

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

Lesson 1 – The Invisible Overworld

Summary

In this lesson the children are introduced to the 'Whatifs', the fictional characters, who make Paradise Pastures their home. The Whatifs set the children a challenge which gives their scientific enquiry work over the next few lessons a clear purpose and narrative.

The children begin their practical work by investigating the vegetation and creatures found living on the ground in Paradise Pastures. The types of enquiry that they predominantly focus on are 'Observation' and 'Identification and Classification' as well as beginning to think about 'Pattern Seeking'. They also begin to develop their scientific skills such as 'observing', 'measuring' and 'recording data'.

Pick a dry day for this session – the children will be spending a lot of their time sitting/lying on the grass.

Outcomes for Lesson 1

- Explain what is meant by the term biodiversity.
- Observation and identification of living things using guides – plants and invertebrates.
- Develop fluency in using scientific equipment and recording information.
- Discuss how physical conditions in the environment affect living things.
- Connect to the nature in their school grounds.

Key Vocabulary

Biodiversity, habitat, Microhike, vegetation, invertebrates, identification, classification, tincture, equipment, observation, patterns, decomposing.

General Resources

- Tiny letters folded into paper planes (1 per group).
- Labelled bottles of green tincture – 'drink and shrink juice' (1 per group). This is a green smoothie.
- Small drink receptacles (e.g. cleaned /sterilised limpet shells) (1 per pupil)
- Working wall in the classroom - big map of Paradise Pastures upon which to pin their learnings. This needs to be drawn / orientated so that North is at the top of the map as they look at it, and have key features identified.
- Pins, post-its, pens

Research Kits (1 per group)

- Invisible Overworld Recording sheets A4 (1 per pupil)
- hand lenses

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

- dental mirrors
- rulers
- 2 tent pegs connected by a 1m length of string.
- Data logger if available (can be substituted for a thermometer)
- plant ID key (e.g. www.field-studies-council.org/shop/publications/playing-field-plants-guide/ or use 'Playing Field Plants Identification')
- Invertebrate ID key (e.g. www.field-studies-council.org/shop/publications/garden-bugs-and-beasties/)
- Clipboards and pencils
- Blank luggage label

Prior to the lesson

Select an outdoor area where you want the children to base their investigations. They will return to this area over the series of lessons. This place needs to be somewhere that is predominantly grassland, perhaps with some trees/bushes/hedges so that it provides variability in terms of the conditions there and the living things which might be found. You need to arrange for this space to be left untouched by the school grounds team (no grass cutting). This area is 'Paradise Pastures'.

Just before the lesson begins scatter the paper aeroplanes and tinctures within Paradise Pastures for the children to discover when they venture out there.

Begin the lesson in the classroom

Introduction

Explain to the children that you are excited to be starting a new science project with them today called Paradise Pastures. (Slide 1)

Explain that Paradise Pastures is going to run for a series of lessons and that you are going to need:

-A team of curious scientists, armed with playful spirits and determination.
-A team ready to discover the things in nature that are often hidden from view.

(Slide 2) Share the overarching plan about how the project will work:

- For the first few sessions we will be getting to know an area of our school grounds known as Paradise Pastures, developing our practical scientific skills and exploring the nature in our own school grounds.

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

- After that you will be asked to compose your own scientific question to investigate based on something that has interested you, decide how best to answer that question and then planning and completing an investigation to in order to answer it.

At the same time, you need to be prepared to immerse yourself in a weird and wonderful Invisible World - a land where science and imagination meet. Can you do that?

(Slide 3) Share outcomes for today's lesson.

Starter question: What is biodiversity? (Slide 4)

The Paradise Pastures Project investigates the biodiversity in our school's grounds. Have a conversation with the group about what we mean by the word 'Biodiversity'.

Biodiversity is the 'Variety of life' – the number of different types of living things in a habitat. Every living thing is important and has a role to play in its environment. Biodiverse environments are healthy environments. Biodiversity is also important because it gives us lots of the things we need to survive – food, medicine, materials, clean water, fertile soils, clean air and so on. For example, insects like bees are important because they pollinate a lot of the crops plants that we eat.

The Tropical Rainforest has more biodiversity than any other habitat on earth. But there is lots of biodiversity where we live too - even in your own school grounds. That is where our work is taking place.

Research kits

Hand out the kits (1 per group) and ask the children to have a look through them to see what equipment they've got. Come up with a group name and record on their luggage label for later.



Looking through the research kits

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

Head outside

Our story starts outside. Head out to the patch of land (Paradise Pastures) with the group – leaving the research Kits behind. Show them the area they will be working and invite them to explore for a moment and take a second look at a place which they will likely be familiar with already. As they do this they will discover the paper aeroplanes and the bottles of tincture. Bring the discoveries back to the classroom ensure each group has one of each.



The 'drink and shrink' tinctures and limpet shells

Back in the classroom

In their groups invite them to use the hand lenses in their Research Kits to read the messages hidden on the inside of the aeroplanes. Go through the message with the class (slide 5), clarify understanding of the challenge set by the Whatifs.

Message reads:

We are the 'Whatifs'. We enjoyed a peaceful, sleepy winter sheltered underneath the fallen leaves of autumn and have recently been enjoying the bright spring days. As we edge towards summer the plants here in Paradise Pastures have begun growing furiously in the longer, warm days. Life seemed like it couldn't get better!

However, we have received warning through the 'Wood Wide Web', that the 'Justsos' have been getting their strimmer ready and that a dreaded 'mowing' is just around the corner. The 'Justsos' are only trying to keep things tidy, but the problem is that they tend it like everything around the place to look 'Justso'. However, we know that if they left Paradise Pastures alone to grow more wild then that would be good for the plants, animals and fungi. As in - 'Whatif they just left it alone?'

If only they could take a closer look! We need you to help us by helping them to see just how amazing and interesting our 'Invisible World' of Paradise Pastures is so that they can realise that the best way to help might actually be to let it grow a little wild!

Over the next few lessons we have 3 challenges for you to complete and 3 tinctures for you to drink, which we think will help you find out about the amazing Invisible world of Paradise Pastures. We have asked your teacher to draw a giant map of Paradise Pastures for you on the wall. This will come handy as a place for recording what you find out. Good luck!

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

Selecting their patch of Paradise Pastures

Refer to the big map of Paradise Pastures on the working wall. Take time to orientate the children, using key landmarks explaining that North is at the top of the map. It's really helpful to use a satellite view of your school grounds on Google Maps to help you to do this. Have a discussion about the path that the sun takes during the day, the direction of the prevailing wind, locations which might be in shadow at particular times of day and so on.

Now, ask each group to select a part of Paradise Pastures to work in. As a class ensure that the locations selected are spread out around the space (edge, middle, under trees, out in the open, in shadow, sheltered, exposed). Get each group to mark their location by pinning their luggage label in that spot.

Head back Outside

Head outside to Paradise Pastures, taking their Research Kits and tinctures with them.

Gather the group and explain that you are going to demonstrate how to complete a Microhike of your patch of Paradise Pastures using the Research Kit. This will help to investigate what the Whatifs called the 'Invisible Overworld' and to notice things which all too often we miss.

To do this, we need to shrink ourselves down to 'ant-size'. The Whatifs have given us their 'Drink and Shrink Juice'. This tincture will shrink you down to 'ant size' and give you ultra-observation powers so that you can explore the Invisible Overworld. You need to drink that before you start. Pour a small amount of the tincture into your limpet shell (or whatever receptacles you are using), drink the tincture and then shrink down to the floor to begin a demonstration of how to do a Microhike (talking in a squeaky little voice from now on is optional – but quite funny!)

Once you have demonstrated how to complete the Microhike send the groups off to their own patches to drink their tinctures, shrink themselves down and begin their Microhikes. Circulate between the groups and encourage very careful observation. Try to record any anecdotal observations/questions/'noticings' that the children are making as well as any patterns they notice, for example in terms of where they find or do not find certain living things. These observations can be very valuable and often form the basis of enquiries further down the line.

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

Completing a Microhike

1. Using the tent pegs and string mark out a 1-meter Microhike.
2. Measure and record the height of the vegetation and temperature at the mid-point of the Microhike. If you have a datalogger you may also be able to record the light levels and other parameters.
3. Record any general observations about the area of the Microhike. Is it in sunlight? shade? What is the proximity to large plants and so on.
4. Work your way along the Microhike at ground level exploring and recording what you find along the way (like a transect). Use the hand lens to investigate closely and the dentist mirror to look at the undersides of the plants. Record your observations on your sheet as and when you discover them.
 - Use the plant key to try to identify plants you find. Record what you find and make drawings.
 - Use the invertebrate key to try to identify those creatures. Record what you find and make drawings.
 - record / draw other artefacts / things which catch your eye on the way. Are they living? Non-living? Once alive? (They can annotate / describe things)
5. Record any questions/wonderings that come to mind or possible patterns you notice as and when they crop up.



Drinking the tincture and setting up the Microhike

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM



Completing their Microhike and using the guides to identify the invertebrates

Back in the classroom

Once they have completed their Microhikes head back to the classroom.

Check that the tinctures have worn off and that everyone has returned to normal size! Remark about how much there was to see in the Invisible Overworld - when you really take the time to look closely.

(Slide 6) Now it's time to collect a little bit of feedback from each group about their location. Give them 5 minutes to discuss and record answers to the questions below on post-it notes.

1. What was the location like? Exposed? Sheltered?
2. How tall was the vegetation?
3. What sorts of things did you find – animals and plants? Decomposing leaves?
4. What else did you notice? Anything surprising?
5. What would you like to know more about?

Once they have feedback ask them to pin their post-its to their patch on the working wall. Now that you have all the information on the wall in the correct locations tease out and record any possible trends/patterns/observations between locations that you and the class

LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

have noticed. Record these on post-it notes and pin them to the working wall. These might form questions to be investigated later.

Well done! – we are building a picture of what paradise pastures is like.

Summing up

(Slide 7) Final question for discussion – It is likely that the children have visited that location (Paradise Pastures) many times before. Maybe they play there every day at break and lunchtime. Ask them to tell the person next to them one thing that they have learnt about that place that they had never thought or noticed before.

As a class share their idea with each other.

(Slide 8) Review the session outcomes and what has been achieved. Refer back to the challenge set by the Whatifs. Ask the children to remind each other what that challenge was. An interesting additional question to ask would be 'what do they think a Whatif actually is?'. This could form the basis for some creative writing or art work.

Tell the children that next time we will investigate the 'Invisible Underworld' of Paradise Pastures, but that in the meantime, you encourage them to continue to think about the things they have seen. They can come back to the map in their own time and have a look at what other groups found and noticed. Tell them that if they come up with any more things that they noticed or are wondering about then please add a post-it to the working wall.



Their working wall and map of Paradise Pastures

Explorify Extension activity:

Complete this Explorify activity called '[Thorny Issue](#)' to put your class's observation skills to the test with these three woody habitats. This activity is great for promoting observation and discussion skills.