New Moon.)

What does GIBBOUS mean? (The stage in which the illuminated part of the moon is bulging, more than a semi-circle but less than a full circle.)

What does CRESCENT mean? (A curved shape with ends tapered to points.)

Suggestions for further learning:

What is the moon made of? Let the children guess first, then either tell them or set them the task of finding out.

Show the children a picture of the far side of the moon in comparison to a picture of the near side of the Moon. Why does the far side look so different?

How many moons do other planets in our solar system have?

How does the Moon affect the tides on Earth? Explore the relationship between the lunar phases and Earth's ocean tides.

Discuss the Moon landing of 1969.

Explore the moon symbolism and meaning in different cultures.

Worksheet no. 10 – Moon Observation Journal:

Set the students the task of observing the moon over a period of time. Using Worksheet no. 10, they can record the date and shade in the circle to represent the phase of the moon they see.

Moon Phases Picnic:

Select various food items that are, or can be, shaped like one of the moon phases, e.g:

Croissants: Show the students how a croissant is shaped like a crescent moon. Explain that the word 'croissant' means 'crescent' in French.

Bananas: Hold up a banana and ask the class which moon phase a banana resembles.

Rice cakes: Rice cakes are round like a Full Moon. They are even pitted like the surface of the moon.

Crumpets, English muffins and pikelets: These food items are round like a Full Moon, but can also be cut in half to look like a First Quarter/Third Quarter moon phase, or trimmed to look like a gibbous moon phase.

Provide fillings and toppings, and enjoy a moon phase picnic.

How to Demonstrate the Moon Phases

Worksheet 11A shows the phases of the Moon in the southern hemisphere. Worksheet 11B is a blank version – students can shade in the circles to represent the phases. They can label each phase by writing the names on the dotted lines or cut out the names from

Worksheet 11C and paste them on. These worksheets can be used in combination with the following four Moon phase demonstrations.

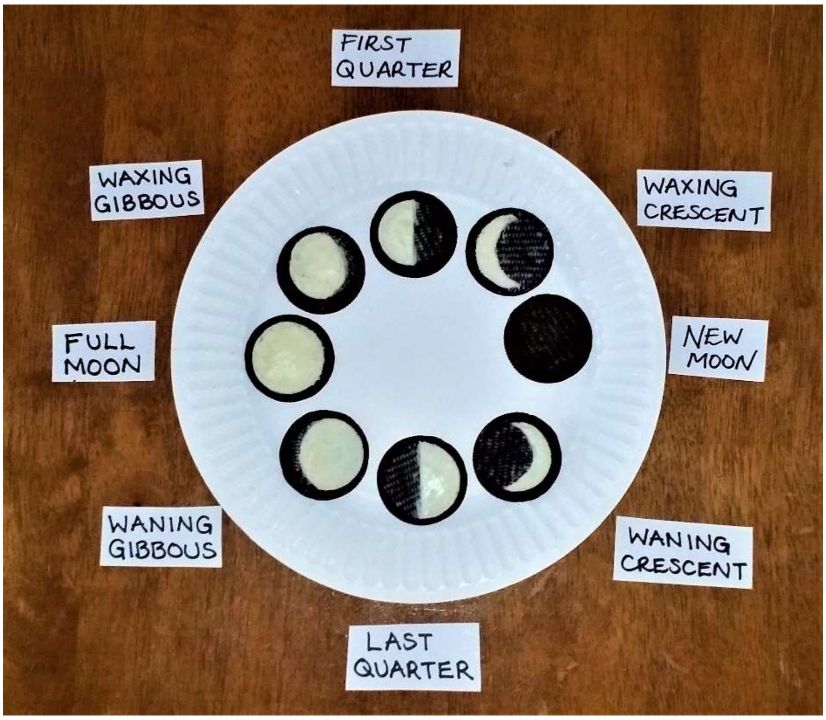
<u>Oreo Phases of the Moon – 2D Demonstration</u>

This delicious demonstration will help students connect the names to the shapes of the moon phases and learn the order. The contrast of the white crème filling against the dark biscuit is wonderfully suited to representing the moon in the night sky.

You will need:
A packet of Oreo biscuits
Something to scrape off the crème (e.g. a child-safe plastic butter knife, a spoon or a popsicle stick).
Paper plate or Worksheet 11B.

Optional: If displaying Oreo moon phases on a paper plate, students can draw planet Earth in the middle before they start. They can also draw a partial Sun on one side where the New Moon phase will be placed. Use Worksheet 11A as a guide.

1. Separate the two biscuits of an Oreo, twisting carefully, so that the creme filling stays attached to one side while the other side comes away clean. The clean side will be the New Moon and the side with the crème circle will be the Full Moon.
2. Separate more Oreos and scrape the crème away to match the other phases of the moon. Worksheet 11A can be used as a guide.
3. Display your 8 moon phases in the correct order on either a paper plate, as shown in the picture, or on Worksheet 11B (blank moon phases). Then make name labels for each phase, or print and cut out the labels on Worksheet 11C. Alternatively, you can just write the corresponding name next to each phase directly on the paper plate/worksheet.



Play-dough Moon Phases – 2D Demonstration

You will need:
Play-dough
A child-safe plastic butter knife, a spoon or play-dough tools
Paper plate

In this activity, children will make the 8 phases of the moon from play-dough. It will help them connect the names to the shapes of the moon phases and learn the order.

Optional: Students can draw planet Earth in the middle of the paper plate before they start. They can also draw a partial Sun on one side where the New Moon phase would be. Use Worksheet 11A as a guide.

1. Use a circle cookie cutter to make play-dough circles.
2. Use the tools provided to shape each phase of the moon. Worksheet 11A can be used as a guide. The play-dough represents the lit part of the moon, so you will not need to make anything for the New Moon phase.
3. Arrange your moon phases in the correct order and display in a circle on a paper plate. The space where the New Moon goes will be left blank because none of the moon is lit in this phase. Then make name labels for each phase, or print and cut out the labels on Worksheet 11C. Or simply write each phase name directly on the paper plate next to its corresponding play-dough representation.

Styrofoam Ball Interactive Moon Phase Model - 3D Demonstration

You will need:
A white Styrofoam ball (about the size of an orange). This will be the "Moon."
A pencil or wooden dowel.
A light source, such as a lamp with the shade removed. This bulb will be the "Sun."

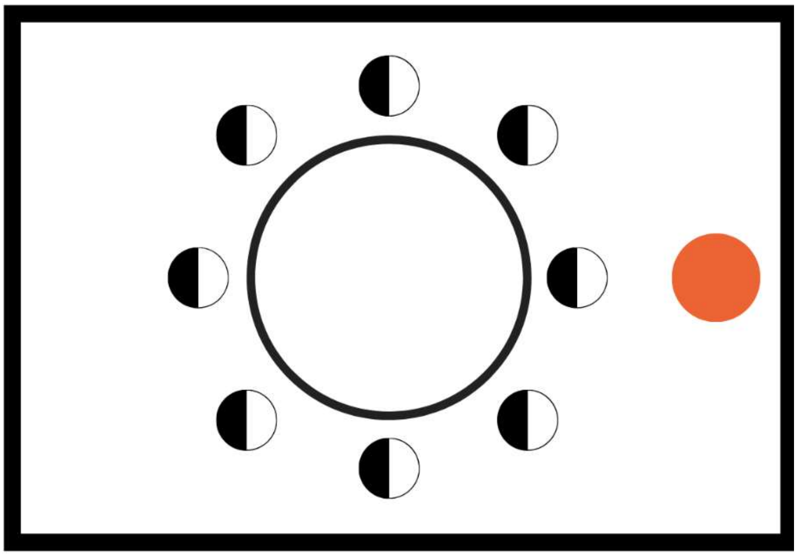
What to do:
1. Push the pencil or dowel into the centre of the foam ball so that it looks like a large lunar lollipop!
2. Turn the lamp (sun) on and the room lights off. The lamp has to be the only source of light, just like the Sun is.
3. The first student, with their arm stretched out in front of them, holds the pencil/dowel with the "Moon" attached on top.
4. The student starts off facing the lamp, holding the "Moon" between the "Sun" (bulb) and themselves ("Earth"). Their head = their perspective from Earth. The light from the "Sun" will be shining on the "Moon's" far side. The side they can see will not be lit. This simulates a New Moon.
5. Direct the student to turn slowly in a circle to their right until they see the Waxing Crescent phase, then continue turning to see the First Quarter phase, then on to the Waxing Gibbous phase. For the next phase, instruct the student to hold the "Moon" above their head to see the Full Moon, otherwise their shadow will cause a lunar eclipse (depending on the ages of the students, you might want them to demonstrate an eclipse and pursue further learning in this area).
6. The student continues to observe each moon phase, completing the cycle all the way back to the New Moon phase. Allow each student to do the demonstration for themselves.

Interactive Moon Phase Board - 3D Demonstration

You will need:
A thick, sturdy black poster board or black foam board
A tool to cut a hole in the board
8 same-sized white balls (e.g. ping pong balls or styrofoam balls)
1 bigger white ball
Orange paint
Black paint or black permanent marker
Glue

How to make:
1. Cut a hole in the centre of the poster board or foam board, large enough for a student to comfortably fit their head through.
2. Take the 8 smaller balls and use black paint or a black permanent marker to colour half of each one. All 8 should be half white and half black.
3. Take the bigger ball and colour it orange. This will represent the Sun.
4. Glue the “Sun” to one of the short ends of the board (as shown in diagram).
5. Glue the 8 same-sized balls onto the board, around the hole. Make sure they are placed as shown in the diagram: two in line with the sun, all spaced an equal distance apart and all their white sides facing towards the “Sun.” Tell the students that the white sides are lit by the sun.

What to do: Each student has a turn to poke their head up through the hole (their head represents Earth or their view of the Moon from Earth) and rotate the board around to observe the 8 phases of the moon.



Bird's eye view of interactive moon phase board.

Making Craters Demonstration:
ACSIS233, ACSIS025, ACSSU075.

Fill a container (using a round container adds a nice touch as it is moon-shaped, but not necessary) with about one inch of flour and pat down flat – this is our "moon surface." (This activity can be done with Moon Dough instead of just flour, see recipe below.)

Tell the children that space rocks hitting the lunar surface cause impact craters. Explain how Earth has an atmosphere that protects it by slowing down and burning up most space rocks, but the moon doesn't have an atmosphere to protect it.

Provide small objects of different sizes and weights (e.g. stones, marbles, ping pong balls, Christmas baubles, bouncy balls) to use as "space rocks."

Let the children take turns to drop a "space rock" onto the "surface of the moon." Remove the object and observe the crater. Compare craters made by different objects. Additional investigation: Experiment by dropping the same object from different heights. Does dropping it from a greater height equal a deeper crater? If so, why do you think this is?

Explain how the moon's lack of geological activity like Earth has, (e.g. volcanic and tectonic activity, erosion caused by wind and rain) means there is no way to erase the craters, so they will remain there.

Moondust Footprints Activity: (Outside activity) Fill a container (large enough for the students to stand in with both feet) with about one inch of flour and pat down flat – this is our "moon surface." Using a round container adds a nice touch as it is moon-shaped, but not necessary.

Discuss the 1969 moon landing. Tell the children that there is powdery dust on the Moon's surface (there are also craters, so you might like to use this container of flour to do the Making Craters Demonstration first, see above). Let the children take turns stepping onto the "surface of the moon" (into the container of flour), then walking on the ground leaving their footprints, just like astronauts on the moon. Explain that their footprints will be blown away by the wind, but that there is no wind on the moon, so footprints on the lunar surface will stay there. This activity can be done with shoes on or bare feet. Another nice touch, but again, not necessary, is for the children to wear boots (e.g. gumboots), just like the astronauts.

Moon Dough Recipe – Sensory Play Activity

Requiring only two ingredients, Moon Dough is easy to make. It's crumbly like sand, and mouldable when pressed together. This is the recipe for one batch – double or triple it as necessary.

You will need:
8 cups of all-purpose/plain flour
1 cup of baby oil (or use cooking oil if concerned about little ones putting some in their mouths)

Mix the flour and oil together thoroughly. The mixture should be crumbly but hold together when squeezed. Place moon dough in a plastic tub or tray. Let the children play with it as is, or give them accessories such as cookie cutters, scoops, silicone cupcake moulds, etc. Or keep the moon theme going with little astronaut figurines, toy spaceships and moon buggies. (This Moon Dough recipe can also be used for the Making Craters Demonstration, instead of flour on its own.)

Mathematics

ACMNA015, ACMNA030.

Worksheets no. 12A and 12B: Counting and addition fun with rabbits, carrots, moons, top hats and wands. Two pages with different degrees of difficulty.

Pick a Number, Any Number – Maths Magic Number Trick

Teach the students how to do this maths magic number trick so they can use it to amaze their friends and family. Depending on their ages and abilities, students can do the math in their head, write it out on paper or use counting aids.

Tell the students to:
Think of any whole number (for younger children it is best to ask them to choose a number between 1 and 10).
Double it.
Add 6 to it.
Halve it.
Subtract the original number you chose at the start.

Now, dramatically predict that their answer is 3! Ta-da! (The answer will always be 3).

Worksheet no. 13 – Walk Through Paper Trick

Hold up a sheet of plain A4 paper. Ask the students if they think you can walk through it. Tell them you know a magic trick to create a hole in the paper big enough to walk through. Give each student their own sheet of plain A4 paper and let them try to create a hole in the paper big enough to walk through. Tell them they can use scissors. Then, bring out Worksheet no. 13 and show them how it's done:

Step 1. Fold the paper in half along the dotted line.

Step2. Cut out the thick black rectangle.

Step 3. Cut along all the other black lines.

Step 4. Unfold the paper carefully and you will have a large paper loop - big enough to step through. Ta-da!

Depending on the ages of the students, you might like to extend this area of learning by discussing the relationship between area and perimeter and how, by cutting the paper in this way, you were able to lengthen its perimeter.

Worksheets no. 14A and 14B – Magic Squares
ACMNA055

What is a magic square? A grid containing specially arranged numbers so that every column, row and diagonal (top left to bottom right and top right to bottom left) add up to the same total – which is called the *magic number*. Benefits: practising addition skills and developing problem-solving techniques. A great aspect of magic squares is that they come in many different sizes and degrees of difficulty to suit your students' year levels and capabilities. Print out Worksheet no. 14A and 14B for basic magic square puzzles ready to be completed.

Card Towers
ACSIS213, ACSIS029, ACSIS041.

Decide if each student will build a tower individually, in pairs or groups of three. Give each student, pair or group a deck of playing cards. Set a time limit and challenge the students to build the highest card tower they can in the allotted time. When the time is up, discuss the various designs and building techniques used. What worked? What didn't? Did they stack the cards vertically or horizontally? Did they form their cards into triangular structures? Did they form their cards into square structures? Examine the tallest towers: what type of building techniques have been used? Compare the tallest towers to each other: have they been constructed using the same building techniques, or different?

The Arts - Textured Moon Art
ACAVAM107, ACAVAM111.

Start with a black A4 piece of cardboard or paint a white one black and let dry. Optional: Over the black, paint a thin layer of silver or gold glitter glue to create a starry night sky. Next, cut the rim off a paper plate (not the glossy type) – the inner circle will be your moon.

Choose one of these three art methods to make your textured moon:

Art method 1: Use school glue/PVA glue to draw the outline of circles on your moon and allow the glue to dry completely. These dried glue circles are the craters. Paint your moon with light yellow or light bluish grey watercolour paint. When dry, glue the moon onto your night sky background.

Art method 2: Add some flour to white paint until it is the consistency of cottage cheese or the paste used to fill wall cracks (about 2 parts paint to one part flour). Paint this mixture onto your paper plate moon. Use a plastic bottle cap to make circular indents on your moon surface. Let your moon dry and then glue it onto your night sky background.

<u>Art method 3:</u> Puffy paint moon. You will need one and a half cups of shaving cream (not shaving gel) and half a cup of PVA glue. (For a tint of colour, you can add a small amount of yellow, blue or grey paint or food colouring.) Mix the shaving cream and glue together gently, with a folding method as used in baking, so as not to lose all the air from the shaving cream. Paint your paper plate moon with a thick layer of the mixture. Drop marbles or bouncy balls into the puffy paint to make craters, or just make them with your fingers. Let your moon dry and then glue it to your night sky background.

Optional: Stick gold or silver star stickers onto the sky area.

The Arts - Drama

ACADRM028, ACADRM033.

Ask the children to learn a simple magic trick. They can practise it at home with help from their parents, and then perform it for the class. Lots of magic tricks can be done with simple objects found around the home. There are many online videos and library books with step-by-step instructions of easy magic tricks that kids can do. Benefit: developing performance skills.

Magic, Neuroscience and Psychology

Do magicians trick us or is it our own brains?

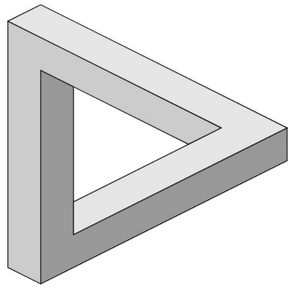
Magic is an art form dependent on fooling your brain into experiencing something impossible.

Years of practice and experience performing has enabled magicians to hone their skills and refine their methods. Studying magic scientifically can teach us more about how our brains work.

Many people consider magic to be simple entertainment, however, the ancient art of magic is helping today's scientists learn more about the psychology of perception and reality. The Science of Magic is now an area of study all of its own.

Now that scientists and magicians are collaborating, magic tricks and illusions - once guarded by secrecy and a source of great mystery - are providing fascinating insights into the mysteries of the human mind.

The Science of Optical Illusions
ACAVAR117, ACAVAR123.



Optical illusions trick our brains by using light, colour and patterns in ways that can be misleading or deceptive.

The human brain is designed to see structure and logic. It looks for patterns and fills in the blanks. Our brain is reliant on visual cues and it likes to group and organise things in a predictable way. Our eyes gather information that our brain processes and interprets to help us make sense of the world we're in.

Optical illusions trick us into a perception that differs from reality, just like magicians do.

Show optical illusions to the students and ask them to discuss what they see.

Classic optical illusion suggestions: The Impossible Tuning Fork/The Impossible Trident, the Ebbinghaus Illusion, the Café Wall illusion, the Hermann Grid illusion, the Jastrow illusion, the Kanizsa Triangle, the Rotating Snakes illusion, the Duck or Rabbit illusion, the Vase or Two faces illusion, M.C. Escher's optical illusions, the Muller-Lyer illusion, the How-many-legs-does-the-elephant-have? illusion, the Penrose Stairs illusion, the Lilac Chaser illusion, the Fraser Spiral illusion.

The Law of Conservation of Energy

ACSSU155, ACSSU190.

The Rabbit's Magician is inspired by the Law of Conservation of Energy, a fundamental law of nature. This scientific principle states: *Energy cannot be created or destroyed, but it can change from one form into another.*

Discuss the two primary forms of energy: Potential (stored energy) and Kinetic (energy in motion). Discuss other types of energy, e.g: Chemical, Electrical, Mechanical, Radiant, Thermal, Nuclear, etc.

The total amount of energy in a system always stays the same. Energy may appear to be lost, but it has only been converted.

What is energy transformation? (When energy changes form.)

Discuss examples of energy transformation.

What is energy transfer? (When energy moves from one place to another.)

Discuss examples of energy transfer.

Questions:

Can energy be created? (No.)

Can energy be destroyed? (No.)

Can energy be transformed? (Yes.)

Can energy be transferred? (Yes.)

Activity suggestions for further learning in this area:

Make a Magic Rollback Can.

Make a Popsicle Stick Catapult. Be sure to launch safe items like cotton balls or marshmallows.

Science experiments that seem like magic!

ACSSU031, ACSSU080, ACSIS011, ACSIS025, ACSIS038, ACSIS054, ACSIS213, ACSSU076, ACSIS065.

This list of scientific demonstrations has been selected for their magical effects and wow factor. They all have a short description and are well-known enough to find in-depth instructions, explanations and video tutorials online. Suitable for a wide range of ages and abilities. Many are S.T.E.M. activities.

Magic Milk: Learn about surface tension. You will need: Whole milk (but you can also experiment with milk containing different fat percentages), food colouring, some liquid dish soap in a cup or small bowl, cotton-tipped swabs, shallow dish or plate with a flat bottom and raised edges.

Pour some milk into the dish, you don’t need a lot, just make sure the bottom of the dish is covered (1-2 cm deep). Let it sit until still. Drip some drops of food colouring onto the milk (use 3 or 4 different colours and about 2 to 3 drops of each), but do not stir. The food colouring will allow you to see the chemical reaction. Dip the cotton-tipped swab into the dish soap to coat it, then touch it gently to an area of milk with food colouring and watch the chemical reaction. You can repeat this step by re-coating the cotton tip with dish soap and touching it to the milk in different areas. Enjoy the colourful show. It looks amazing, but do not be tempted to drink the milk – it is soapy.

Rainbow Walking Water: Learn about capillary action and colour mixing. You will need: 7 clear cups, glasses or jars; water; red, blue and yellow food colouring; paper towel.

Line your seven containers up in a row. Add water to numbers 1, 3, 5 and 7, make them about ¾ full.

For the next three steps, try to keep the number of drops uniform, e.g. if you add five drops of colouring to ¾ water in one jar, use the same ratio for the others too.

Add red food colouring to jars 1 and 7.

Add yellow food colouring to jar 3.

Add blue food colouring to jar 5.

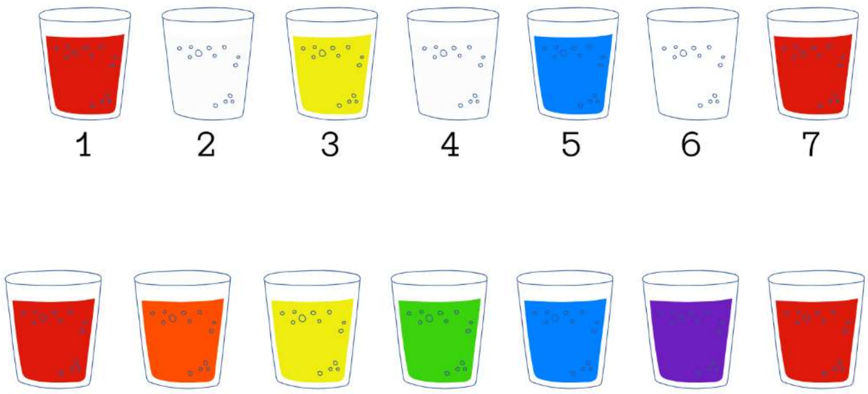
Jars 2, 4 and 6 should be empty.

Tear off six separate sheets of paper towel. Fold each one in half and then in half again so you have a long strip. Place one end of the strip into a jar with coloured water and the other end into the empty jar beside it. Repeat, so you have a strip of paper towel going from jar 1-

2, 2-3, 3-4, 4-5, 5-6, 6-7. (If your seven containers are fairly short and your paper towel strip sticks up high in the air between its two containers, you can trim it.)

The paper towel strips are like bridges. The coloured water will “walk” up one side of the bridge and down the other into an empty container. Two primary colours meet in each empty container, creating secondary colours.

Variation: You can omit jar number seven and, keeping the other six in the same order, arrange them in a circle like a colour wheel.



End result: secondary colours made in cups 2, 4 and 6.

<u>Refraction of Light:</u> Draw a thick black arrow on a sticky note, pointing either to the left or the right. Stick the note to a plain wall. Look through a drinking glass or jar filled with water. You will see that the arrow is now pointing in the opposite direction! Now experiment by drawing something else and see what happens when you look at it through the water-filled glass/jar.

<u>The Disappearing Coin:</u> This is another trick that demonstrates refraction of light. Place a coin on a flat surface like a table. Sit a drinking glass directly on top of the coin. Sit a saucer on top of the glass. Ask someone if they can see the coin through the side of the glass. They should say yes. Now temporarily remove the saucer, fill the glass with water, then replace it. Ask the person if they can see the coin now. They should say no. The coin has disappeared! Where did it go? Take the saucer away and tell the person to look down into the mouth of the glass to the bottom. They will see the coin!

<u>Lift an ice-cube without touching it:</u> Give each child a piece of string (about 20 cm long) and a cup filled with cool water. Put an ice-cube in each cup. Ice has less density than water so the cube will float. Ask the children if they can lift the ice-cube out of the cup without touching it, only by using the string. Once they’ve had a suitable amount of time to try, tell them to lay one end of the string across the top of the ice-cube. Then give them some “magic powder” (salt) and ask them to sprinkle it over the string and ice-cube. Wait 1 – 2 minutes. Now they will be able to lift the ice-cube with the string!

<u>Magic colour-changing playdough:</u> Put a magical spin on a fun favourite by adding thermochromatic pigment to your playdough recipe.

Oobleck: Oobleck is a marvellous, magnificent mixture of cornflour/cornstarch and water. Oobleck is a non-Newtonian fluid. When you put pressure on it, it acts like a solid. When it is under no pressure, it acts like a fluid. Optional: Playing with Oobleck is a magical experience as is, but try adding thermochromatic pigment for an extra dose of magic.

Science with Skittles: Learn about water stratification and concentration gradient. You will need a packet of Skittles candy, a white dinner plate and very warm water. Arrange the Skittles in a single-file circle on the plate. Use the different colours to make a fun pattern. Pour water gently into the middle of the plate until the candies are sitting in it, but not so much that they float out of their positions. You don't have to wait long, watch as their coating starts to dissolve and colours streak out from each candy towards the centre.

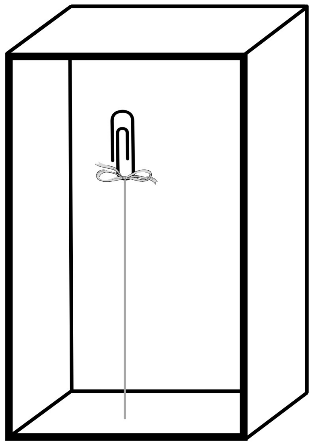
Skittles arranged in a circle on a plate.

Leak-proof Bag: This demonstration is an impressive way to start a conversation about the chemistry of polymers. You will need a resealable plastic sandwich bag (or the next size up works well), water and sharpened pencils. Pour water into the bag until it is between ½ and ¾ full, then seal it up. Hold the top of the bag with one hand and a pencil in the other. Poke the pencil in through one side of the bag and out the other. One end of the pencil should be sticking out of each side of the bag, but amazingly the water doesn't leak out! Repeat by poking more pencils through the bag.

Colour Changing Flowers: Learn about capillary action, transpiration and cohesion. You will need fresh white flowers, jars, water, food colouring and scissors. Fill the jars with water and add a different shade of food colouring to each one. Cut the flower stems diagonally and place one in each jar. The flowers will drink up the coloured water and you should start to see some results in a few hours. The flower will begin to take on the colour of the water. Continue to check on the progress over the hours and days.

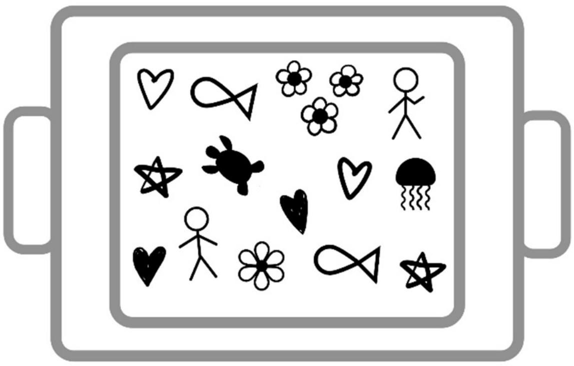
Bonus "split ends" experiment: Split the stem of a flower in two up the middle and put one half into a jar of coloured water and the other half into a jar of different coloured water. What happens?

<u>Defy Gravity:</u> Learn about gravity and magnetism. You will need a shoebox, a piece of thread, a magnet, a paperclip, scissors and tape. Stand your shoebox up vertically on a table or benchtop. Tie one end of the thread to the paperclip and then tape the other end to the horizontal "bottom" of the shoebox. Make sure the thread is just a bit shorter than the length of the box. Stick your magnet to the inside of the box's "roof." Hold the paperclip up near the magnet and when you let go it should stay there, seemingly defying gravity. The paperclip doesn't drop down because the magnetic force is attracting it. And it doesn't leap up and attach itself to the magnet either, because it is tethered by the thread, so it stays suspended in the air. Optional: You can decorate the shoebox to make a fun scene, e.g. make a park scene with grass, trees, sky, clouds. Draw a small kite on a light piece of paper, cut it out and stick it onto the paperclip. You can create any scene and flying object you like (night scene with a flying saucer, flower garden scene with a butterfly, etc.).


A paperclip defying gravity!

Always supervise children with magnets.

<u>Floating ink pictures:</u> You will need dry erase markers, a shallow ceramic or glass dish and room temperature water. Use a dry erase marker to draw a simple picture on the bottom of the dish, e.g. heart, star, flower, fish, turtle, jellyfish, stick-figure person. Wait a few seconds for the ink to dry. Then pour water slowly into the dish beside your picture. Watch as your picture "comes to life" (i.e. lifts off the dish and floats). In some cases you may need to move your dish around gently so the water motion can help it separate from the dish. Use a straw to blow your picture/s around in the water, just for fun. You can experiment with drawing only an outline versus colouring the picture in.


Pictures drawn on the bottom of a shallow dish.

<u>Lava Lamp:</u> Learn about density and chemical reactions. You will need oil; water; food colouring; Alka-Seltzer tablets and a clear drinking glass, jar or empty plastic water bottle (a tall, slim vessel gives a better effect).

Measurements don't need to be exact, try to keep your ratios of oil to water somewhere around ¾ oil to ¼ water, or 4/5 oil to 1/5 water. Remember to leave some room at the top of your container for the bubbling action.

You can add the oil and water in any order. Oil and water don't mix. Notice how the oil sits on top of the water. The oil has less density (is lighter). The water has a higher density (is heavier).

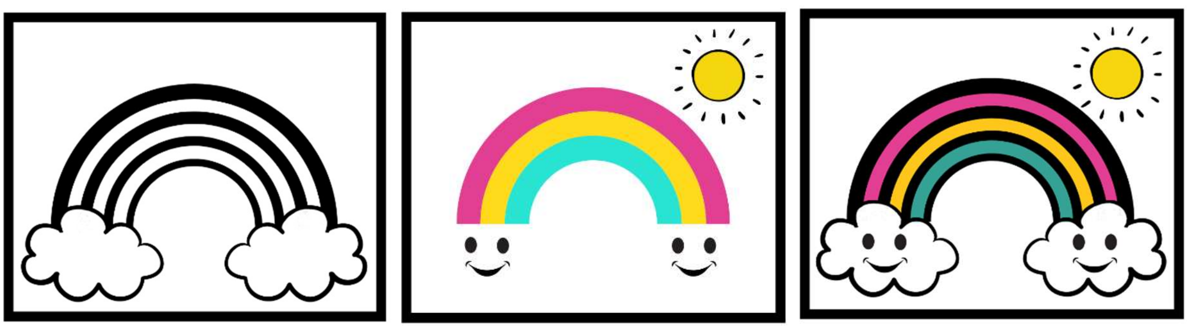
The food colouring can either be pre-mixed with the water before adding it to your container – or – when the oil and uncoloured water is in the bottle, you can add the food colouring and watch as it sinks down through the oil layer to mix with the water.

Break an Alka-Seltzer tablet into 2, 3 or 4 pieces. Drop in a piece of tablet. Watch your lava lamp bubble to life as the tablet dissolves and reacts with the water, creating carbon dioxide gas. The gas bubbles carry coloured globs of water to the surface. The bubbles pop at the top and the coloured globs sink back down, where they are picked up by more bubbles. This continues until the reaction dissipates. Simply add another piece of tablet to get it going again.

Do not put a lid on your container while the contents are reacting. Do not let children put the Alka-Seltzer tablet in their mouth.

<u>Blooming Paper Flowers:</u> Learn about capillary action. Print out the flower templates on Worksheets no. 15 A, B, C, D and E. Colour in your flowers with crayons or pencils, then cut them out. One at a time, fold the petals in towards the centre. Put water in a tray, then gently place your folded up paper flower on the surface, petals side facing upwards. Behold, the petals will unfold as if by magic!

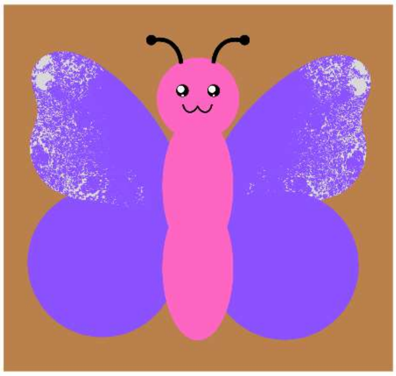
<u>Magic Paper Towel Art:</u> You will need a black permanent marker, washable colour markers, paper towel and a shallow dish with some water in it. Tear off two sheets of paper towel, keeping them joined together. Fold in half along the perforated seam so that one sheet sits directly on top of the other. Using the permanent marker, draw a simple picture on the top piece of paper towel. Enough of the ink should bleed through to the bottom piece for you to see a basic outline of your picture. Using washable markers, colour in this faint outline on the bottom sheet only. Optional: You might like to add some extra features that will show through. In the example below, we added a sun and smiley faces. Use a permanent marker for any black lines and washable markers for the coloured areas. When done, fold the top sheet back over so that it sits on top of the bottom sheet, then, holding both sheets neatly together, place them on top of the water. As the paper towel absorbs water, the colours (and any added features) from the bottom sheet will show through to the top as if by magic! Experiment by trying out different picture ideas.



Top sheet of paper towel. Bottom sheet of paper towel. The combination when wet.

<u>Hair Levitation:</u> This static electricity trick is literally hair-raising! Blow up a balloon and rub it against your clean (no hair styling products), dry hair. Pull the balloon away from your head and your hair should rise up towards the balloon.

Caution: Balloons are usually made of latex - check if any students have a latex allergy.



Butterfly body is glued down, wings are free to flap.

Static Electricity Butterfly: You will need: a square of cardboard from a cardboard box to use as a base plate (it needs to be slightly bigger than the wings), a piece of thin coloured cardstock for the butterfly body, tissue paper for the wings, a balloon, a pencil, scissors and a glue stick. Using Worksheet 16, cut out the butterfly body template. Trace around it onto your thin cardstock and cut it out. Next, cut out the butterfly wings template, trace around it onto the tissue paper and cut out the wings in one piece. The wings should not be bigger than or overhang the square cardboard base plate. Sit the tissue paper wings on the cardboard base. Apply glue to the back of the butterfly body and glue it onto the cardboard so that it holds the middle section of the wings down. The rest of the wings must not be stuck down, they need to be free to flap. Draw a face and antennae on your butterfly. Blow up a balloon and rub it on your hair or with a cloth to charge it up. Hold the balloon close above your butterfly (but not touching) and watch what happens. Do the wings move? Can you make them flap by raising and lowering the balloon?

Magic Wand / Science Wand: Make objects float in the air! You can purchase a nifty wand-shaped gadget called a Fun Fly Stick, which is a portable, handheld version of a Van de Graaff Electrostatic Generator. Being battery-operated, it can generate static electricity at the push of a button. It comes with a range of mylar shapes to levitate, but also has many other applications like bending a stream of water and moving an empty aluminium can without touching it, etc.

Or, to make your own electrostatic science wand, you will need a length of PVC pipe (60 centimetres long, 2.5 centimetres wide) and a cloth (wool works well). Rub the pipe with the cloth to charge it up. Experiment by holding the charged pipe near different things like pieces of ripped up tissue paper, bits of Styrofoam, popped/puffed rice cereal, confetti and thin strands of tinsel. You will need to recharge the “wand” regularly.

Note: Might not work as well in humid weather.

Physical Education

ACPMP009, ACPMP012, ACPMP013, ACPMP014, ACPMP029, ACPMP030, ACPMP045, ACPMP047, ACPMP048, ACPMP049.

Bouncy Bunny (played like Hot Potato): Provide a small soft toy bunny. Students sit in a circle. While music plays, students toss the bunny (essentially making the bunny “bounce”) to the person beside them, continuing around the circle. When the teacher stops the music randomly, the player left holding the bunny is out. Repeat until there is only one player left – the winner!

Abra, Abra, Abracadabra (played like Duck, Duck, Goose): Students sit in a circle facing inwards. One student is selected to be The Magician and is given a shortened foam pool noodle to use as a magic wand. The Magician starts walking around the outside of the circle. The Magician taps each player they pass once gently on the head (or shoulder) with the pool noodle as they say, 'Abra.' The Magician can tap as many or as few players as they like, but when The Magician taps someone and says the full, 'Abracadabra,' that player is magically transformed into The Chaser. The Magician starts running around the circle as The Chaser leaps up from their spot to chase after The Magician.

The Magician must try to make it all the way around the circle without being tagged and sit The Chaser's spot. If The Magician manages this, The Chaser now takes on the role of The Magician.

If The Chaser manages to tag The Magician, then The Chaser reclaims his/her spot in the circle and The Magician stays The Magician for another go. The game continues for as many rounds as you want to play.

Rabbit Hide 'n' Seek: Cut rabbit shapes out of white paper or cardboard (you might even like to laminate them). Hide the rabbits around the classroom (you can hide them outside too) so that only their ears or their bottoms and cottontails are visible. Ask the children if they can find them all.

Top Hat Toss: Construct a top hat from black cardboard. Alternatively, you could use a black bucket or plant pot (or cover any colour bucket or plant pot with black paper) and attach a cardboard hat rim to it.

Mark a spot on the ground and place the hat a suitable distance away, this will depend on the ages of the children. The first child stands on the marked spot. They are given ten sponge balls, the type magicians use. The goal is to aim and throw the balls one at a time, trying to land as many in the top hat as they can. Each child has a turn.

It can be as simple as this, or you can turn it into a game of elimination by giving each player only 5 sponge balls (or 3 for even more of a challenge). If all your balls miss, you are out. The players who are able to land at least one ball in the hat go into the next round. The hat is moved further away in each round. Continue until only one player is left – the winner!

Variation: To practice a different throwing technique requiring a flick of the wrist, students are given playing cards instead of sponge balls. Gameplay is the same as above: they can simply throw ten cards, attempting to get as many to land in the hat as possible. Or play the game of elimination with only 5 (or 3) cards.

The Human Knot Game

Benefits: This team-building exercise tests problem-solving and communication skills.

Magicians often do tricks with ropes and knots. In this game, people get themselves into knots. It can be played with groups of people as small as 5, or larger than 10. The bigger the group the more complicated the knots are, so smaller groups are better for younger children. Divide the class into groups (of 5 or 6 or 7, etc.) depending on the ages of the children and the number of students.

Groups stand in a circle facing each other. Players put their left hand into the middle and take hold of someone else's (not a person directly on either side of you). If there is an odd number of players there will be one left hand not partnered up, this will be sorted out in the next step.

Next, players put their right hand into the middle and take hold of someone else's (again, not the person directly on either side of you, and not the same person whose left hand you are holding). If there is an odd number of players there will be one right hand not partnered up, this hand can now join with the unpartnered left hand from the previous step.

Now players work as a team to untangle themselves without letting go of hands (however, you may adjust your grip as necessary to be more comfortable.)