



All LEARNZ field trips targeting primary and secondary schools are closely linked to the New Zealand curriculum, in particular science, social studies and geography. They can also be used by other subject teachers.

## Key concepts

Adaptations, Antarctica, biodiversity, carbon cycle, climate change, ecology, environment, food webs, human impacts, ice, life cycle, marine communities, marine research, monitoring change, ocean acidification, oceans, Offshore, scientific research, sustainability.

## The New Zealand Curriculum - NZC

### Key Competencies

LEARNZ virtual field trips contribute to the development of all five key competencies:

| Key Competencies                  | Examples of Related Field Trip Components   |
|-----------------------------------|---|
| Thinking                          | Constructing questions to put to experts during Audioconferences and via Ask-an-Expert.   |
| Using language, symbols and texts | Interpreting and making meaning of a variety of language and symbols in the Background Pages and throughout the web site.                         |
| Managing self                     | Numerous content-related Activities provide students with chances to engage with the material and create their own interpretation of the content. |
| Relating to others                | Videos connect students with a range of expert opinions. Students listen actively when seeking answers to video questions.                        |

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|                                |  |
|--------------------------------|--|
| Participating and contributing | LEARNZ Virtual Field Trips are an ideal medium for group-based topic inquiry. They also enable students to transfer new learning into the context of their own communities where they are encouraged to take action. |
|--------------------------------|--|

(See page 12-13 NZC 2007)

## Values

The *Antarctica* field trip encourages, models and explores these values:

- innovation, inquiry and curiosity
- ecological sustainability
- community and participation

(see page 10 NZC 2007).

## E-learning and pedagogy

The *Antarctica* field trip directly involves learning that is supported by information and communication technology (ICT).

In particular, the trip will:

- Assist the making of connections by enabling students to enter and explore new learning environments, overcoming barriers of distance and time.
- Facilitate shared learning by enabling students to join or create communities of learners that extend well beyond the classroom.
- Enhance opportunities to learn by offering students virtual experiences and tools that save them time, allowing them to take their learning further (Page 36 NZC 2007).


## Social Science

| Strand         | Achievement Aims   | Background Pages  | Related Activities             |
|----------------|--|---|--------------------------------|
| Social Studies | Place and Environment <ul style="list-style-type: none"><li>• Level 2 Understand</li></ul> | <ul style="list-style-type: none"><li>• <a href="#">All</a> [1]</li></ul> | <a href="#">Activities</a> [2] |



- how places influence people and people influence places
- Level 3 Understand how people view and use places differently
- Level 4 Understand that events have causes and effects
- Level 5 Understand how people's management of resources impacts on environmental and social sustainability

**Science**


| Strand  | Achievement Aims   | Background Pages  | Related Activities                    |
|---|--|---|---------------------------------------|
| <p><b>The Nature of Science</b></p>  | <p><b>Participating and contributing</b></p> <ul style="list-style-type: none"> <li>• Levels 1-2: Explore and act on issues and questions that link their science learning to their daily</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">All</a> [1]</li> </ul> | <p><a href="#">Activities</a> [2]</p> |

- living.
- Level 3-4:  
Use their growing science knowledge when considering issues of concern to them.

## **Understanding about science**



- Levels 1-2:  
Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.
- Level 3-4:  
Identify ways in which scientists work together and provide evidence to support their ideas.

## **Communicating in science**


|  |   |   |                                       |
|--|---|---|---------------------------------------|
|  | <ul style="list-style-type: none"> <li>• Level 3-4:<br/>Begin to use a range of scientific symbols, conventions and vocabulary.</li> </ul>  |   |                                       |
| <p><b>Planet Earth and Beyond</b></p>  <p>The diagram illustrates the greenhouse effect. It shows the Sun emitting radiation that reaches the Earth's surface. Some of this radiation is reflected back up into the atmosphere, where it is absorbed by greenhouse gases. These gases then re-radiate the energy back towards the Earth's surface, warming it. Labels include 'Sun', 'Atmosphere', 'Greenhouse Gases', and 'Earth'.</p> | <p><b>Earth systems</b></p> <ul style="list-style-type: none"> <li>• Level 2-5;<br/>Explore and describe natural features and resources</li> </ul> <p><b>Interacting systems</b></p> <ul style="list-style-type: none"> <li>• Level 2;<br/>Describe how natural features are changed and resources affected by natural events and human actions</li> <li>• Level 3-5;<br/>Investigate the water cycle and its effect on climate, landforms, and life</li> </ul> | <ul style="list-style-type: none"> <li>• <a href="#">All</a> [1]</li> </ul> | <p><a href="#">Activities</a> [2]</p> |
| <p><b>Material World</b></p>   | <p><b>Properties and changes of matter</b></p> <ul style="list-style-type: none"> <li>• Level 2-5;<br/>Observe,</li> </ul>  | <ul style="list-style-type: none"> <li>• <a href="#">All</a> [1]</li> </ul> | <p><a href="#">Activities</a> [2]</p> |





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|   |   |
|---|---|
|                              | <p>describe, and compare physical and chemical properties of common materials and changes that occur when materials are mixed, heated, or cooled.</p>   |
| <p><b>Living World</b></p>  | <p><b>Ecology</b></p> <ul style="list-style-type: none"> <li>• <a href="#">All</a> [1]      <a href="#">Activities</a> [2]</li> <li>• Level 2-4; Explain how living things are suited to their particular habitat and how they respond to environmental changes.</li> <li>• Level 5; Investigate the interdependence of living things (including humans) in an ecosystem</li> </ul> |

## The five science capabilities

| Science Capability  | Description  |
|---|--|
|  <p><b>Gather and interpret data</b></p> | <p><b>Learners make careful observations and differentiate between observation and inference.</b></p> <p><i>Science knowledge is based on data derived from direct, or indirect, observations of the natural physical world and often includes measuring</i></p> |

|   |   |
|---|---|
|   | <p><i>something. An inference is a conclusion you draw from observations – the meaning you make from observations. Understanding the difference is an important step towards being scientifically literate.</i></p>   |
|  <p><b>Use evidence</b></p>                | <p><b>Learners support their ideas with evidence and look for evidence supporting others' explanations.</b></p> <p><i>Science is a way of explaining the world. Science is empirical and measurable. This means that in science, explanations need to be supported by evidence that is based on, or derived from, observations of the natural world.</i></p>  |
|  <p><b>Critique evidence</b></p>           | <p><b>Not all questions can be answered by science.</b></p> <p><i>In order to evaluate the trustworthiness of data, students need to know quite a lot about the qualities of scientific tests.</i></p>  |
|  <p><b>Interpret representations</b></p> | <p><b>Scientists represent their ideas in a variety of ways, including models, graphs, charts, diagrams and written texts.</b></p> <p><i>Learners think about how data is presented and ask questions such as:</i></p> <ul style="list-style-type: none"> <li>• <i>What does this representation tell us?</i></li> <li>• <i>What is left out?</i></li> <li>• <i>How does this representation get the message across?</i></li> <li>• <i>Why is it presented in this particular way?</i></li> </ul> |
|  <p><b>Engage with science</b></p>       | <p><b>This capability requires students to use the other capabilities to engage with science in “real life” contexts.</b></p> <p><i>It involves students taking an interest in science issues, participating in discussions about science and at times taking action.</i></p>   |

**Technology**

| Strand  | Achievement Aims   | Background Pages   | Related Activities                    |
|---|--|--|---------------------------------------|
| <p><b>Technological Knowledge</b></p>  | <p><b>Technological Products</b></p> <ul style="list-style-type: none"> <li>Level 1-3; Understand the relationship between the materials used and their performance properties in technological products.</li> </ul>                         | <ul style="list-style-type: none"> <li><a href="#">_ [3]</a><a href="#">All [1]</a></li> </ul> | <p><a href="#">Activities [2]</a></p> |
| <p><b>Nature of Technology</b></p>   | <p><b>Nature of Technology</b></p> <ul style="list-style-type: none"> <li>Level 1-3; Understand how technological development expands human possibilities and how technology draws on knowledge from a wide range of disciplines.</li> </ul> | <ul style="list-style-type: none"> <li><a href="#">_ [4]</a><a href="#">All [1]</a></li> </ul> | <p><a href="#">Activities [2]</a></p> |

**English**

The selected processes and strategies indicators used in the table below are from Level three of the NZC, but aim to cover indicators from levels two to four.

| Strand   | Processes and Strategies Indicators                           | Example of Related Field Trip Component |
|--|---|---|
| <p><b>Speaking, Writing and Presenting</b></p> | <p>1. uses an increasing understanding of the connections</p> | <p>1. making the connection between</p> |





- between oral, written, and visual language when creating texts
- 2. creates a range of texts by integrating sources of information and processing strategies with increasing confidence

- Audioconferences, Background Pages, Videos, and own discussion when generating written responses
- 2. assimilate information from Audioconferences, Background Pages, Videos, and Ask-an-Expert to create a range of texts

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## Listening, Reading and Viewing



- 1. selects and reads for enjoyment and personal fulfilment
- 2. recognises connections between oral, written, and visual language
- 3. integrates sources of information and prior knowledge confidently to make sense of increasingly varied and complex texts
- 4. thinks critically about texts with increasing understanding and confidence

- 1. printed copies of Background Pages could be part of classroom library
- 2. making links between Audioconferences, Background Pages, and Videos
- 3. Audioconferences, Audioconference Backchannel, Videos, Diaries, and Ask-an-Expert can be used to make sense of Background Pages and Diaries and generate questions to put to experts for further clarification

## NCEA

Science 1.14: Demonstrate understanding of carbon cycling

Students are assessed on the addition, removal and storage of carbon in short and long term biological, chemical and geological cycles.

ESS 3.5: Demonstrate understanding of the impact of human activity on the Earth System. External, 4 credits. Human activity could be negative or positive such as fossil fuel combustion and sustainable practices. Impacts may be consequences such as climate change, ocean acidification and the extinction of species.

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### Links

[1] <http://www.learnz.org.nz/scienceonice144/bg-standard>

[2] <http://www.learnz.org.nz/scienceonice144/activities>

[3] <http://www.learnz.org.nz/argofloats142/bg-standard-f/what-is-an-argo-float%3F>

[4] <http://www.learnz.org.nz/argofloats142/bg-standard-f/the-argo-float-programme>