teachers guide

Geothermal energy 5: Latent heat

Components

	NAME	DESCRIPTION	AUDIENCE
	*Latent heat* teachers guide	This guide describes some activities for teaching the concept of latent heat.	teachers
	*Investigating latent heat* procedure sheet	Students perform an experiment to investigate the latent heat of water and its relevance to energy transfer.	students
	*Latent heat problems* worksheet	Students solve problems about latent heat.	students

Purpose

To introduce students to the concept of latent heat, including both qualitative and quantitative treatment.

Outcomes

Students:

- perform an experiment that helps them explore the concept of latent heat;
- analyse second hand data to establish the value for the latent heat of vaporisation of water;
- apply the concept of latent heat to everyday contexts; and
- use the relationship Q = m L in calculations.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Students perform the experiment, *Investigating latent heat*.	small group practical activity
Students answer questions posed in post-lab analysis and discussion.	teacher-led discussion
Students complete the worksheet, *Latent heat problems*.	individually or in pairs

Teacher notes

It is difficult to conduct a student experiment in school laboratories that produces a reliable result for the value of the latent heat of vaporisation of water, without resorting to use of complicated apparatus. For this reason second hand data are provided to support a simplified investigation. Students may analyse the provided graph and calculate a value.

Technical requirements

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

Associated SPICE resources

Geothermal energy 5: Latent heat may be used in conjunction with related SPICE resources to investigate specific heat and latent heat.

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

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SPICE resources and copyright

All SPICE resources are available from the Centre for Learning Technology at The University of Western Australia ("UWA"). Selected SPICE resources are available through the websites of Australian State and Territory Education Authorities.

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