Space Place Education Team

The World Around Us

Activity booklet Level 1

This booklet contains:

- **Teacher's notes for 'World Around Us'**
- **World Around Us assessment points**
- **Hands on activity suggestions**
- **Curriculum links**
- **Classroom worksheets**

Classroom worksheets:

Use these flexible worksheets to develop students awareness of abstract scientific concepts.

Day and night

Moon log

Our night time sky

Create a constellation!

The Sun and Earth sorting activity

Night time/ daytime sorting

These worksheets are available for editing and can be downloaded from our website.

museumswellington.org.nz

Curriculum Links:

Use these ideas to link this science topic with Literacy, Mathematics and Craft sessions.

Look at our recommended Book list for science books aimed at Level 1 students.

Fiction and non fiction titles are at the back of the booklet.

Notes for Teachers

The World Around Us

The 'World Around Us' workshop covers how day and night happens, how the Earth goes around the Sun and how we get the phases of the Moon. We discuss what happens in the day/night time and what we can see at these different times.

Day and night:

The Earth takes 365.25 days to travel once around the Sun. Every 4 years we add an extra day in February to make up for this- a leap year. The side that faces the Sun gets the daylight, the side that points away from the Sun is in shadow and it doesn't get any light from the Sun so it is night time. At different places or positions on Earth get the day and night at different times, New Zealand has its daytime when Europe has its night and vice versa as they are on opposite sides of the globe.

At the same time, the Earth is spinning, taking 24 hours to complete 1 spin. The tilt (23.5 degrees) of the planet allows parts of the Earth to get different hours and strengths of sunlight during the seasons of the year. When the Earth is slightly tipped towards the Sun, that hemisphere will have more direct sun rays and longer sunlight hours. The Sun appears to rise in the East and set in the West because of the spin of the Earth.

Phases of the Moon:

At the same time as the Earth moving around the Sun, the Moon is also travelling around the Earth. It takes approximately 29.5 days, a lunar 'moonth' or 'month' to complete one cycle. We only ever see the side of the Moon that is lit up and *reflects the light* from the Sun. We will only see the same face of the Moon, as the Moon also spins once for each orbit.

We see the Moon from different positions as Earth and the Moon are both orbiting. It waxes (gets bigger) until it becomes the full moon, and then wanes (gets smaller) until it becomes the new moon, then the cycle starts again. The New Moon is directly in between the Sun and the Earth so the reflected side of the Moon is pointing away from the Earth and no Moon can be seen. A full moon is when the Earth is in between the Sun and the Moon. The Moon is now directly opposite the Sun and is fully lit up by the Sun's light and can be seen as a full moon.

Some more challenging questions are:

- **Why does the Moon appear in the daytime and the night time?**
- **What is it made out of?**
- **Why don't we get a lunar or solar eclipse every month?**

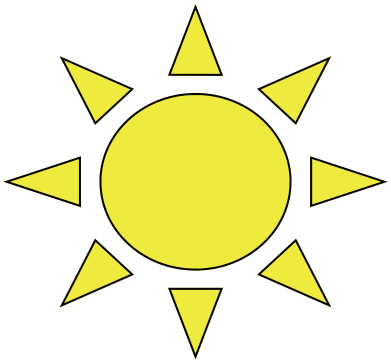
Assessment points for Teachers

The World Around Us

This assessment tool should help in understanding how much the children know before and after their visit to Carter Observatory.

- **Can children explain how we get day and night?**
- **Can children recognise the Sun, Earth, Moon and stars?**

You may want to annotate the pictures and note down children's ideas about their drawing. You may want to discuss what happens at day and night or what they can see or do at different times.



Assessment points: Day and night picture

Children should be able to understand that the side of the Earth pointing towards the Sun will be the daylight, the side facing away is night time as it is in shadow. Students may use arrows.

Assessment points: Sun, Moon, Earth and stars picture

Children should draw the Sun as the biggest circle and the Moon as the smallest. The Moon should be close to the Earth. If it is coloured in then the Sun should be yellow, Earth green/blue/white and the Moon grey. Stars do come in a variety of colours – blue, white, yellow, orange and red. The background colour should be coloured black.

There are many misconceptions around this topic, children should know that -

- **The Sun is NOT made of fire**
- **The Sun DOES NOT move, but the Earth does**
- **The Moon DOES NOT has its own light source**
- **The Earth is NOT the centre of the Solar System**

Hands on class activities

The World Around Us

There are many great hands on activities for this abstract topic.

Here are a few suggestions:

- **Create a Moon diary.** **Make a 30 page book with black pages. Each afternoon, ask a child to take the diary home to draw the phase of the moon that can be seen that evening or morning. Include with the diary, some white crayons or chalk, a small can of hairspray to set the pictures and a moon non fiction book. If no moon can be seen, draw what you *can* see (clouds, stars, rain etc) Date your pictures. You may want to draw the first few Moon phases so children and parents know what to do. Continue for a lunar month (29 days). Alternatively, you could use our provided worksheet and ask each child to create a log over 29 days.**

- **Day/night game.** **Ask children to cut out pictures from magazines or newspapers about what we see or do during daytime and night time. You may want to laminate the pictures or add Velcro to make an interactive display. Ask children to sort these activities into day and night time groups. Add words or statements to increase the difficulty. You could use this activity as a sequencing activity, or for independent or group discussions about day and night.**

- **Day and night moving model:** **In a large circle, place a lamp in the centre to represent the Sun (you may want to talk to children here about the similarities and differences between the lamp and the Sun) Choose an 'Earth' child and wrap them in an Earth map. Mark your home town on the map. Children should be able to see the difference between the 'night' and the 'day' as the child spins. Can children work out when dawn/noon/dusk will be at your home town or another point on the map? (children will need to move round in anti-clockwise direction if the Southern hemisphere is pointing up) What happens to other places on the map when your home town is at noon?**

- **Make an edible Sun, Moon and Earth:** Make and decorate three different sized cookies. Use the biggest cookie as the Sun, the smallest as the Moon. Use different icing colours and icing pens, toppings and lollies to create craters and rocks on the Moon, the seas, land and clouds on Earth and features of the Sun, like sunspots. Then enjoy eating them!

- **Time role plays:** Remind children about the words 'sunrise', 'morning', 'midday', 'afternoon', 'dusk', 'nighttime', 'midnight' and when these times happen. One child will role play a time of the day (going to bed, eating lunch, getting dressed , being asleep etc.) the rest of the group need to guess what time of day it is. Can they use the correct terminology? Create a whole day in role play from sunrise to sunrise. Take photos of each freeze frame and use these for sequencing activities later on.

- **Make a role play cave.** Using the book **"Can't you sleep Little Bear?" by Martin Waddell** as inspiration, create a role play cave and investigate the different sizes of light sources. Look at different size torches and use mirrors to reflect the light. Investigate the size of the torches/ light sources and the brightness or area it lights up. Make a curtain for the cave or house to block out the Moons light. What materials would be best? How would you find out? Make coloured stars to represent the night time sky.

A variety of learning activities can be beneficial to teach children about abstract topics like this. A mixture of observing, creating physical hands on models and linking it to other areas of the curriculum can help students create links and help understand difficult topics.

Literacy linked activities

The World Around Us

- Retell Maui and the Sun stories, use drama to think about how the characters were feeling. Freeze frame some of the story.
- Creative writing- look at pictures from the Moon. What does it look like? Describe the scene. What would it be like living on the Moon?
- Listening to different legends about the Sun, Earth or Moon from different cultures. Which was your favourite or least favourite? Why?
- Create role play areas of rockets and space ships. Where are you going? What would you need?
- Create rhyming lists of words that rhyme with Sun, Moon, Earth. Create a class poem.
- Read stories that include night time– Owl Babies, The Owl that was afraid of the dark, Goodnight Mouse.
- Routines—write a list of things you need to do before you can go to bed. E.g. read a story, brush teeth, change into pyjamas.
- Write clues about either the Sun, Moon or Earth. Use describing words and colours. Can children work out which one you are talking about?
- Have a selection of fiction and non fiction books about space in your library or reading area.
- Learn about the job of an astronaut and an astronomer. Would you like to be an astronaut or an astronomer? What do they do and why are they different?
- Use labels and captions on day and night pictures. What animals come out at different times? What things stay the same? See activity sheet.
- Create a question area– what questions would children like to know about the World Around Us? You could write these questions on stars or Sun shapes and display them in your classroom.
- Write postcards from the Earth. Collect postcards and pictures of the different environments we have on the Earth. Use adjectives to describe these pictures.
- Invite an astronomer to talk to your students. Ask students to come up with a list of questions that they would like to know about. You could create an interview situation or record it.

Mathematics linked activities

The World Around Us

- Sequencing day and night pictures, identifying 'morning', 'afternoon', 'evening' and 'night time'.
- Sorting out planets, stars and space objects using criteria like colour, size and shape, using language about size like big, bigger, biggest, small, smaller, smallest. Use language about shape to describe objects. Talk about corners and sides, which shape would have the most corners?
- Counting backwards like a rocket launch towards 'BLAST OFF!" Children start off crouched down and gradually rise up and jump high when they get to Blast off!
- Create a space picture with instructions. E.g. draw 2 rockets with 5 windows. Draw 3 planets and 6 moons.
- Join the dot constellations, make your own or use a star map to create actual constellation patterns using numbers in order. How many stars do you need to make a recognisable shape? Which constellation has the fewest/most stars? Which is the longest or shortest?
- Drawing different size and shaped stars, with 4,5,6,7,8, 9, or 10 points. **Make sure children are aware that stars are not actually star shaped.**
- Create shape pictures to represent the sun, rockets or planets. Talk about the shapes you have used and why.
- Making clocks and recognising when it is morning or afternoon.
- Practising direction – quarter turn, half turn, three quarter turn, full turn (good link with the Earth and Moon phases)
- Ordinal numbers – e.g. in a line of stars give the instructions to colour particular stars. E.g. colour the second star green and the sixth star orange.
- Using diagrams like T charts and Venn diagrams to sort and classify different space objects. E.g. Earth vs Sun, the Moon vs Earth or the Moon vs Sun. What they have that are similar and/or different?

Arts linked activities

The World Around Us

- Make the planets, Moon and Sun with tissue paper. Choose colours for each and think about sizes. Layer tissue paper to get different shades.
- Make constellation viewers or binoculars out of cardboard rolls. Paint and use in role play areas.
- Use clay to create flat 'moonscapes'. Use different tools to make smooth areas to reperesent the maria and make craters and ridges by squashing and pinching. Experiment with different ways of using clay. Look at large pictures of the Moon to get inspiration.
- Using junk materials, create rockets. Paint and decorate by looking at logos, windows and writing that rockets have. Blast off rockets after a countdown.
- Create shadow pictures or puppets and perform a shadow play. Show children how to make basic shadow animals with their hands.
- Using chalk and pastels, draw a starry picture on a black background.
- Draw stars and planets with wax crayons. Paint over with watery black paint to create a magical visible picture.
- Listen to slow music and pretend to walk on the Moon, using big heavy bouncy steps and slow movements. Pretend to drive or scoop up rocks.
- Sing songs like Twinkle twinkle little star in different languages. Make up actions for the words. Find traditional Māori songs like 'Rona in the Moon' or newer songs like 'Catch a falling star'.
- Investigate musical instruments. Listen to spacey tunes from artists like Rhian Sheehan or space movie theme tracks. Create your own space melody.
- Read 'Can't you sleep little bear? By Martin Waddell. Create your own role play area with caves and different size torches. Make coloured stars to represent the night time sky.
- People have been finding shapes in the Moon for centuries. What shapes or pictures can you find?

Recommended book list

The World Around Us

Sun up, Sun down Jacqui Bailey and Matthew Lilly
Taming the Sun; 4 Maori myths Gavin Bishop
Papa, please get the moon for me Eric Carle
Alfred's Broccoli Rocket Simon Clearwater and Andrew Dopheide
The Magic School Bus Joanna Cole and Bruce Degen
How Maui slowed the Sun Peter Gossage
I love the night Dar Hosta
Goodnight Mouse Rochelle Killiner
Rockets, Planets and Outer Space Helen Martin, Judith Simpson and Cheryl Orsini
You decide to go to the Moon Faith McNulty
On the Moon Anna Milbourne
There's no place like Space! (A cat in a hat series) Trish Rabe
Dr Seuss's Sleep Book Dr Seuss
Owl Babies Martin Waddell
Can't you sleep Little Bear? Martin Waddell
Spacebusters: The race to the Moon Philip Wilkinson