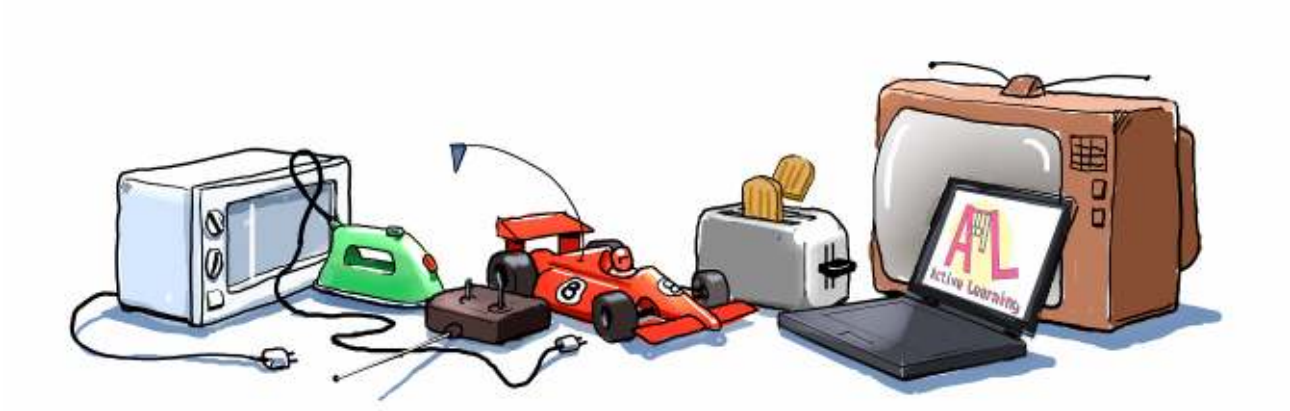

ENERGY LABEL DETECTIVES

Goal(s):

- The pupils know where to find information on the energy consumption of a given appliance and are familiar with the contents of energy labels.
- The pupils know the benefits of choosing an A-rated appliance over a G-rated appliance and can calculate the payback time of additional costs if any.

General description of the activity:

The pupils are introduced to the concept of energy labels through a visit to a local shop.

Required materials:

- A calculator for each group,
- Information on average household electricity price

Required pupil skills:

Knowledge of kWh, ability to use calculators.

How does this activity fit into the curriculum:

This activity is well suited for lessons in Science, Mathematics, Citizenship and Literacy.

Safety issues:

None

Individual steps of the activity:	Required time:
1. Make an agreement with a local shop with a large assortment of product types to allow the pupils to investigate the products on display in the showroom.	Preparation

2.	Introduce the pupils to the topic through a discussion of how one can tell the energy consumption of an electric appliance just by looking at it. What is an energy label? What information does it contain? What information on the labels is useful for the comparison of appliances?	Observation - 2 lessons (shop visit)
3.	Divide the pupils into a manageable number of groups. The groups will compete with each other.	
4.	At the local electrical appliance shop the task of the groups will be for each appliance category to find the best and worst appliance in the shop in terms of energy consumption (best = low energy consumption). The pupils also record the price of the products.	
5.	Back in the classroom the pupils calculate the difference in consumption between the best and worst appliance in each appliance category	Reflection - 1 lesson
6.	Who is the winner?	
7.	Discuss the findings: ➢ Was it possible to find energy labels on all types of appliances? ➢ What was the highest and lowest ranking in each appliance category (the choice of selection)? ➢ Is there a price difference between appliances with low energy consumption and those with high energy consumption? Does the price increase with increasing energy efficiency? ➢ If the appliance with the lowest energy consumption is more costly than the product with the highest energy consumption, then how long will it take to save the additional cost through electricity bill savings? ➢ What criteria other than low energy consumption are importnat when choosing an appliance?	
8.	Preparation of a presentation of results to the parents of the pupils.	1 lesson

Suggestions for combination with other AL activities:

"Standby power in my home" – Investigation of the standby power consumption at home.

"Race of the pots" – How to heat a pot energy efficiently. Under what conditions does the pot heat its contents fastest? How much energy is consumed?

"Electricity counts" – Can you save 500 Watt of electricity?

Variations:

Supplement to shop visit: In addition to going to a shop it is possible to search for information on appliance consumption and product prices appliances on the internet. Your local energy agency may have a website where you can find out which shops carry energy efficient products.

Public information obligations: Which regional or national organisation is responsible for providing advice to the general public on efficient usage of appliances? Where and how to find out? What advice do they offer?

Use the appliances correctly: Find out if appliances are being used efficiently, so that even the appliances which are already used could have lower energy consumption. Not many people read device instruction manual!

Available aids:

Aid 1 – Energy label information

Aid 2 – The best versus the worst

Aid 1

[each partner may insert an example of an energy label in their own language or link to such information]

Calculation example

Name of appliance	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference		A	B

Electricity price (EUR/kWh)	C
Electricity bill savings per hour of use (EUR/h)	D=A*C
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	B/D

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

	Label rating (A,B,C …)	Energy consumption (kW)	Price (EUR)
WORST MODEL:			
BEST MODEL:			
Difference			

Electricity price (EUR/kWh)	
Electricity bill savings per hour of use (EUR/h)	
How many hours do you have to use the best appliance before price difference is paid back by electricity savings?	

Energy label detectives – Aid 2

Search words:

Energy end-use	General topic	Educational subject	Age level
Transport	General sustainable development	**Mathematics**	6-8 years
Space heating & cooling	Renewable energy	**Literacy**	9-10 years
Hot & cold water	**Energy efficiency (saving)**	**Science**	**11-12 years**
Lighting	CO_2 wise transport		
Electric appliances			