

LESSON PLAN

The joy of the small outdoors



“Even a small patch of the outdoors (especially with the help of an inspiring teacher) can somehow connect us to the wonders of the universe.”

Anna Portch

Manager, [Sunnyside Community Gardens](#)

LESSON OVERVIEW

Aim: To spend some time outside in a calm and reflective way. To get an understanding that we all live on a planet in space that rotates around a sun.

Learning outcomes

1. To know what a shadow is and that it moves throughout the day
2. To know that the earth goes around the sun, causing shadows
3. To know what the solar system is
4. To find out that some of the fun of a hobby is in ‘the doing it’ rather than the outcome.

Anna’s Inspiration

“My favourite environmental education activity is the leaf shadow drawing that is both tiny and inspiring. It was first shown to me by the wonderful John Cree and it blew my mind. Like all good environmental education activities it is

deceptively simple. I also love many Japanese crafts. It seems to me that crafts like Dorodango are also deceptively simple. Have fun!"

Number of students: Up to 32 in a class (depending on needs/ ability etc)

Suggested lesson time: Approx. one hour (hopefully longer!!)

Teaching Group: This activity can be enjoyed by a remarkable age range of people. It is based on a classic Japanese nursery school activity, but is also enjoyed as a hobby by adults. There is lots of potential to develop the concepts further if you wish.

Probable subject focus: Science, Art and/or Geography.

Subject specific language/key words: Shadow, solar system, Dorodango

Pre-planning

This outdoor session is ideal for an urban green space as all you need is an outdoor space with mud and leaves. A few days before the activity, go out onto the green patch that you are going to do the activity on and dig up a bucket of mud, bring it back to the classroom and let it dry out.

MAIN LESSON PLAN *(continued on next page)*

Timings	Teacher	Student	Outcome
Intro Find a leaf Shadow 15 mins	<i>Give each student a small square of paper and a piece of charcoal. Ask them to find a shadow of a leaf on a flat surface.</i>	<i>Place the piece of paper so that one leaf's shadow is on the paper. Colour in the shadow with the charcoal. Get the shadow to be perfectly on the charcoal shape. Secure the piece of paper with little stones. Then leave it and don't look at it until the end of the session.</i>	<i>Pieces of paper with leaf shadows drawn on them.</i>

Timings	Teacher	Student	Outcome
<p>Main task (part 1)</p> <p>Making a Dorodango (a perfectly round mud ball)</p> <p>20 mins</p>	<p><i>Lead the pupils in sieving your already dried mud and taking out the twigs and stones. Get them to add water very carefully to the mud until it is moldable like clay then ask them to try and make the perfect Dorodango round ball.</i></p>	<p><i>Sitting round making a perfect mud ball. Sometimes this is a calming activity with students sitting round and quietly chatting.</i></p>	<p><i>Each student has a mud ball, they will be different sizes.</i></p>
<p>Main task (part 2)</p> <p>Making a mud ball solar system</p> <p>15 minutes</p>	<p><i>Show the students the illustration of our solar system. Get them to lay their balls out like the solar system, naming each mud ball after a planet. They can move their ball around the "Sun" like a planet.</i></p>	<p><i>Students make solar systems together with their mud balls.</i></p>	<p><i>Each student knows what planet their mud ball is representing.</i></p>
<p>Plenary</p>	<p><i>Ask the students to go look at their leaf drawings. Ask them not to move the paper but what do they notice? (The leaf has moved) Ask the students why?</i></p> <p><i>(Because the earth has moved around the sun in the time that they have been making mud balls)</i></p>	<p><i>Students find their shadow drawing again. They observe that the real leaf shadows have moved.</i></p>	<p><i>Students contribute ideas why their leaf shadows have moved.</i></p>



Resources

Essential:

Small squares of scrap paper, charcoal, bucket of dried mud, sieves, bowls, water, an illustration of the solar system.



Optional for a longer session

YouTube is full of videos showing how to make beautiful shiny Dorodango. Our lesson is the most simple version, but if you are inspired to make this a much longer activity (with older students and/or adults) I recommend watching films on YouTube first and then you will need: Straw, sand and clay to make the Dorodango. Plastic bags, old jam jars, old tights and wax to shape and polish them.

Online resources

- **Nasa** has lots of great teaching resources for all the budding Astronomers in your class. For example, [Click here](#).
- YouTube has some great films about how the pros make **Dorodango's**. [Click here for a beautiful one](#).
- **Lisa Chell's** lovely article where she shares her experience of making these special Dorodango's with children. [Click here to read it](#).



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Enjoy!