Euronet 50/50

Energy Saving at Schools

E-Pack

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EURONET 50/50

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ABOUT THE E-PACK:

In your hands, you hold the educational material handed to you by the partners of the Euronet M50/50 project.

Euronet 50/50 is an energy saving project for schools starting in 50 schools in nine countries of the European Union. It aims at achieving energy saving by changing the behaviour of the users of the school building: pupils, teachers and other members of the educational community.

Environment and climate benefit from a reduced use of energy at schools due to lower CO2-emissions. In Euronet 50/50, the schools benefit also – because they receive 50 per cent of the energy costs they save for their own use.

The E-Pack aims at helping you to carry out the educational part of Euronet 50/50 in your school. The core of the E-Pack is the teacher's guide and the worksheets developed by the Independent Institute of Environmental Issues (UfU) in Berlin, Germany. UfU has been carrying out energy saving projects in school – many of them within 50/50 incentive schemes – for more than 15 years. Additional material gives background information.

UfU is aware of the fact, that the situation in schools and the teaching programs are different in the partner countries. We tried very hard to develop an education plan that is applicable in different circumstances. You are welcome to adapt it to your specific conditions, but you should keep the focus on pupils' ideas and activities. UfU trusts the creativity and drive of children and youths in shaping their environment. And Euronet 50/50 can be one step more to empower the pupils to do so – in school, at home and in their future.

TEACHERS/EDUCATORS GUIDE TO EDUCATION IN A 50/50 PROJECT

This guide aims at giving you an easy to follow way to run the 50/50 project with the energy team. It is based on the experience of the **Independent Institute for Environmental Issues (UfU)** that has been running successful 50/50-projects for more than 15 years.

The UfU approach to 50/50 projects focuses on independent work and capacity building in the participating pupils rather than teaching & lecturing by the teacher. Thus the teacher/educator is accompanying and helping as the kids go on their energy expedition and research opportunities to save energy. We encourage the children to do as much as they can on their own and to present their own work in front of the school public.

We recommend integrating the project work in the regular school time as it is easier to assess the real energy use in the school when the building is in regular operation. Apart from this, the school public takes more notice of the project, when they see the energy team doing its work.

UfU usually works with a whole class as energy team, as this is easier to organise in class time.

This guide proposes to run the project on 6 days. The work of every day as it is described takes 90-150 minutes (without breaks), although the amount of time can differ from school to school.

It is possible to concentrate the project on fewer days – but the project is more sustainable, if it is not carried out in just one or two consecutive days. UfU usually has one or two weeks in between the project days.

KICK OFF:

STEP 1

INTRODUCTION OF THE 50/50 PROJECT

Ask the whole class:

What do you already know about the Project?

Why is it important to save energy?

If you have the consumption figures of the school, let the class guess:

- How much electricity and heating energy is used in the school in one year?
- How much money is spend on this?

The kids might not fully understand the figures, yet the big figures will not fail to impress them and they compare the amount of money spent on energy to prices in their everyday life

STEP 2

INTRODUCTION OF THE CONCEPT "ENERGY"

Discuss the Concept "Energy"

Ask the whole class

- What do you know about energy?
- Where does it come from?
- Where is it used?

> ***Note*** *the answers on the blackboard.*
> ***Sort*** *what is coming up into three columns on the black board using differently coloured chalk*
> ***Red:*** *fossil and atomic energy*
> ***Green:*** *renewable energies*
> ***White:*** *ways to use energy*

Focus on the sources of energy and establish an understanding that by burning fossil fuels CO_2 is emitted

Discuss the results with the class

STEP 3

INTRODUCTION OF "GREEN HOUSE EFFECT"

Development of illustration of the green House effect on the blackboard (Appendix 1.1)

You can make this more practical by the experiment described (Appendix 1.2)

STEP 4

EXPEDITION "ENERGY IN OUR SCHOOL"
(Tour of the school building with caretaker)

Setting out

- Introduce the caretaker as the expert for the heating system of the school
- Tell the kids they are going on a scientific research trip and ask what this means (this is about being careful and quiet)

Heating cellar

The caretaker shows and explains what you see in the heating cellar

- What is the source of heating energy
  (gas pipes, district heating pipes, heaps of coal…)
- How does the radiator work?
- What measuring instruments are to be seen?
- What do they measure and how do they work?
- Which pipes take the heating energy into the building?
- What is in them?
- Are they insulated?

Outside the school building

The children assess the outside of the building

- Are there electrical lights switched on outside the school even though it is not dark? – count the lamps that exist and the lamps that are switched on
- Is the school building insulated?
- How many doors does the school building have?
- Are there open doors even though it is class time?
- How many windows are open?
- Anything else, that is relevant for energy use?
- Measure the outside temperature

Staircase/corridor

The children assess the situation on the staircase/in the corridor

- Check the temperature on the staircase/in the corridor
- Check the radiators on staircase/in corridor: Are they hot? Can they be adjusted?

Staff room

The children check the energy behaviour of the teachers – and the staff room is an interesting place anyway

- How many lights are switched on?
- Are there any teachers in the staff room?
- What is the temperature in the staff room?
- How many radiators are there?
- How are they adjusted?

> *You have to find out before the tour what target temperature the numbers on the thermostat mean – usually, it is 20°C for number 3 – which makes this the ideal position of the thermostat in any class/staff room.*

- Are there any open windows?
- What about the radiators under the open windows – are they switched on or off?
- What other electrical appliances and gadgets are there? (from photocopier to coffee machine) Are they switched off? Or on "stand-by"?

Own class room

The children assess the situation in their own class room

- How many windows (open)?
- What is the temperature in the room?
- What about the radiators? Are they adjustable?
- How do we air the room? Leaving the windows open a little for a long time? Or do you open the window(s) wide for a short time?

Discuss with the kids (and if possible try):

- What happens, when you open the window and the cold air falls on the thermostat? (what happens is: the heating heats up automatically, which makes the room even hotter)
- What is the way out of this circle? (Turn the heating completely off when you open the window.)

STEP 5

SAVING THE RESULTS

Ask for the results of the measuring and counting (you may write them at the black board)

The pupils fill in the worksheet (Appendix 1.3 and 1.4)

Make sure that these worksheets are collected, so you can use them later on.

ENERGY TOUR - HEATING – ELECTRICITY

Purpose of this day:

- Survey of the whole building in a short time – ideally in one school hour
- Dissemination of the project in the whole school – that is why this has to happen during regular school hours
- Capacity building in pupils in the energy team as they will make the expedition on their own – and they are doing all the tasks on their own

Preparation:

- Inform all teachers at a regular meeting beforehand, that this will take place, as all classes are going to be “disturbed”
- Find a way to divide the school building into sensible sections for sub-groups of the energy team (class) to survey during the time of one lesson
- Get a copy of the school map and a protocol sheet for each group *(Appendix 2.1)*
- Get a key for relevant rooms that are locked (festive hall, rooms that are used only in the afternoon…)

STEP 1

RECOLLECTION OF THE PREVIOUS PROJECT DAY

- Where did we do last time?
- What did we see?
- How does the heating work?
- Why are we doing this project?

This is to reconnect the following project activities to issues as global warming, climate change, possibilities and necessities to act on the small scale

STEP 2

PREPARE THE ENERGY TOUR

Form groups – usually three-five groups are needed – depending on the size of the building (e.g. one group for each floor or section), the best size for the groups is five-seven kids. If there are not enough pupils in your energy team to have five kids in each team, co-opt some more kids.
If you are running the project as an outside educator, let the teacher form the groups.

Define the tasks that have to be done during the "expedition" together with the kids.

These tasks are:

- Knock at the door,
- Say hello, introduce your group
- Explain what the aim of the project is
- Measure the temperature/light, count the windows, check whether they are open or closed, check the regulation valves of the radiators *(important: always say what you are going to do before you do it – and announce the results afterwards!)*
- Ask the people in the room you visit whether they usual feel warm/cold/okay in this room
- Write the results down properly
- Say good bye

  You can combine tasks to fit the number of pupils you are going to have in the groups.

Now the groups constitute and divide the tasks among themselves

STEP 3
REHEARSAL

> *It is helpful – not only for primary school kids – if every group rehearses the whole sequence of a visit of another class in front of the energy team before actually setting out.*

The first sub-group leaves the class room with the task of doing everything as they will do when they go into the other (class)rooms.
So they start by knocking the door – You ask them in… – *Make everything as realistic as possible.*

After the group has finished: collect positive and constructive feedback from the class/add yourself what is necessary.

Repeat the procedure until all groups have rehearsed.

STEP 4
THE ENERGY EXPEDITION

Now remind every group of the part of the school they have to go to and how important it is for the project that they work carefully and in a disciplined way.

The pupils set out on their expedition on their own.

> *Ideally this should happen long enough before a school break – to finish the tour before the bell rings – otherwise you have to make clear what they are supposed to do in the break.*

While all pupils are away:
Write down the norm-temperatures for the different types of rooms in a school (appendix) – a good way to do this is writing the norm ("good") temperature in green, left of it lower temperatures in blue and right of the good temperatures higher temperatures in red.

When all groups are back, ask them about their experiences (e.g. how they were met in some classes, what one of the teachers said…) - *they will be full of impressions and want to talk about it.*

STEP 5
WORKING WITH THE RESULTS

Explain the norm temperatures and ask the groups

- to take their section of the school map and copy the temperature they measured in each room into the map and to colour in the room on the map with the correct colour for this temperature
- to prepare what they are going to tell the whole energy team about their findings

STEP 6
PRESENTATION OF THE RESULTS:

All groups present their maps and explain their findings

This is finish for this day – you should tell the team what will be their task next time.
Make sure the maps and protocols will be available on the next project days, as you will need them.

STEP 7
(POSSIBLE ADD-ON) START A LONG TERM MEASUREMENT OF THE TEMPERATURE

If you have a data logger (for long term temperature measurements) you can place it at a suitable spot in the classroom now. Explain what it is good for and how it works. Then you can make a proper countdown and switch it on. The long term measurement should last at least for one full week, so you find out what the temperature is at night and during the weekend.

ENERGY AND ELECTRICITY

Preparation:

- Get a voltmeter to measure the electrical intake of appliances and gadgets
- If you have significant consumers of electrical energy in your school, organise accessibility for measuring or information about its energy intake

STEP 1
RE-INTRODUCTION INTO THE TOPIC

You can recollect what you discussed on energy at Day 1 of the project:

- What is energy?
- What are the sources of the energy we use?

STEP 2
INTRODUCE THE FORMS OF ENERGY

Kinetic energy, potential energy, light, warmth, sound
For consolidation use worksheet *(Appendix 3.1)*:
the pupils fill this in working in pairs or very small groups

STEP 3
THE ENERGY ALPHABET

You can do this in a communicative form with the whole class:
Write the alphabet on the blackboard and ask the kids to find at least one item connected with energy for every letter.
Write the example on the black board.

While the kids name their item you can discuss what form of energy is concerned, whether the energy is transformed and what effects this transformation has *(Appendix 3.2 as illustration)*

> *To get the best results, you should find at least one item for every letter yourself before you do this in class. You might have to cut down the number of electronic entertainment items to get a larger variety of examples.*

STEP 4

THE ENERGY QUIZ

The same small groups as before fill in the energy quiz. *(Appendix 3.3)*
The task is to name examples for energy in the everyday life of the kids. The kids are free to pick any item from the alphabet or come up with new ideas.
You should be available to answer questions.
You can discuss the results of the groups afterwards.

STEP 5

ELECTRICITY IN THE CLASSROOM

- Check the classroom for electrical appliances and gadgets.
- Think about significant consumers of electrical energy at the school.
- Measure the electrical intake of the appliances and gadgets in the class.

This should include all appliances in the class in all possible modes, e.g. stand-by, regular use, use with different intensity.

If there are too few things in the classrooms, you can bring some examples as mobile phone with charger, radio, laptop computer (in standby, working and screensaving mode), fan, hair dryer/small electric radiator (these are impressive, because you can make visible, that producing heat makes the difference)

The kids note down the results

If there are other relevant consumers in your school – go and measure them/get information about their intake.

The kids note down the results

STEP 6

SAVING THE RESULTS

Discuss your findings:

- What consumers use most energy?
- How are these consumers used?
- Where is energy used without any sense?

MAKING CONCLUSIONS

Preparations:

- **If you made** the long term temperature measuring, you should have print outs of the results ready on this day.
- **Think about** how you want to tell the school public about the recommendations for energy use the kids are going to work out today.

STEP 1

RECALL THE RESULTS OF THE PREVIOUS PROJECT DAYS

- **Recall** what you did on the different days of the project work
- **If applicable:** Present the printouts of the long term temperature measurement and let the kids interpret what they see.

STEP 2

THE KIDS WORK OUT PROPOSAL FOR ENERGY SAVING

Form small groups (4 per class) that discuss their findings using their protocol sheets, think about ways to save energy and proposals for improving the situation.

The groups present their findings in front of the class using the protocol sheets/their notes.

While they do that, the teacher/educator notes down the important findings, proposals, ideas … at the blackboard.

When all groups are ready ask whether there are any more ideas and recommendations.

STEP 3

FIND OUT WHO HAS TO DO WHAT

Discuss with the kids, who has to do what to implement each of the proposals.

Usually the key players are:

- the caretaker
- the school headmaster
- the local authorities (unless the school is responsible for its building shell itself)
- last not least: we ourselves/the pupils/teachers (the “school public”).

Discuss the ways how to address these different actors.
This can be:

- Headmaster/caretaker: a letter with recommendations/questions
- The local authorities: a letter with recommendations/questions
- The pupils/teachers: A wall paper for the main hall, including the recommendations and an appeal to everybody in the school to make proposals for improvement and/or a presentation at the next school project day and/or a visit to all classes to tell them about the result of your project.

STEP 4

START WORKING IN GROUPS NOW

Either continue working in the same groups as before or form new ones to prepare the different tasks:

- Draft a letter to the director/caretaker
- Draft the content of the wallpaper
- Prepare labels for light switches, windows, radiators, electrical appliances *(Appendix 4.1)*
- Build a letter box (for the improvement proposals from pupils and teachers)
- Draft a short guideline how to save energy in the class to be handed to the other classes
- …

The groups should work as independently as possible.
You should just assist, if they get stuck or ask.

PRODUCING THE MATERIAL FOR THE SCHOOL PUBLIC

Preparation:

- **make an appointment** with the headmaster for the end of the project time on this day
- **bring material:** big coloured paper, colours, glue, marker pens, colour pens...

STEP 1

PRESENT THE DRAFTS

The energy teams look at the drafts they made last time, individual pupils might present the work done at the last project day.

The energy team/teacher gives final hints.

STEP 2

THE PRODUCTION OF THE MATERIAL

Now the groups actually produce what they drafted.

> *You have to plan plenty of time for that –*
> *because the kids are producing the tangible product of their project, which is going to show the results to the school public.*

STEP 3

TELL THE HEADMASTER

Go to the headmaster's office or – better – invite the headmaster into your classroom.

The kids will be proud to present their findings and read the letter to him, present their wallpaper.
Ideally, the headmaster will give some answers, take the letter (and later on answer it) and propose to put the wallpaper in the main hall/next to his office or another good spot in the school.

Handing in the letter is an option, too – but only half as exiting.

TELLING THE GENERAL SCHOOL PUBLIC

OPTION 1

SCHOOL PROJECT DAY

A presentation at a general school project day, where the energy team/class can tell the whole school about their project and their results either at a stall or from a stage.

Rehearse/prepare the appearance, so the kids feel confident when they start.

OPTION 2

A TOUR OF ALL CLASSES IN THE SCHOOL

This would be a second tour of the school building – which has the advantage that all classes are told about the results of the project in their room – they learn about the proposals to save energy on the very spot, where they can act.

Preparation:

- **Photocopy the letters** to the classes und labels for light switches, windows, radiators, electrical appliances that the class produced previously (you should have enough to provide all relevant rooms of the school, class rooms, staff rooms, rooms used in the afternoon…) with an “energy saving pack”

> *if you have the opportunity to laminate the labels for window, radiators and electrical appliances, this makes them much more durable.*

- **Material to make a folder** (either paper – but plastic pockets do as well)
- **Tell the other teachers** that they will be visited by the energy team

STEP 1

PREPARATION FOR THE TOUR

Review with the energy team

- what material you have
- what it means

Form groups in a similar way as on *Day 2* - usually three-five groups – depending on the size of the building (one group for each floor or section), the best size for the groups is five to seven kids.

The groups prepare the "energy saving packs" – this includes cutting out the labels if this has not been done before and packing the folders

Decide which group goes to which part of the school.

Identify the tasks the groups have to fulfil in similar way as on *Day 2*

- Knock at the door,
- Say hello, introduce your group
- **E**xplain what you found out in the project,
- **P**resent your recommendations, present the content of the "energy saving pack",
- Say good bye
- Who carries the packs?

You can combine tasks to fit the number of pupils you are going to have in the groups.

The groups rehearse their "job"

Again, it is helpful if every group rehearses the whole scene in front of the energy team *(see Day 2)*.

Now remind every group of the part of the school they have to go to.

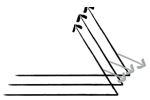
The groups set out and disseminate the results of their work.

When the groups come back, let them tell about their experience.

DRAWING FOR BLACK BOARD:

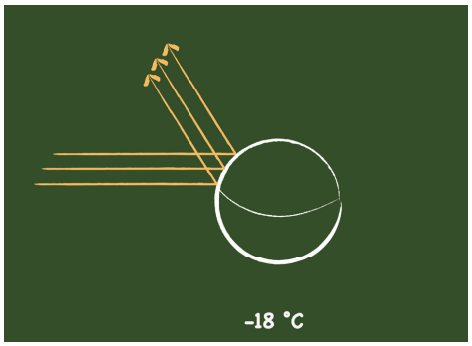
THE GREEN HOUSE EFFECT

sunlight + reflections



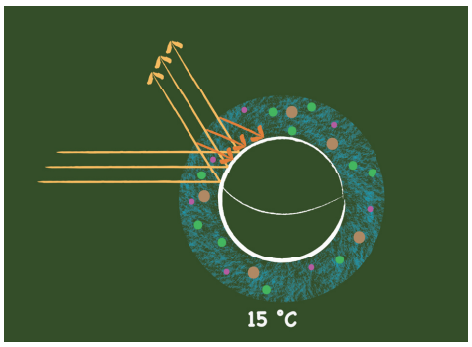
earth + equator

atmosphere +
gas molecules



This is the earth without an atmosphere. The average temperature would be **-18°C** – thus no life would be possible. The sunlight hits the surface of the earth – it is transformed into thermal energy. The thermal energy is reflected into outer space.

(Some of the incoming light is reflected back into space straightaway as light, in order to keep the drawing simple, this is not depicted here).

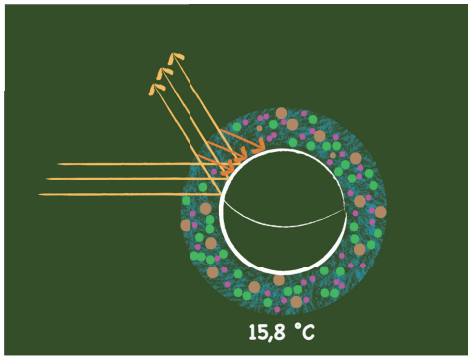


You draw an atmosphere around the second globe. You write **"atmosphere"** – as the word is not common to all.

You make a few dots into the atmosphere to symbolise the gas molecules. Name some gases – e.g. **oxygen, carbon dioxide** (draw them in **different colours**). Mention that there are more.

Sunlight hits the surface after passing the atmosphere and is transformed into thermal energy. Some of the thermal energy is reflected into outer space, some is kept inside the atmosphere by the green house gases, e.g. **carbon dioxide**. Due to the composition of the atmosphere (concentration of greenhouse gases), the average temperature on earth one hundred years ago was **+15°C**. This is the natural green house effect that makes life on earth possible.

Explain what average means in this case.



Make considerably more dots in the atmos-phere of the third globe. They symbolise the increased **CO_2-emission** due to human activity: By burning fossil fuels, which contain carbon, we are emitting CO_2 into the atmosphere. As a result, the atmosphere becomes less permeable for thermal energy and thus stores more thermal energy. That is why the average temperature on earth is rising. During the last one hundred years, the average temperature rose to **+15,8°C**. We call this the man-made green house effect, it causes the climate change we are experiencing now.

EXPERIMENT TO

EXPERIENCE GREEN HOUSE EFFECT

In addition to the explanation about the greenhouse effect at the Blackboard with the images given in Appendix 1.1 the following experiment can be used to help the kids explore the transformation of light energy to heat energy and the green house effect.

You need:

- a large empty glass jar
- a thermometer
- transparent film
- some dark soil

Setting up the experiment:

- put the soil into the jar
- cover the jar with the transparent film
- put the jar onto the window sill, if the sun is shining or put jar under a lamp
- measure the temperature in the jar every five minutes
- record the results

THIS EXPERIMENT CAN BE DONE BY GROUPS OF KIDS OR IN FRONT OF THE WHOLE CLASS.

Possible variations:

- take a second jar put white paper at the bottom and proceed in the same way as with the other jar. The white paper reflects a larger part of the light, the temperature will stay lower
- take a second jar with dark soil, but don't cover the jar. Proceed in the same way as with the other jar. This would show a much smaller green house effect.

WORK SHEET 1

ENERGY EXPEDITION "ENERGY IN OUR SCHOOL"
INFORMATION ABOUT THE SCHOOL BUILDING

TASK:
Draw an outline of your school.
Encircle the heated part of your school with a red pen and the unheated part with a blue pen.

General Information:	Day					
	Outside temperature (°C):					
Information about the building:	In which year was the school built?					
	Floor space (m²):					
	Heated Floor Space (m²):					
Cellar:	Is the cellar heated?	Yes				No
	Is the cellar ceiling insulated?	Yes		cm		No
Attic:	Does the school have an attic?	Yes				No
	Is the attic used/heated?	Yes				No
	Is the attic insulated?	Yes				No
Outside insulation:	Is the school building insulated?	Yes		cm		No
Outside lighting:	There are		lamps.		of them are switched on.	
Windows:	There are		windows.		of them are open	
					of them are tilted/half open.	
Doors:	There are		doors.		of them close automatically and	
					have to be closed by hand.	
					doors don't close properly.	
Water:	Is the rainwater collected?	Yes				No
	Is the rainwater used in the school area?	Yes				No

WORK SHEET 2

ENERGY EXPEDITION "ENERGY IN OUR SCHOOL"
HEATING

How is the school heated?

- ☐ district heating
- ☐ oil heating
- ☐ combined heat and power unit
- ☐ natural gas
- ☐ solar energy
- ☐ coal
- ☐ wood pellets
- ☐ other _____

What parts of the building are heated?

- ☐ main building
- ☐ outbuildings
- ☐ gym
- ☐ after school centre
- ☐ other _____

There are _____ heating circuits

Yearly consumption of heating energy: _____ kWh

The heating system can be regulated and in run as follows:

Regular School Days:
Heating is on from _____ to _____

Target temperature for classrooms _____ °C

Saving option for weekends:
Heating is on from _____ to _____

☐ There is no saving option for weekends.

Target temperature for saving option _____ °C

Saving option for school holidays:
Heating is on from _____ to _____

☐ There is no saving option for school holidays.

The heating pipes in the cellar are ☐ insulated. ☐ not insulated.

How is warm water generated?:

- centrally with the school heating
- in the classrooms with electrical boilers
- with a solar thermal system

Where does the electricity come from?

- photovoltaic system
- combined heat and power unit using (wood, plant oil, biogas, natural gas, oil,…)
- public grid
- green electricity from a supplier using renewable energy sources

Current meter reading:

Annual electricity consumption:

Energy output of photovoltaic system:

WORK SHEET 3

TEMPERATURE PROFILE AT OUR SCHOOL

TASK:

Not all rooms in the school have the same temperature. There can be different reasons for these temperature differences. To find out whether and where it is too warm in your school, you have to measure the temperature in every room. Additionally, you should ask the persons present in the room how they feel about the temperature in the room. If the room is empty, ask yourself.

For making the temperature profile of the school you need:

- a map of the school
- instant thermometers

Target Temperatures

20°C	*in classrooms*
15-18°C	*in other rooms and the gym*
14-17°C	*on stairs and in corridors*

Example: *22°C – Too warm*

Date: Secretary:

Class: Outside Temperature:

Room no.	Tempera-ture	Thermostat valve Adjusted to			Open Windows	User survey		
						Too warm	Too cold	Okay

WORK SHEET 4

LIGHT AT OUR SCHOOL

TASK:

Sometimes the light is switched on, even though we don't really need it. And we do not need the same amount of electric light in all parts of the room, as natural light comes in through the window. Check how the light situation is in the rooms and how you can regulate the light.

For this task you need:

- a luxmeter

Target figures for the light

300 lux *in classrooms and offices*
500 lux *in science rooms*
(measured at the work places)
100 lux *in other rooms*

Date: Secretary:

Class: Light outside (lux):

Room no.	Are lights on? yes/no	Number of lamps			Different light switches? yes/no	Light intensity when lamps are switched off		
						window	wall	black board

WORK SHEET 5

FORMS OF ENERGY

TASK:

Find the correct characteristics for the following forms of energy and fit them in with the pictures.

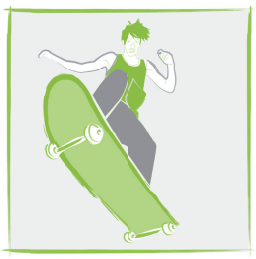
FORMS OF ENERGY

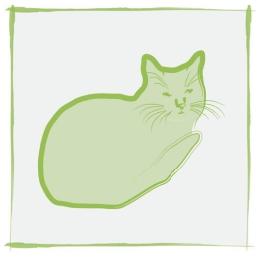
1. Kinetic Energy (Movement Energy)
2. Potential Energy
3. Heat Energy (Thermal Energy)
4. Light Energy
5. Electrical Energy
6. Chemical Energy

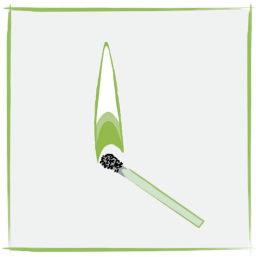
CHARACTERISTICS

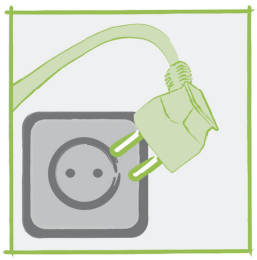
This form of energy is found in something that

A is warm
B is shining
C you can burn
D is moving
E gives electricity
F is lying somewhere high up









WORK SHEET 6

THE ENERGY ALPHABET

TASK:

Where can you find energy and what does the energy do there?

Think about where you can find energy in your surroundings. Try to find items for all the letters.
Example: under C you could name Cycling.

A			N
B			O
C	Cycling - The energy of my muscles moves the bicycle that takes me from one place to the other.		P
D			Q
E			R
F			S
G			T
H			U
I			V
J			W
K			X
L			Y
M			Z

WORK SHEET 7

THE ENERGY QUIZ

TASK:

Find examples, where energy is used in your everyday life. What does the energy effect? Where does the energy come from?
Fill in the chart.

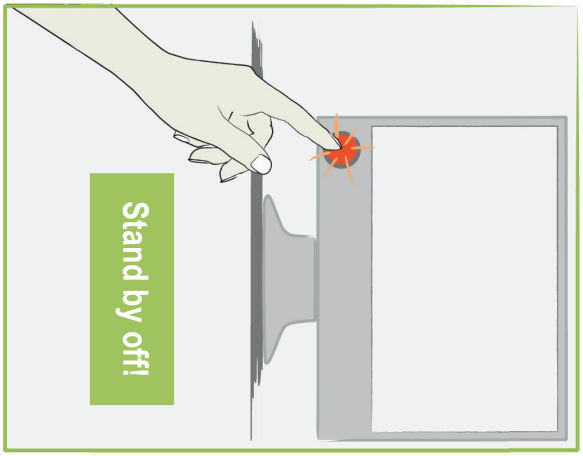
If you don't have any more ideas, think backwards: What does make a noise? What is growing? What is moving? Why does the light or the temperature change in a room?

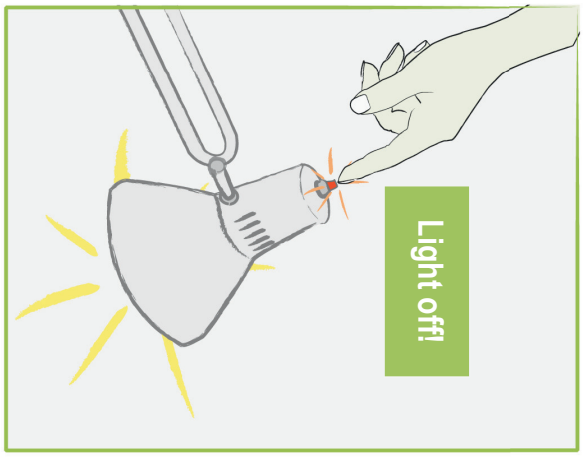
Where is the energy used?	What does the energy do?						What energy is used, where does it come from?
	Movement	Noise	Growing	Light	Warm/ Cold	Relocation	
Car	*X*	*X*			*X*	*X*	*Fuel/Oil*
Tumble dryer	*X*	*X*			*X*		*Electricity/Coal*

OPEN THE WINDOW PROPERLY

… and switch off
the heating
before
you open the window.

BETTER:
Open the window **WIDE**
for a **SHORT TIME,**
THAN having it **HALF OPEN**
for a long time.



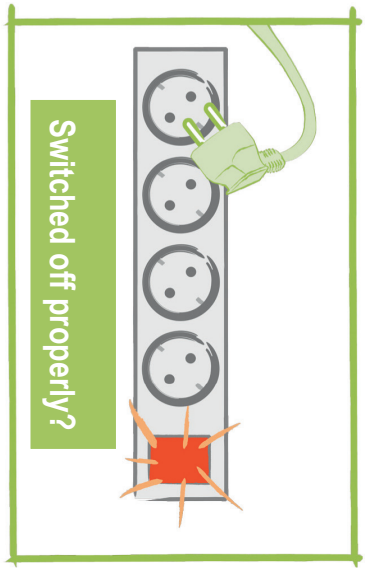


N.B.: you have to check what is available in your country

Wall

Black Board

Window



Not more than **3** –
Otherwise
It gets too warm

WASTE LESS AT SCHOOL!

Waste is what we throw away and like not to think about. We put it in a bin, so we don't see it and somebody takes it away. Or we see it as litter at the school, in the school yard or somewhere else in town.

But what kind of waste do we produce in our school? And how much waste do we produce? Who takes it away? How much does the school pay for that? And how does recycling work in our area?

These are the questions we are dealing with in this chapter. The pupil research the situation in their own class and in the whole school. They check out how waste is treated in their area and finally present their suggestions and their findings to the whole school.

AN EXPEDITION INTO WASTE:

What you need to prepare:

- A plastic sheet to put on the floor
- Some pairs of plastic gloves
- The rubbish basket in the class after some school hours
- Basic information on the waste collection in the school to adapt the worksheet

Tasks for pupils:

- To sort through the rubbish
- To write a protocol

STEP 1

- Put the plastic sheet on the ground
- Empty the rubbish bin onto the sheet
- Identify the kinds of waste: paper, package material, glass, biological waste, other waste (what?)
- Note down the results

STEP 2

On the basis of the results, make assumptions about the amount of waste of the class in a month or a whole school year.

> ***Example**: there were 5 plastic bottles after one day. If we assume that we make the same amount of waste every day, this means 25 bottles per week and 1000 bottles in the school year (Assuming there are 40 school weeks).*

Visualise the space these 1000 bottles would take up.

STEP 3

The day continues with a research about the general conditions in the school.

The kids research the following questions:

- How much do we pay for waste disposal?
- Who deals with the waste at the school?
- Who collects the waste?
- How many / which containers?
- How is waste collected?

They use worksheet Waste 1
You can divide the tasks among groups of pupils.

STEP 4

Discuss the results

The workgroups prepare brief presentations of their results and present in front of the whole team.

Options:

- As a home work the kids can to the same research at home:
  How much waste and what kinds of waste does my family produce at home for a day?
- If you decide to visit your local waste treatment plant:
  Develop questions from the results of the research at the school.

VISIT TO WASTE TREATMENT/RECYCLING PLANT

Many waste treatment companies offer the opportunity for visits to their premises.
Some also do education themselves, either in their premises or they come to the school.

Tasks for the kids:

- Use the questions they developed at the end of day one to find out e.g. about waste treatment and recycling.
- Find out about the amounts of waste in the area, development tendencies....
- Note down the results of your research

RESEARCH ON RECYCLING

The kids do research on recycling using the internet and other reference
This can be done at school or alternatively as homework

What you need to prepare:
Book the computer room and/or find reference material you can give to the kids, when you do the research in class

STEP 1

Research

- Find out how waste is used nowadays. What is done, when the materials are recycled? What products are produced from the recycled material?
- Do research on the recycling of paper, glass, package material
- Research in the internet and/or in other reference material. You can also ask staff of the waste treatment plant or the environment administration in your area.
- Note down or print out your information. Always note down the source of the information

STEP 2

Discuss the results in the class
Now you already know much about the waste, its treatment and recycling.
Define the most important issues everybody in school should know about waste, waste treatment and recycling

STEP 3

Define the priorities for the waste survey in the school.

- What do you want to find out?
- Which options of recycling do you have?
- What do you need to recycle in the best way?

Prepare and/or adapt Waste 2

WASTE SURVEY TOUR

What you need to prepare:

- Enough copies of the worksheet

STEP 1

The pupils recollect the results of the previous project days

- What they found out about waste, waste reductions and recycling
- What they decided what everybody in school should know

Introduce the protocol sheet *(Worksheet Waste 2)*

STEP 2

Form groups – usually three-five groups are needed – depending on the size of the building (e.g. one group for each floor or section), the best size for the groups is five-seven kids.
Identify the information that should be given during the tour as it is interesting or motivating to do something.

Identify the tasks to be carried out during the survey

- Introduction
- Checking the bins
- Giving information
- Writing the protocol
- …

STEP 3

Getting ready for the survey:

- The groups constitute, divide the tasks among themselves
- At least one of the groups should rehearse their appearance

> *If the same team that made the energy tour is doing the waste survey as well, this might be enough. Otherwise, let all groups rehearse.*

STEP 4

MAKING THE SURVEY

The groups set out, complete the survey and return to the class.

Ideally this should happen long enough before a school break – to finish the tour before the bell rings – otherwise you have to make clear what they are supposed to do in the break.

When the groups are back they prepare a brief presentation of their results.

STEP 5

DEALING WITH THE RESULTS

- The groups present theit finding
- Discuss the results with the class and identify opportunities for improvement.

Make an action plan:

- identify opportunities for improvement, necessary changes
- Count how many new bins you need, make sure, they are ordered
- Identify the people you have to address to achieve the inprovements

If you are going to have more bins:

- Collect information about what belongs into which bin
- Decide, how you want to give his information (stickers on the bins, poster on the wall…)

PREPARATION FOR PRESENTATION

What you need to prepare:

- Book the computer room

STEP 1

Identify topics that you want to give the school public information about.

- How waste is treated
- How recycling is done, which products are produced including
- evaluation of the process
- How to reduce waste (avoiding is better than recycling)
- …

STEP 2

Groups work out short presentation/speeches about these topics

Rehearse in front of the class

STEP 2A

DEVELOP A QUIZ

This can be a task for one or two groups while the others are working on the speeches

- Formulate questions using the information you collected during the project

The best way is to design the questions in the »Who wants to be a millionaire«-form giving one correct and three wrong options

- Design the questionnaire

TELLING THE SCHOOL PUBLIC

STEP 1

When you have new bins/new ideas to reduce waste, take the opportunity to inform everybody about their correct use and about what everybody ought to know about waste.

STEP 2

Set up a collecting system: pupils who are responsible for emptying the bins from the classrooms into the respective school containers.

STEP 3 **(which can happen later)**

Present your results at the next project day or any similar school event

Use material developed within the project –

- give a speech or a presentation
- let the guests do the quiz
- play the game

AN OPTIONAL GAME

This game is for fun and to help to learn to sort the rubbish correctly.

It is important that you set this up according to the regulations in your area.

> ***What you need to prepare:***
> *Paper, pencils and other drawing material, scissors, Newspapers/journals/advertising material*
> *Glue to make the bins*

STEP 1

The kids can draw and/or cut from printed material different items that might appear as waste

Draw/make different bins (the same ones you are going to have)

THESE TASKS CAN BE DONE BY SMALL GROUPS

STEP 2

Make or set the rules of the game

- at what number of points on the dice the teams are allowed to throw away waste items (suggestion 1 and 6)
- Who is the winner?
  One factor is speed, define how the speed will be rated
- the other factor should be correctness: If you want to check, whether the rubbish is sorted correctly, number the teams and number the items to dispose of by the group accordingly

> ***Suggestion:*** *compete for the lowest score, the fastest groups gets 1 point, the second fastest 2 and so on. For each item disposed of incorrectly give one point. The winner is the group with the lowest score*

STEP 3

THE GAME

- Form small teams
- divide the rubbish items equally among the teams
- the teams alternately toss the dice, if they have 1 or 6 points, they can throw the item into a bin
- play until all teams are finished
- establish the score

Winner is who is finished first and ordered the items correctly.

WORK SHEET 1

School:

Group:

Secretary:

Date:

Who did we talk to:

TASKS:

- Find out how waste is dealt with in your school
- Ask the caretaker and other school personal who might know something
- Ask the teacher to help you with the calculations if necessary.

- Answer all questions

Do behave carefully when you move around the schoolhouse.
If possible make photographs of what you see.

1 AMOUNT OF RUBBISH

Find out, how much rubbish your school produces per year.
Calculate the different kinds of rubbish separately (if there is separate collection).

TABLE: WASTE AT OUR SCHOOL

	Paper	Glass	Package Material	Other waste	Anything else (What?)
How many containers does our school have?					
How big is one container?					
Calculate the volume of all containers (in litres)					
Calculate the volume of the waste at each collection (litres)					
How often are the containers emptied per week					
Calculate how often the containers are emptied per year					
Calculate the volume of the waste per year (litres)					
Recalculate the volume from litres into m^3					
Round the Volume (m^3) in a sensible way					

2 AMOUNT OF WASTE PER HEAD

Find out, how many pupils, teachers and other staff there are in your school

Pupils:

Teachers:

Other staff:

Sum of all people in the school:

Calculate how much general waste there is per head and year:

3 SEPARATE COLLECTION OF WASTE

Find out, how well the separate collection of waste works in your school.
To find out, look into the different containers and note down (and if possible photograph) what you see.

If there is no separate collection, move straight to the next question

Paper

Where is the container?

What is in the container?

Glass

Where is the container?

What is in the container?

Package material

Where is the container?

What is in the container?

4 WHOSE TASK IS DEALING WITH THE WASTE?

Ask the caretaker, whose task it is to deal with the waste

Who puts baskets/buckets/containers into the rooms?

Who empties the baskets/buckets/containers from the room?

Who empties the waste containers from the school yard?

Who empties the schools' waste containers?

Who pays for the waste?

How much does the school pay for waste collection per year?

WORK SHEET 2

PROTOCOL SHEET FOR WASTE SURVEY IN SCHOOL

Group:

Secretary:

Date:

ROOM:

What kinds of containers/for which material?

Paper:	yes		no	
General waste:	yes		no	
Glass:	yes		no	

Are the containers used correctly? yes no

If no, which problem occurred?

Which proposals to reduce waste do the users of the room have?

WATER – THAT'S WHAT IS COMING FROM THE TAP IN OUR HOUSE

The permanent and easy availability of clean drinking water has become a matter of course in all European cities and town and even in most rural areas.

Yet, this is a fairly recent achievement, it is not so long ago that clean water was scarce, water often carried diseases. And in many regions of the world it is like this even today.

On the other hand pollution from human activity, especially in industry and in agriculture threatens our water supply today – So clean drinking water in sufficient amounts is not a matter of course at all. Even though most of these issues are not directly connected to Euronet 50/50, which is aiming at savings both in money and CO2. We decided to take a somewhat broader approach and connect it with Euronet activities at the school.

We start with the water circulation system and historic aspects concerning the water supply in your area. We deal with the water supply and waste water treatment as they are now and close with the research of the water consumption in your school.

Additionally, we propose two experiments to explore the hydrological cycle and waste water purification.

WATER IS GOING ROUND IN A CIRCLE

STEP 0
WATER IN PROVERB AND SAYINGS

There are numerous sayings and proverbs dealing with water in any language – to get the discussion going, you can collect some of them out of your mind and the minds of the kids of the class.
Discuss, what they mean.

STEP 1
THE WET SPOT

- make a large very wet spot on the blackboard using a sponge
- draw the outline of the spot with chalk
- ask the kids what is going to happen and why

> *While you are discussing this, the spot will get smaller.*
> *Draw the outline around the smaller spot.*
> *You can try to influence the process by airing the room…*

STEP 2
THE DIFFERENT PHASES OF WATER

In Step One we dealt with the liquid and the gas phase
What is the third phase?

Discuss the phases of water and the different transitions between the stages based on the following table

Out of which phase	By what process	Turns into this stage
Liquid water		Water vapour (gasiform phase)
Water vapour (gasiform phase)		Liquid water
Liquid water	evaporating	
		Solid ice
	Melting	Liquid water

(key: evaporating, condensing, water steam, freezing, solid ice)

STEP 3

WATER CIRCULATION IN NATURE – THE HYDROLOGICAL CYCLE

The water in nature is going round in a never ending circle
Start to develop the image on the black board with drawing the sun and a cloud

- Clouds are moving inland towards the mountains
- Rain is falling on mountains and lowland
- Rivers collect the water and go down to the sea
- Water is evaporating from land and the sea
- The steam is condensing in clouds….

Visualise the direction of the water in the different stages with arrows that show a circular movement

Additional question:
What drives this circle? –the sun/solar energy

EXPERIMENTAL STEP

BUILD YOUR OWN HYDROLOGICAL CYCLE

(See experiment description hydrological cycle)

> *As this experiment takes some time, it can be used for keeping the project going in everybody's mind by monitoring it daily till the next project day.*

Also, you can give the kids some research tasks regarding the history of the water supply in your area as described in preparation for Day 2.

WHEN DID THE WATER GET INTO THE PIPE AND WHAT HAPPENED BEFORE?

Preparation:

Give the kids some research tasks beforehand, e.g.:

- interview your grandparents to find out about water supply in their childhood (maybe, you have to go even further back in history)
- find out, how the water supply was in your area 500 years ago
- when was the first water pipe system establishes in your area

In southern and some central parts of Europe, the Romans or even older cultures built the first water supply systems, which demonstrates the importance of water in civilisation – If you have such structures in your area, make them an issue

Familiarise yourself with the experiments and get the material for the experiments.

- Pipes, flexible tubes (if possible transparent), canister, big empty metal can (from the canteen kitchen), material to connect pipes/tubes to water containers, some big container to prevent the spilling of the water used for the experiments…

STEP 1

PRESENTING THE RESEARCH RESULT

Designate different tasks to different groups of kids depending on which topics they researched.

The groups prepare the presentation of the results including visual elements, e.g. a poster, a drawing, a map…

The groups present their findings in front of the class.

Discuss the presentation underlining historic development.

Some of the presentations under Step One may already have contained aspects of the following steps – then these examples in the following steps to bring the issues closer to the kids.

STEP 2

HOW DOES THE WATER GET INTO THE PIPE – INTO EVERY HOUSE AND TO THE PIPE?

Discuss the physical characteristics of water and what they mean for the water supply. Work out the situation in your area:

a **All water is going down** (as every other matter, due to the law of gravity.
The source of the water must be higher than the consumer.
In some regions, the water source is high in the mountains, in flat areas, »water towers« were used (nowadays, usually big pumps “press” the water into the pipe system

b **Water is flexible.**
It can fill up pipes and containers.

c **In closed pipes, water can even go over hills** – as long as the reservoir is higher than the hill.
Whereas the ancient water supply of the Romans was an open canal, in which the water could only go downhill.

d **Water makes pressure** (also due to gravity)
The higher a water source/a tank, the higher the pressure of the water is at the end of a pipe

STEP 3

EXPERIMENTS TO RESEARCH THE CHARACTERISTICS ABOVE

a **This is a matter of course** – the kids know about it

b **Connect a flexible tube** (or a pipe) to a water container; make sure the tube/pipe is closed. If you use a transparent tube, you can see, whether the water has filled up the whole tube

c **Open the tube**. Flex the tube in different directions and observe when the water is running and when not. Also observe the changes of the pressure of the water leaving the tube depending on the difference if height between the reservoir and the end of the tube.

d **Take the large empty can**. Make holes in it in different heights. Put the can over a larger container to prevent the water from spilling on the ground.
Now fill the can with water and observe the pressure of the water coming out of the different holes.

e **As most kids can't really imagine the pressure of a water column** of a few meters, you can try the following: take 5 meters of a slightly larger pipe or hose (2 cm across). Lift one end –if possible connected to a container - up (or put one end out of the second floor window). A person on the lower end covers the opening with the hand, while the pipe is filled with water from above. Observe how long the person at the other end can resist the water pressure. Only do this where you can't do any harm with the water and when it is warm enough – the person on the lower end might get wet.

> *If the kids in your class are up to it, you can give the research tasks and the materials to groups of kids and let them work out the set-up of the experiments themselves.*

Discuss the experience made

STEP 4

RECOLLECTION OF PAST WORK AND PREPARATION OF NEXT STEP

Recollect what you found out above water and water supply so far

Work out questions to be answered when visiting the water company in your area.

The kids note down their questions.

MODERN WATER SUPPLY

Visit to local water supplier and/or water purification plant

Many water companies offer the opportunity for visits to their premises
Some also do education themselves, either in their premises or they come to the school.

Preparations:
Make arrangements with the company to visit

Work out questions together with the kids on the basis of their experience gained within the project or of previous lessons, e.g.

- Where does the drinking water in your area come from?
- How much water is supplied, what are to most important water consumers in the area?
- What are the most important problems related with supplying water?
- What development tendencies of water consumption?
- How is waste water treated in your area? What happens with the treated water and the residue from the purification plant?
- What are the main problems in waste water in your area?
- What are the energy related issues in supplying fresh water and waste water treatment?

Designate a certain topic to different groups of kids

STEP 1

VISIT TO THE WATER SUPPLIER

TASKS FOR THE KIDS:

- Find the answer to the questions your worked out
- Note down the results of your research

STEP 2

ESTABLISHING THE RESULTS

The groups prepare the results of the visit for their particular task for presentation in class

The groups present their results

STEP 3

DISCUSSION AND CONCLUSIONS

Finally the results are discussed.

Establish conclusions:

- Which are the most important fresh and waste water relates issues in your area?
- Which important water issues are concerning your school?

The school related issues will be the basis of the research into water issues at your school.

As an optional activity to make the principles of water purification visible, the kids can build a small biological water purification plant; see the experiment description biological water purification plant.

> *As this experiment takes some time, it can be used for keeping the project going in everybody's mind by monitoring it.*

WATER CONSUMPTION AND WATER SAVING AT YOUR SCHOOLS

This is the part essential for Euronet, if you only do this part, you should still introduce the topic »water« even though in a shorter way.

Preparation:

- Introduction into the topic of water based in Module 1 or your own introduction into the topic based on your curriculum
- Get map of the school

You may prepare a protocol sheet on the basis of Worksheet Water 1 beforehand, still the kids should work out the important issues on water on their own

STEP 1
INTRODUCTION

Discuss the use of water at school – class discussion or group work with presentation:

- Where is water used at the school?
- How are the issues of water and energy interlinked?
- What are the relevant aspects of water usage for the 50/50 project at the school?

STEP 2
WHAT ARE THE IMPORTANT QUESTIONS?

Establish together with the kids relevant questions and issues for the use of water in your school, what information you need to answer them and how you can get the answers, e.g.:

- Water price/waste water price (you might find this in the Euronet agreement between your school and school authority)
- Where are the water meters?
- Where is water used?
- How many water outlets are in the school?
- Is there a hot water supply and how is the water heated up?
- Are there problems with the water supply due to which water is wasted

STEP 3

MAKE PLAN FOR RESEARCH

Discuss, how the research into the consumption of water at your school can be carried out in a sensible way, e.g. divide the school into section.

Form groups and establish the tasks for the groups

The groups prepare a protocol sheet for the research of the daily consumption of water **(similar to Worksheet 2)**

> ***Please note:***
> *The conditions in school can be fairly different, adjust the checklist to the situation in your school.*

STEP 4

SURVEY OF THE WATER CONSUMPTION

The groups carry out the research in the different sections of the school

STEP 5

DISCUSS THE RESULTS

The workgroups prepare brief presentations of their results to present them in front of the whole team.

The group presentations should include proposals for savings and how these savings can be realised, e.g. who should be contacted or how the other pupils can be informed.

> *Hot water is an important issue in a 50/50 project, as there is the issue of energy consumption as well as water consumption, make sure the kids are aware of this.*

OPTIONAL STEP

RESEARCH YEARLY CONSUMPTION OF WATER IN YOUR SCHOOL

- Find out, how much water was used in your school last year, and one or two years before.
- Calculate on the basis of your findings how much your school paid for water and waste water during these years.
- Find out how many persons (pupils and teachers) were at your school during these years
- Calculate how much water was used per person at your school

STEP 6

TAKE MEASURES

Discuss the proposals and establish the most important measures, e.g.:

- write to headmaster
- talk to caretaker,
- prepare a presentation of the results to the school public

Groups work on the different measures.

Finally – show the results of your project at your school.

MAKE YOUR OWN HYDROLOGICAL CYCLE

Form of work:
work in groups or presentation in front of the class

What you need per group.:

- One large clean glass container (e.g. a preserving jar)
- some charcoal
- Some soil (sterilised would be best)
- One small life plant
- Water (distilled, if possible)
- Transparent film
- One rubber band

It goes like this:

1. Fill charcoal and soil into the glass container until a quarter of its height. Now carefully plant the plant. (If you like you can put some small toy figure in the container as well for decoration and identification.)

2. Fill charcoal and soil into the glass container until a quarter of its height. Now carefully plant the plant. (If you like you can put some small toy figure in the container as well for decoration and identification.)

3. Find a bright, but not too sunny place for the glass, where the container can stand undisturbed for a few days. Don't remove the film.

4 Make a protocol sheet for the observation of the container during the next day containing day and time of the observation, what you see and the name of the observer, e.g.

Day, Time	What did I see?	Who wrote this down?

5 Observe the container for the next few days.

WASHING THE WATER – FIND OUT HOW DIFFERENT LAYERS OF EARTH CLEAN OUR WATER

Form of work:
work in groups or demonstration in front of the class

What you need per group:

- Four pots with holes in their bottoms (e.g. plant containers)
- One glass container
- One clean paper coffee filter (from the coffee machine)

Generally you need:

- One small water can
- Sand, fine gravel, coarse gravel
- Dirty water (from washing the dishes or cleaning)
- Ink

It goes like this:

1. Put one flower pot into the opening of the glass container.

2. Take the second flower pot, put it into the paper coffee filter and put this into the first flower pot.

3. Put sand into the second flower pot until it is half full. Put the third flower pot on top of the sand in the second one, fill in the fine gravel and do likewise with the forth pot and the coarse gravel.

4. Colour the dirty water with the ink and pour it carefully into the top flower pot and wait till the water has arrived in the glass container.

5. Check the water in the glass container. Is it really clean?

6. Shake the water in the glass container. What happens?

THE BIOLOGICAL WATER PURIFICATION PLANT

Form of work:
One experiment for the whole class

What you need per group:

- Tall flatsedge (Cyperus eragrostis) - available at garden markets
- One large plastic bucket (10 litres)
- One thin, flexible, but not too soft tube
- One clean plastic container (e.g. from yoghurt)
- Some cling film and plasticine or window putty
- Coarse gravel, fine sand, garden soil containing clay
- One mug

It goes like this:

1. Cut a few holes into the sides of the plastic container and one hole in the bottom. Drill a hole into the side of the bucket – about 10 cm above the bottom.

2. Put the plastic container upside down into the bucket. Put one end of the tube several centimetres through the hole in the bottom of the plastic container. Put the other end of the tube through the hole in the side of the bucket. Seal the hole in the bucket with plasticine or putty. Fasten the tube outside the bucket with the cling film; put the mug under the end of the tube.

3. Now you fill the bucket: first you put the coarse gravel onto the bottom of the bucket, then the fine sand and finally the garden soil. Plant the Cyperus. You have to water the Cyperus with clean water for a few weeks till it has taken root.

4. When the Cyperus has taken root, you can water it with dish washing water. Or you can wring the dirty sponge from the blackboard onto the plant.

   The dirty water will now trickle down through the different layers of soil and is cleaned by the bacteria at the roots of the plant. The cleaned water will run out from the tube.

Take care:
The water is cleaner now – but it does not yet have drinking water quality.

WORK SHEET 1

CHECKLIST – HOW IS WATER USED IN OUR SCHOOL?

Group:

Secretary:

Which part of building Is checked:

We talked to:

Date:

TASK:

- Find out, how our school uses drinking water
- Find out, where the water meters are
- Find out, how the hot water is provided
- If necessary ask the caretaker or other experts
- Do the calculation yourself

- Do not disturb others in the school while you are working on this task
- If possible make photographs to document your findings

1 Places, where water is used

Find out where in the school building water is used and for what purpose. If possible draw the places where water is used into a map of the school/the school area. Indicate where warm water is used.

Use blue colour, were cold water is used and red where hot water is used.

a Where?

Toilets

Bathrooms/showers

Kitchen/cafeteria

Class rooms

Flat of caretaker

Anywhere else:

b. **Fore what purpose?**

- Washing oneself/shower ☐
- Cleaning the school ☐
- Flushing the toilet ☐
- Experiments in class ☐
- Cooking ☐
- Washing dishes ☐
- Drinking ☐
- Washing the dishes ☐

Anything else:

c **Where is hot water used and how is it heated?**

d. **Did you find any problems, e.g. leaking taps, or cases when water was wasted e.g.?**

Yes ☐

No ☐

If yes, describe where did you find what:

WORK SHEET 2

DAILY AND CONSUMPTION OF WATER AT THE SCHOOL

Group:

Secretary:

Place, where the meter is situated:

Number of water meter:

Water meter measures / water consumption in which part of the school:

TASKS:

- Find out, where the water meter is / water meters are in your school. Ask the caretaker, which parts of the building they cover. Note down this information together with the number of the respective meter.
- Check the meter twice a day during one week, once in the morning before the school starts, the second time after lessons are finished, always on the same time. Note down the results and calculate the water consumption (new meter result – old meter result) and note down the results.

Time of measuring	Date	Time	Meter result	Water consumption
MONDAY morning				
MONDAY afternoon				
TUESDAY morning				
TUESDAY afternoon				
WEDNESDAY morning				
WEDNESDAY afternoon				
THURSDAY morning				
THURSDAY afternoon				
FRIDAY morning				
FRIDAY afternoon				
SATURDAY morning				
SATURDAY afternoon				
TOTAL				

Adjust table to your needs

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