




Components

	NAME	DESCRIPTION	AUDIENCE
	<i>Sustainable energy sources</i> teachers guide	This guide explains how a data collation activity and accompanying worksheet can be used by students to compare energy sources.	teachers
	<i>Siting a pool</i> worksheet	Students use a fictitious town map and borehole data to suggest a location for a community swimming pool heated by geothermal energy.	students
	<i>Comparing energy sources</i> worksheet	Students perform calculations to compare information about energy available from coal, wind, wave, solar and geothermal sources.	students

Purpose

To **Elaborate** on students' understanding of geothermal energy by graphing and modelling data, and comparison of different sustainable energy sources.

Outcomes

Students:

- graph, analyse and interpret data;
- model the role of science in a real-world decision making process; and
- perform calculations to compare geothermal energy with coal and sustainable energy sources.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Teacher introduces the challenge to students.	small groups or individually
Students follow the worksheet, graphing and interpreting results.	
Students communicate to the class, using their preferred method (IWB, PowerPoint, poster ...), their decision about siting the swimming pool.	small groups or individually

Technical requirements

The guide and worksheets require Adobe Reader (version 5 or later), which is a free download from adobe.com. The worksheets are also provided in Microsoft Word format.

Teacher notes

Students may require tuition about isotherms and how to graph them on the prepared grids. Alternatively, you may provide students with isotherm graphs to help them answer questions on the worksheet.

Students may experience difficulty answering question 5 if they choose sites other than those indicated in the solutions. Teachers may guide students into selecting appropriate sites by engaging in a classroom discussion about suitable criteria (question 4).

Associated SPICE resources

Geothermal energy 4: Sustainable energy sources may be used in conjunction with related SPICE resources to investigate specific heat and latent heat.

DESCRIPTION	LEARNING PURPOSE
<p><i>Geothermal energy (overview)</i></p> <p>This learning pathway shows how a number of SPICE resources can be combined to assist with teaching the topics of specific heat and latent heat.</p>	
<p><i>Geothermal energy 1: Heat beneath your feet</i></p> <p>A video engages student interest in recent developments and future possibilities for the use of geothermal energy.</p>	Engage
<p><i>Geothermal energy 2: Specific heat capacity</i></p> <p>Students investigate the specific heat capacity of water in laboratory and problem-solving activities.</p>	Explore
<p><i>Geothermal energy 3: Heating a pool</i></p> <p>Students' understanding of specific heat is developed through data analysis in the context of heating swimming pools using geothermal energy.</p>	Explain
<p><i>Geothermal energy 4: Sustainable energy sources</i></p> <p>Students reinforce and deepen their understanding of specific heat and geothermal energy through problem-solving activities.</p>	Elaborate
<p><i>Geothermal energy 5: Latent heat</i></p> <p>Students investigate latent heat through practical and problem-solving activities.</p>	Explore
<p><i>Geothermal energy 6: Using geothermal energy</i></p> <p>Students use an interactive learning object to develop an understanding of how latent heat is used in a number of devices.</p>	Explain
<p><i>Geothermal energy 7: The geothermal alternative</i></p> <p>Students use concepts developed throughout this sequence to analyse two case studies that involve use of geothermal energy.</p>	Elaborate

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