

Teaching –learning module compiled by the PARSEL consortium
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Popularity and Relevance of Science Education for scientific Literacy



How Happy are You and Your Family with the Electricity Bill?

A grade 7-8 science (physics) module on
determining energy consumption at home



Abstract

This module leads to a decision making activity, designed to consolidate learning about consuming energy, and energy saving, taking examples from everyday life and to introduce the concept of power. It involves the reading of an electricity bill and checking that the calculation of the bill is correct. It introduces students to the (kilo)watt as a unit of power and the kilowatt hour as the unit used in the home for energy consumption.

Sections included		
1.	Student activities (for students)	Describes the scenario in more detail and the tasks the students should perform
2.	Teaching guide	Suggests a teaching approach
3.	Assessment	Gives suggested formative assessment strategies
4.	Teacher notes	Gives expectations of calculations to be carried out by students

Developer: Jack Holbrook

Institute: International Council of Associations for Science Education (ICASE)
Country: UK

Overall Objectives/Competencies: The students are expected to:

- Decide, with justification, how best to produce a balanced electricity bill.
- Designing a questionnaire (as a research process) to obtain data on the major costs on electricity bills and how to present the results in a tabular form / diagrams.
- Cooperating as member of a group in designing and carrying out an investigation project.
- Explaining the meaning of power when used for electrical appliances, rather than mechanical machines, and the units used to measure power.
- Determining the relationship between power and energy and be able to calculate energy consumption knowing the power of an appliance.

Curriculum content: power as (kilo)watts, energy as kilowatt hour,

Kind of activity: Designing a questionnaire, calculations involving (kilo)watts and kilowatt hours, decision making discussion on realistic ways to reduce the electricity bill.

Anticipated time: 4 lessons

This unique teaching-learning material is intended to guide the teacher towards promoting students' scientific literacy by recognising learning in 4 domains – intellectual development, the process and nature of science, personal development and social development. Its uniqueness extends to an approach to science lessons which is designed to be popular and relevant. For this the approach is intentionally from society to science and attempts to specifically meet student learning needs.

This uniqueness is specifically exhibited by:

1. a society related and issue-based title (supported in the student guide by a scenario);
2. student-centred emphasis on scientific problem solving, encompassing the learning of a range of educational and scientific goals;
3. including socio-scientific decision making to relate the science acquired to societal needs for responsible citizenship.

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