

WithOnePlanet

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Question

Lesson 2

Teacher notes

Curly carbon questions

Years

1 to 2

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INQuIRY     

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WithOnePlanet

Open education
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Curly carbon questions

Lesson 2: Teacher notes

This document provides the teacher with the details of the lesson.

At a glance

To elicit students' questions about carbon in living things.

To collectively develop some questions about carbon that students can investigate.

To use the understandings, information and questions developed during the *Introduce* phase of the *INQuIRY* process to help students determine the essential questions that will form the basis of their investigation.

Students:

- > distil the learning from the *Introduce* phase and consider the key questions that arise for them from this learning
- > develop one or more questions about carbon in living things for use in the *Investigate* phase of the *INQuIRY* process.

Lesson focus

The focus of the *Question* phase is for students to develop a question, or a small number of questions, that accurately reflect their ideas and thoughts from the *Introduce* phase and can act as a springboard for their learning in the *Investigate* phase.

Key lesson objectives

Science

Students will be able to represent their current understanding as they:

- > generate question(s) about carbon in living things
- > suggest ways in which they can seek answers to their questions.

Literacy

Students will be able to:

- > reflect on their ideas from the *Introduce* phase
- > contribute to discussions about the key concepts and components of their questions.

This lesson also provides opportunities to monitor the development of students' general capabilities.

Teacher background information

Essential questions

Wiggins and McTighe (1998) and OCM BOCES (2013) outline the following core attributes of successful essential questions:

Core-Focused, INQUIRY-Based, Reinforce Thinking Skills, Interdisciplinary, and Engaging.

At Years 1 and 2, the teacher will need to facilitate the development of essential question(s) based on the questions that students contribute during whole-class discussions. Use the *Essential questions guide* document to help with the development of essential questions from students' contributions.

The development of essential question(s) is a natural progression from the student-provided understandings, thoughts and observations that have arisen in the *Introduce* phase of the *INQUIRY* process.

Through summarising and paraphrasing student contributions from the *Introduce* phase and student questions in this phase of the learning, the teacher can act as the key facilitator in the development of the essential question(s).

The *WithOnePlanet Carbon: Science curriculum* is based on 5 essential questions that are considered at each stage in the students' schooling from F to 10. These are shown in the table below. In addition, the specific *WithOnePlanet Big ideas* for Years 1 and 2 are also a key stimulus for the development of the essential question(s) at this stage in the *INQUIRY* process. These are also shown in the table below.

These essential questions can provide a stimulus for, and form the basis of the essential question(s) that the teacher facilitates the development of in the *Question* phase of the *INQUIRY* process. However, the questions that the students arrive at may not necessarily be exactly the same as these *WithOnePlanet Big ideas* essential questions. This is preferable as it is important that the questions are student-driven rather than provided by the teacher. In terms of student ownership and engagement in the unit. However, it is also important that the teacher plays the role of effective facilitator and guides the students' thinking in an appropriate direction using the techniques outlined above.

Table: WithOnePlanet Big ideas for Years 1–2

Big Ideas	What is carbon?	What is the carbon cycle?	What is climate change and what role does carbon play in it?	What is my carbon footprint and how can I reduce it?	What can be done to mitigate climate change on a regional scale?
Years 1 to 2	When living things grow, change and reproduce, they are using carbon in some way to make this happen.	Carbon exists in different forms in different parts of the carbon cycle. Natural processes control the movement of carbon between parts of the carbon cycle.	When there is too much or too little carbon in the air, the effects on the weather can be dramatic.	People can do everyday things that add carbon to the air, prevent carbon from entering the air and take carbon out of the air.	

Sources:

Wiggins, G & McTighe, J 1998, *Understanding by design*, Association for Supervision & Curriculum Development, Alexandria, VA.
 OCM BOCES 2013, *Curriculum Mapping Essential Questions Guide*, viewed 1 December 2013, <http://www.ocmboces.org/files/folder1682/OHS_essentialquestions.pdf>.

Some examples of possible essential questions derived from student contributions include:

- > Why are all living things made up of the same materials?
- > How can we find out what living things are made of?
- > What happens to living things as they grow older?
- > How do living things grow bigger?
- > Why do living things change as they get older?
- > What materials make up living things?

Preparation

- > Read the Essential questions guide document. OCM BOCES 2013, *Curriculum Mapping Essential Questions Guide*, viewed 1 December 2013, <http://www.ocmboces.org/tfiles/folder1682/OHS_essentialquestions.pdf>
- > Review and summarise students' ideas from the *Introduce* phase from the 3 *Class worksheets*.
- > Using students' ideas and the *WithOnePlanet Big ideas* (see table on page 2), generate some possible essential questions that can act as a *teacher reference guide* when facilitating student discussion of the essential question during the lesson.
- > Make a large format copy of the *Curly questions about living things – Group worksheet*.

Lesson steps

1. Students to review the ideas on all three class worksheets from the *Introduce* phase, as well as any other ideas they have.
2. Explain to students that as good scientists, they need to work out how they can find out the answers to the questions from the *Agree? Disagree?* activity.
3. Introduce *Curly questions about living things – Group worksheet* to the students. Use the following prompt questions to help students generate ideas and questions:
 - > How can we find out what the answers to these questions are?
 - > What would a scientist do to find out the answers to these questions?
 - > What other questions would it be good to find the answers to so that we are helped to work out the answers to these questions?
4. The teacher can record student responses on the *Curly questions about living things – Group worksheet*. (As well as assisting in the development of the essential question(s), this will also inform teacher planning of the *Investigate* phase of the *INQuIRY* process.)
5. Use the *Essential Questions Guide* to help you paraphrase, clarify and summarise student questions into one or more essential questions.
6. Ask for student feedback to modify the essential question(s) until a class consensus is reached. Display the agreed essential question(s) in the classroom.