

# LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

## Lesson 5 – Developing Your Own Scientific Enquiry

### Summary

The children have now completed the 3 challenges set by the Whatifs and written to persuade the Justsos to manage Paradise Pastures for the benefit of nature. This was a period of exploration, the children touched on a range of enquiry types, enquiry skills, areas of science knowledge and understanding and had a variety of science experiences outdoors learning about local biodiversity. These experiences acted to spark their curiosity.

Now the children are encouraged to draw on these experiences and to develop their own scientific question: something which they themselves have become curious about. They should then be supported to choose the most suitable enquiry type to investigate their question, plan their investigation and complete it before reporting back their findings.

This lesson describes how to develop a suitable and authentic question to investigate. There is also guidance for the teacher in terms of how to help the children to plan and conduct their investigations.

### Outcomes for Lesson 5 onwards

- Agree upon your own scientific question to investigate
- Suggest and discuss ways in which you could answer that question
- Decide upon the most suitable method
- Plan and complete the investigation

### General Resources

- Working wall in the classroom - big map of Paradise Pastures
- 'Questions Ideas Cards' PDF - prepared in advance (1 set per group)

### Prior to the lesson

Since the lesson series begun the teacher has been collecting the children 'ideas for questions', 'wonderings', 'noticings' and 'possible pattern suggestions' on post-its on the Paradise Pastures working wall. These are going to come in handy.

Prior to this lesson collect all of these and record them electronically (see 'Questions Ideas Cards' PDF for an example). You might need to tweak them slightly so that they make sense but the aim is not to present the children with pre-designed questions. They are more like prompts to get them to remember things they have seen and that they have been interested by. Print these out along with some blank cards (1 set per group).

# LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

## Introduction (slide 1)

Use [slide 2](#) to briefly review the overarching plan for the project. We are now looking at the second bullet point (in blue).

## Today's Session Outcomes

([slide 3](#)) Share the outcomes for today lesson. Explain that the 4<sup>th</sup> bullet point may take a few lessons.

## Getting Started

([slide 4](#)) Explain to the children that very soon they will be coming up with their own scientific question to investigate and answer based on their experiences in Paradise Pastures. With this in mind, ask them what they think makes a good question for a scientific investigation. What do they think good science questions have in common?

Give them time to discuss and then collect their answers on the board. Share the 3 points on [slide 4](#). A good question for them will be linked directly to their previous work in Paradise Pastures, will be authentic to them and will be simple enough that when you read the question you can already begin to imagine what you will be doing to answer it (the method).

## Using the 'Questions Ideas Cards'

Give each of the groups a set of the 'Question Ideas Cards'. Explain to the children that these are a collection of their own 'questions', collected on the working wall from the last few lessons. They are not fully formed or necessarily well-worded questions. They are likely to be too general and need pinning down more. There are also observations / 'noticings' that they have made which might point towards a question.

Ask them to spread all the cards out and as a group have a read through them. If they feel that there are things missing then encourage them to write those things on the blank cards and add them in. These might be new questions they have thought of or things that they are interested in that we haven't recorded yet. Tell them not to worry too much about the wording yet - remember these aren't fully formed / necessarily 'good questions' yet. This is their last chance to come up with a new question.

## Being realistic about the questions we can answer

Show the children [slide 5](#) and explain that the questions we currently have can be put into 3 main categories. Share the categories with them.

Ask the children to divide the questions up into the 3 groups and collect feedback on where they have placed some of the cards.

Highlight to the groups that we need to be realistic about the questions that we think we can reasonably answer in the time we have and with the resources at our disposal.

# LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

In addition, although some questions can be answered through research we are keen to continue with our practical work and therefore we are going to select a question from pile 'a'.

Ask the children to have a discussion and select a card from pile 'a' to become their question.

Explain that it is likely we will need to think about rewriting the question so that it becomes something which we can easily investigate. Often good questions start with these kinds of words (show [slide 6](#)) and remember - if it's a good question then when you read it, it should tell you (be obvious) what you are going to do to answer it. In addition, if you get the question right at the beginning the rest of the investigation should flow nicely on from that. [Slide 9](#) is hidden at the end of the presentation, but give you more examples of potential questions.

Ask each group to have a go at rewriting /tweaking their question. Circulate around the groups and help them to formulate the wording of the question. Ask them to record their final question clearly.

These discussions invariably lead to them thinking about the method they will use to answer it. Encourage them to suggest and discuss how they think they will answer their question before developing an outline of the method they think they will use. The teacher and support staff may need to scaffold this to a degree.

## **Finally - Sharing your question with the class**

Ask each group to share their question with the rest of the class and how they think they will go about answering it (a summary of the method).

The [enquiry approaches](#) they are likely to be using will be either; comparative/fair testing, pattern seeking, identifying, grouping and classifying or observation over time. The teacher doesn't necessarily need to explicitly reference the types of enquiry with the students but it can be helpful ([slide 7](#)).

Give them some feedback and pointers on their suggested method taking into consideration the enquiry approaches that each group is using. Encourage other children to chime in with points that they think might be important to consider for each group doing their enquiry.

For example, a group might tell you that their question is 'What environment do woodlice prefer?'

There are different ways of answering this. The children could undertake a pattern seeking investigation whereby they investigate different types of habitat, recording the environmental conditions there and counting how many woodlice they find. Alternatively, they might develop a fair test involving [choice chambers](#) and woodlice that have been collected from the environment. They could potentially start with the pattern seeking



# LESSON PLAN

CREATED FOR TEACHERS BY EDEN'S EDUCATION TEAM

investigation and then move onto the fair test where they can control variables that they can't control in the natural world.

## Slide 10 - Summing up

Go over the lesson outcomes ([slide 8](#)). The first 3 bullet points have been completed. The next step is for each group to finalise their plans, get them checked over by the teacher and then to crack on with their investigation and answer their question. It's over the them!

## A quick word on Assessment

Through the completion of this investigation the children will be developing their [enquiry skills](#). The Primary Science Teaching Trust (PSTT) clearly outline what these are and have also produced a really useful [skills progression grid](#) to help teachers assess progress. It's sensible to just focus on assessing one of the enquiry skills for any particular investigation. You could record the work undertaken as they develop their own investigation by creating a separate [floorbook](#) for each group in the class. The PSTT have lots of useful information and examples about how to create floorbooks. In addition, they even have examples of children's [scientific enquiry skills recorded in floorbooks](#). The floor book will also record the new knowledge and understanding that they develop as they complete their enquiry.

## Get in contact

We'd love to hear how you've got on with this series of lessons, see any examples of the work produced or answer any questions you might have about it. Please contact Robbie Kirkman, Education Team Lead at the Eden Project [rkirkman@edenproject.com](mailto:rkirkman@edenproject.com)