QER for Schools

# QER Science Lesson – Year 6
# Decision making in use of resouces

NOTES

Australia's fuel challenge heightens the urgency to develop new fuel sources, but in doing so there are priorities of health, safety and the environment to be considered. In this lesson, you will tackle some of the big questions relating to the decisions surrounding oil shale as a fuel source.

In this lesson, students will:

- consider the importance of the development of new fuel supplies for Australia's energy future
- discuss advantages and disadvantages of oil shale as a fuel source
- consider issues of health, safety and the environment surrounding the mining of oil shale

## LESSON-LEVEL CONTENT DESCRIPTIONS

**The Australian Curriculum: Year 6**

### Science as a Human Endeavour

Nature and development of science: Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE098).

**Elaborations:**

- investigating how knowledge about the effects of using the Earth's resources has changed over time

### Use and influence of science

Scientific knowledge is used to inform personal and community decisions (ACSHE220).

**Elaborations:**

- considering how personal and community choices influence our use of sustainable sources of energy

### Year 6 achievement standard

By the end of Year 6 students plan investigations to answer questions relating to simple cause-and-effect relationships. Students suggest explanations for observable changes and they predict the effect of environmental changes on living things. They compare different types of change in materials. They identify requirements for the transfer of electricity and describe one way that electricity can be generated. They describe how developments in science have affected peoples' lives and identify examples where scientific knowledge is used in decision making.

## LESSON OUTCOMES

The assessment focus of this lesson is formative: The classroom activities provide an opportunity for students to generate evidence with which the teacher can establish the student's progress towards understanding the concepts that are being developed in this lesson.

| Science Outcomes | Literacy Outcomes | Numeracy Outcomes |
|---|---|---|
| Students may/should be able to: | | |
| • articulate advantages and disadvantages of energy sources<br>• appreciate the community perspective in decision making | • listen<br>• read<br>• view<br>• write<br>• speak<br>• hypothesise about speculative ideas | • collect qualitative data |

## BACKGROUND INFORMATION

Elaboration of necessary Science content needed to be understood by the teacher to make the lesson effective. Touch on any key ideas of Mathematics and English that are also required in the lesson.

## PREPARATION LIST

- download the video from the QER web site www.qervisitorcentre.com.au/ –> Australia's fuel challenge –> Creating new fuels –> Creating new fuels
- download the video from the QER web site www.qervisitorcentre.com.au/ –> QER and sustainability –> Sustainable development

## ACTIVITY SEQUENCE

1. Introduce the lesson by outlining the basics of oil shale using the Oresome Resources Oil Shale Fact Sheet www.oresomeresources.com/resources_view/resource/fact_sheet_oil_shale.

2. As a class, brainstorm a list of advantages and disadvantages of mining shale as a fuel source.

3. Watch short video: QER web site www.qervisitorcentre.com.au/ –> Australia's fuel challenge –> Creating new fuels –> Creating new fuels. Answer these questions:

   - Why is the development of new fuel supplies fuels important in Australia?
   - What are some of the areas in which health, safety and the environment need to be considered when an industry is established? What measures has QER put in place to manage these areas at the new QER Fuel's Development Centre near Gladstone?

4. Watch short video: QER web site www.qervisitorcentre.com.au/ –> QER and sustainability –> Sustainable development.

5. Now go back to your list of advantages and disadvantages of oil shale as a fuel source. Can you now add any others?

## OPPORTUNITIES FOR CONDUCTING FORMATIVE ASSESSMENT

- Observation of students' written and spoken responses throughout this lesson can be used to ascertain understanding.

## LINKS TO OTHER LEARNING AREAS

The following suggested activities may be used to provide a link between the content of this unit and that of other learning areas, in particular those related to Mathematics, English and ICT.

- there is opportunity to extend this topic to include a discussion of aboriginal heritage. Like all resource companies, QER works with the local Aboriginal people in undertaking regular cultural heritage inspections of any areas proposed to be disturbed, looking for artefacts of cultural significance. This is so that as much cultural heritage of the Aboriginal and Torres Strait Island people as possible is documented and preserved for future generations. Cultural heritage clearance is required to engage the native title claimants in the area

## ADDITIONAL RESOURCES

- www.qervisitorcentre.com.au – Extensive overview of QER New Fuels Development Centre, including video snippets, animations, graphs, maps and explanations relating to:
  - Australia's fuel challenge
  - QER and sustainability
  - benefits for Australians
  - turning oil shale into fuel.

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