

Think Energy School Detectives



Let's investigate
energy together!



 info@thinkenergy.ie

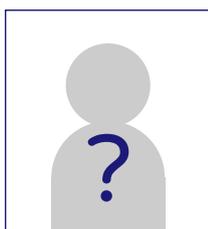
 <https://thinkenergy.ie>

Assemble your School Energy Team

The best way to find new ways of saving energy in your school is to work together as a team.

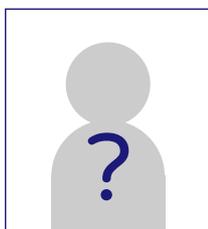
Like every team, the best School Energy Teams are made up of people with different skills, knowledge and interests.

See if you can find these people in your school and ask them to join your team:



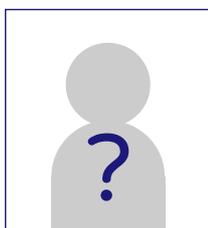
The Deciders

Who makes the big decisions about making changes and buying new things for the school?



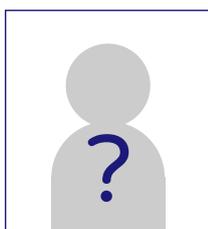
The Caretakers

Who looks after the school building, keeping everything running and fixing things if they break?



The Organisers

Who looks after paying the energy bills?



The Green Team

Who is interested in making the school more environmentally friendly?
(This could be you!)

Ask each member of the School Energy Team these questions:

When you think about energy, what is the school doing well?

What is not working so well?

What's your vision for how your school uses energy in 2030?

What do you think needs to be done to get there?

The Investigation Plan



What energy sources can we explore?

1 Heating

2 Hot Water

3 Lighting

4 Appliances

Tools

You will be able to investigate more accurately by using tools and tips from the Home Energy Saving Kit! Each kit comes with a easy-to-use manual with instructions.

1 Heating



Thermal
leak
detector



Radiator key



Temperature
and Humidity
Meter

2 Hot Water



Measuring jug



Stopwatch

Tools

You will be able to investigate more accurately by using tools and tips from the Home Energy Saving Kit! Each kit comes with a easy-to-use manual with instructions.

3 Lighting



Use your eyes
for this one!

4 Appliances



Plug in
energy
monitor



Fridge
freezer
thermometer



The Home Energy Saving Kit is available in a wide range of libraries across Ireland.

Check your local library!



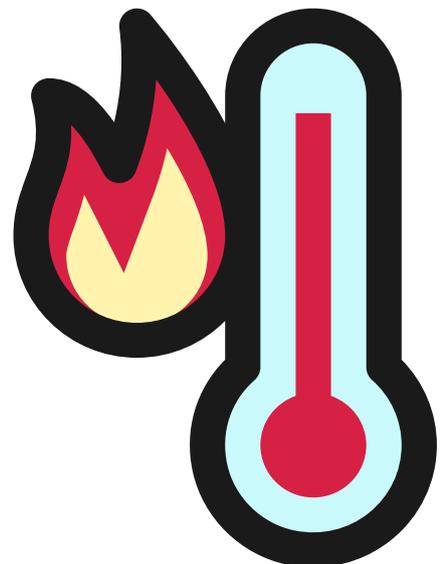
<https://thinkenergy.ie/energy-saving-kit/find-a-kit/>

Think Energy

School Detectives

Module 1

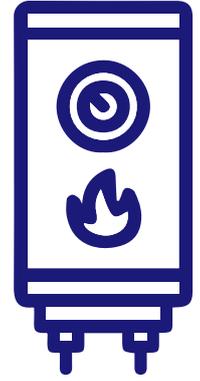
Heat



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1 Heating



Heating often uses the most energy in homes, schools and other buildings.

Ask your School Energy Team to help and see how many of these questions you can answer together.

1. What kind of heating do you have?

Oil Gas Electricity Other

2. Is that renewable or non renewable energy?

3. How old is the heating system?

4. Who looks after it and how?

5. When might it need to be replaced?

6. How is it turned on and when?

7. How old is the school building?

8. What is it built of?

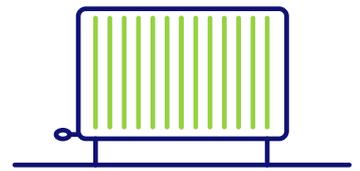
9. Is there much insulation to keep it warm?

10. What would you most like to find out today?

Detecting time

Choose one room at a time to do some more detective work. Use the tools in the Home Energy Saving Kit to help.

1. What room are you investigating?



Radiator

2. How many radiators are there in this room and how are they turned on and off?

3. When the radiators are turned on, check if any are cold at the top but warm at the bottom. If they are, they're not working as efficiently as they should and likely have trapped air inside. Using the radiator key, ask an adult to bleed it as this will improve its performance.



Radiator key

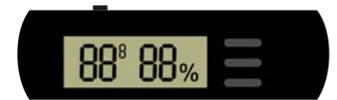
4. A thermostat is something that controls how hot or cold the temperature of a room is. See if you can find one, and write down the temperature it's set to. Occupied spaces should be between 18°C - 20°C.



Thermostat

5. Use the temperature and humidity meter to see how warm and dry it is in some of these places:

Temperature and Humidity Meter



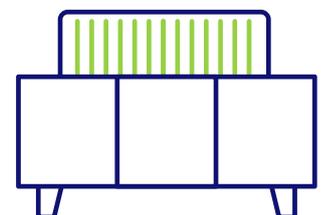
Temperature | Humidity

Humidity should be between 40 - 60% for health, comfort and wellbeing!

	Temperature	Humidity
On the windowsill	----- °C	----- %
On a table or desk	----- °C	----- %
On the floor	----- °C	----- %
In the bathroom	----- °C	----- %
In a cupboard	----- °C	----- %
On a bookshelf	----- °C	----- %

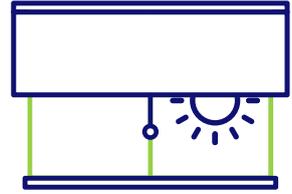
6. Is there anything around the radiators that might be blocking the heat? Check for bookshelves, chairs etc.

Write down anything you notice and we can ask later on if we're allowed to move them.



Radiator with a table in front

7. Check where sunlight comes in. Are there blinds you can open to let heat and light in?



Blinds

8. With your teacher’s help, use the Thermal Leak Detector to look for cold air coming into the room. If the light turns blue, you’ve found a cold spot! This means you need to seal it.



Thermal leak detector

	Does the light turn blue?	
Around the windows	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Around the doors	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Under the skirting boards	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Around the radiator pipes	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Under the sink (if there is one)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Notes

Based on what you've discovered, what would you like to try to save energy on?

This week?

This year?

In the next 5 years?



CONGRATULATIONS

Well done!

You've completed Level 1 of
Energy Detectives!



Next steps:

Now that you have investigated heating,
next time we'll look at hot water,
lighting and appliances.

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School Detectives

Module 2 Hot water



2 Hot Water



Heating water uses lots of energy. We need hot water to wash our hands and keep the school clean. Ask your School Energy Team to help and see how many of these questions you can answer together.

1. How is the school's water heated?

2. Is that renewable or non renewable energy?

3. How old is this system?

4. What kind of maintenance does it need?

5. When might it need to be replaced?

6. How is it turned on and when?

7. Does it come on at the weekend or at night?

8. Are there any hot water taps that are cold ?

9. Are there any hot water taps that are too hot?

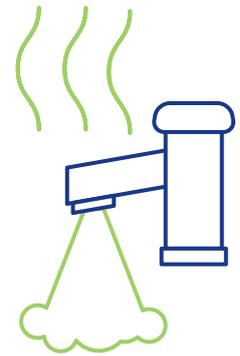
10. Are there any hot water taps that leak or drip?

Detecting time

Decide with your School Energy Team what areas might use the most hot water and ask if you can start your investigations there. Kitchens, staff rooms and bathrooms are often good options.

1. What room are you investigating?

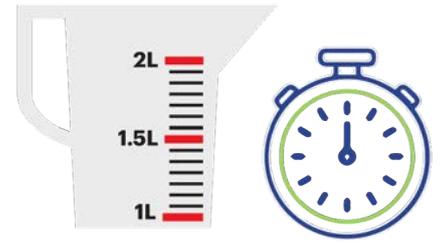
2. How many hot water taps are there in this room?



Push-button
tap

3. How are these turned on and off?

4. With an adult's help*, see if you can measure how quickly water comes out of one of these taps. Write down the answer in litres per minute. Ideally, this shouldn't be over 9 litres per minute.



Measuring jug and stopwatch

*Learn how to measure water flow rate at [YouTube.com/@energysavingkit](https://www.youtube.com/@energysavingkit) or scan this QR code for instructions!



5. Are any taps fitted with flow restrictors? These are attachments that slow the water down so you use less.

6. If not, can you check how many taps might be given flow restrictors? Ask if your school could test a flow restrictor on one tap, then add more if it works.



Flow restrictor

Based on what you've discovered, what would you like to try to save on hot water?

This week?

This year?

In the next 5 years?



CONGRATULATIONS

Well done!

You've completed Level 2 of
Energy Detectives!



Next steps:

Now that you have investigated heating and hot water, next time we'll look at lighting and appliances.

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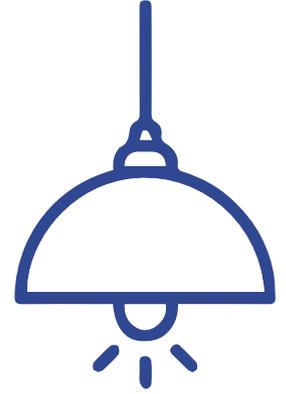
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Module 3 Lighting



3 Lighting

We need lots of different kinds of lights in school to help us to see our work, find our way around safely and to feel comfortable throughout the day. Ask your School Energy Team to help and see how many of these questions you can answer together.



1. What types of lights are there in the school?

2. When are they turned on and off?

3. Are any lights operated by timers?

4. Are any lights operated by motion sensors?

6. Do the lights come on at the weekend or at night?

7. Are there any rooms that are too bright?

8. Are there any rooms that are too dark?

9. Are there any lights that aren't working?

Detecting time

In your classroom, investigate how and where lighting is used.

1. Using a compass, map or app, find out which way your classroom windows face.

2. How much sunlight comes into the classroom and at what time of day?

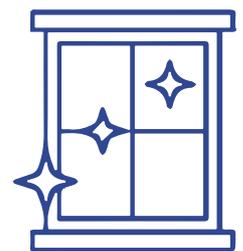
3. Are there times of the day when you don't need to turn the lights on?

4. How often are the windows cleaned - inside and out?

Compass



In the Northern Hemisphere:
South-facing: brightest, all-day light
East-facing: morning light
West-facing: afternoon/evening light
North-facing: coolest and dimmest



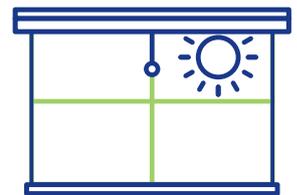
Clean windows

5. Is there anything else blocking the light coming through the windows - posters, artwork, furniture?

6. Are there blinds on the windows?

7. Who opens and closes them, and when?

8. What kinds of bulbs or lights can you find?



Open blinds to let the sun in

9. Could any of these bulbs or lights be replaced with energy saving ones? They use 80 - 90% less energy!



Energy efficient bulbs

10. Could any of the lights be cleaned safely?

11. Are there any lights outside ?



Outdoor lighting

12. How are when are these turned on and off?

Notes

Based on what you've discovered, what would you like to try to save on lighting?

This week?

This year?

In the next 5 years?



CONGRATULATIONS

Well done!

You've completed Level 3 of
Energy Detectives!



Next steps:

Now that you have investigated heating, hot water and lighting, next time we'll look at appliances.

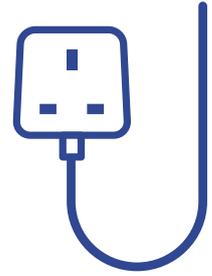
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Module 4 Appliances



4 Appliances



There may be lots of plug-in devices, machines and gadgets in use in your school. Ask your School Energy Team to help and see how many of these questions you can answer together.

1. How many of these are in the school?

Computers _____ Laptops _____ Printers _____ Scanners _____
Photocopiers _____ TVs _____ Whiteboard / Big Screen _____
Fridges _____ Freezers _____ Heaters _____ Lamps _____
Projectors _____ Other _____

2. When are they turned on and off?

3. Who turns appliances on and off?

4. Are any on timers?

5. Are any left on standby mode?

6. Are any left on over the weekend or at night?

7. Do any need to be updated or replaced?

8. Are there any that aren't needed any more?

Detecting time

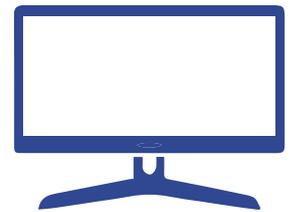
Starting with your classroom, check how much energy is used by appliances and devices. Use the Plug-in Energy Monitor in the Home Energy Saving Kit to help.

1. Make a list of all the plug-in appliances and devices in your classroom.

2. With an adult, choose three of the these to measure with the Plug-In Energy Monitor.

3. Pick one device you use frequently and see if you can work out how much energy it uses in one day?

4. Check with whoever organises the bills to find out how much your electricity costs. Use this to see how much that device costs to use for one day. Then see how much it would cost to use for a whole year in school!

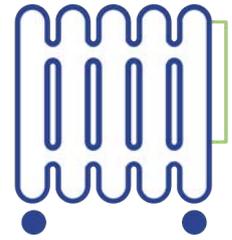


Screen monitor



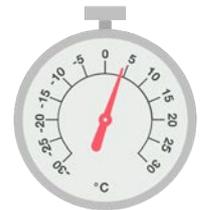
Plug in energy monitor

5. Can you think of appliances that are used at different times of the year, such as plug-in heaters, fans, lamps?



Plug in radiator

6. Are there any fridges or freezers in your school that you can get access to? Use the fridge freezer thermometer to check the temperature. Fridges shouldn't be colder than 3 to 5° C and freezers, -18°C.



Fridge freezer thermometer

7. Count how many kettles, coffee machines or water boilers are in use around the school.



Electric kettle

8. Think about dishes and other things that need to be washed in the school. Does that use hot water or electricity?

9. Could an insulated urn be used to keep water hot?



Hot water urn

10. If the school uses a dishwasher or washing machine, when are they turned on and on what setting?

11. Are there any other water heaters in the school?

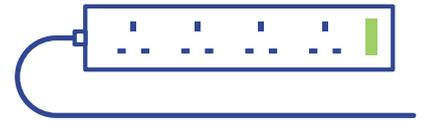


Instant water heater

12. Check with the School Energy Team how the cleaning team uses hot water for washing floors etc.

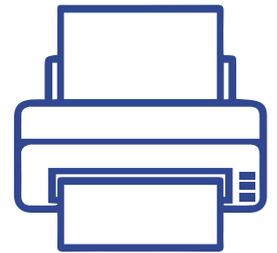
Notes

13. How many items need to be turned off at the end of the day?



Multiple adaptor / extension cord

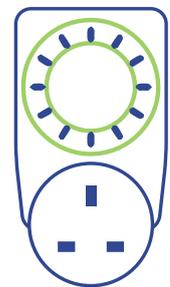
14. Do you have a routine for turning devices off?



Printer

15. Is there anything that's usually left on all day (maybe a printer or whiteboard?)

16. Could you try turning them off until they're needed or putting any on a timer?



Timer plug

Notes

Based on what you've discovered, what could you try out to save on appliances?

This week?

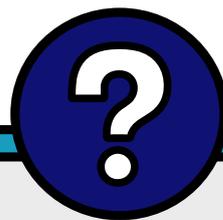
This year?

In the next 5 years?



well
done!

You've completed all levels, you are
now an official Energy Detective!



Can you investigate any
of these energy topics
where you live, play
sports or hang out?