

GRUP D'EXPERIMENTACIÓ PER AL PLURILINGÜISME

INSTITUT ESCOLA LLORET DE MAR



TÍTOL WHAT ILLUMINATES YOUR LIFETIME

Àrea TECNOLOGIES 2n d'ESO

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WHAT ILLUMINATES YOUR LIFETIME

Material elaborat durant la realització de la formació adreçada als docents que implementen el pilotatge del GEP (Grup d'Experimentació per al Plurilingüisme) durant el curs 2016-2017, realitzada amb la formadora del British Council, Ms Joanna Gore

SG de Llengua i Plurilingüisme
Servei de Llengües Estrangeres

Març, 2017



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Ten tips for learning success

- ✓ Provide multimodal input
- ✓ Learn autonomously
- ✓ Maximize language exposure
- ✓ Deal with real problems and find real solutions
- ✓ Be aware of the importance of community knowledge
- ✓ Use of authentic material and resources
- ✓ Acquire knowledge through ICT
- ✓ Transfer knowledge to real-life situations
- ✓ Carry out activities that are challenging and require thinking
- ✓ Self-assess own progress
- ✓ Interact with yourself, other students and teachers

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Títol del text

INTRODUCING TOPIC: **What is the ghost electrical consumption?**

Ghost electrical consumptions is the electricity spending of electrical or electronics appliances when they are not being used (when despite turned off they're still connected to a power source) or when they are in standby mode.

When the power supply is not disconnected or shut down, appliances continue consuming electricity from the power (from 0.5 Watt up to more than 20 Watt).

At current electricity prices, ghost consumption represents approximately 1.5 €/year.

This may mean about 9 € useless spending per year. A computer can be € 30 per year.

To avoid this type of consumption, we have a simple solution: unplug the device that's not being used. We can use a power strip with a switch off.

PHANTOM ELECTRICITY

<https://www.youtube.com/watch?v=pEcjAxKc3Lo>
<https://www.youtube.com/watch?v=b9edl44QGfY>

Activities

Explicit

- What's phantom electricity?
- Which appliance could have phantom consumption?
- What's a surge protector? What prevents you?
- What electrical devices need to be charged?

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Implicit

- Which difference is between using power saving mode or turning machines off?
- What can you do to save energy when you go to sleep? What appliance can not be turned off?
- Describe why electricity generates heat on your mobile.

Referential

JOULE EFFECT

When is it a profit to convert electricity into heat? Find 3 appliances that use Joule effect as a benefit.

There are two mainly effects that produces energy loss. The Joule effect and friction. Propose five inventions or technical solutions to reuse this lost of energy.

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Revision

Electrical Conductivity

<https://www.youtube.com/watch?v=QZPURSF5iH4>

REMEMBERING a concept.

Note that your summary has to...

Define or use this words:

Bulb, wire, switch, cell and electrical conductor (write examples of good or poor conductors)

Recognise or highlight in your summary:

What's electrical conductivity?

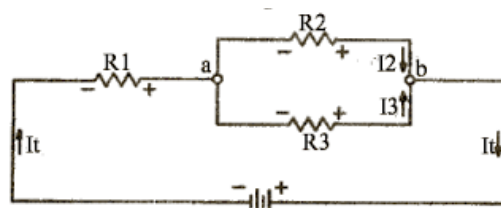
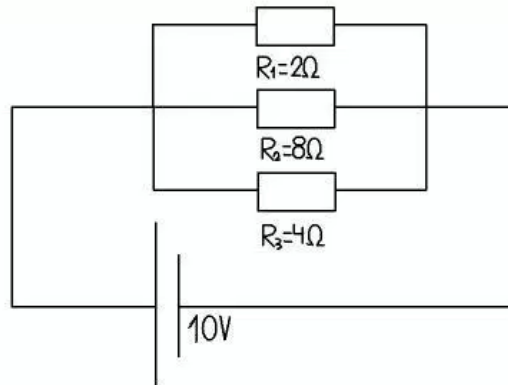
Why does the bulb turn off?

How can we glow the circuit?

Work in pairs and write a summary of the video

Let your teacher to take a look to your summary

Work in pairs to distinguish and classify these circuits



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Work in pairs to illustrate or represent

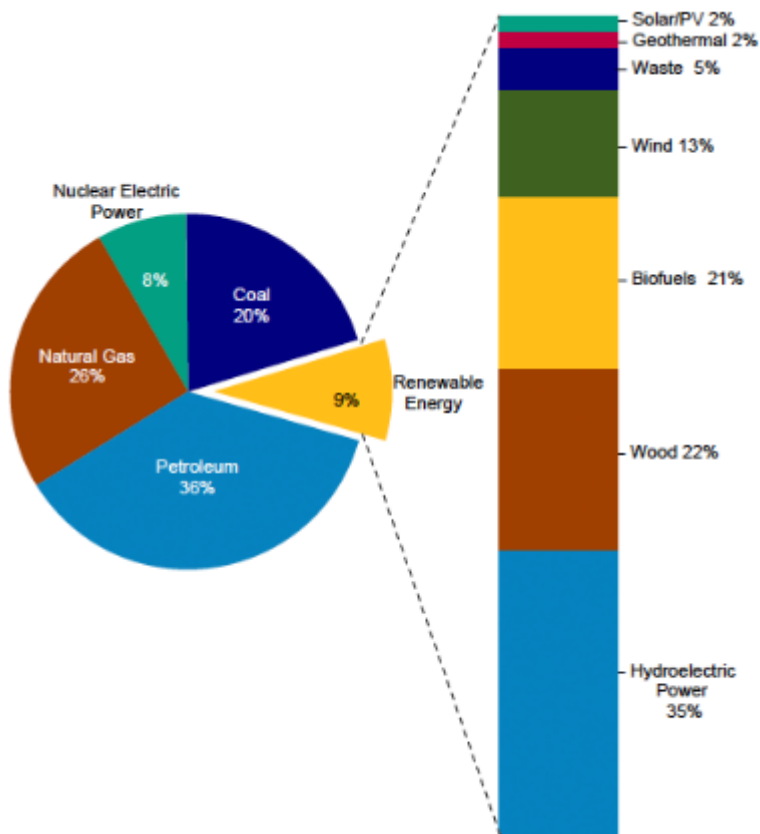
- a) an electrical circuit that has two bulbs, one battery and 2 resistances connected in series
- b) an electrical circuit that has two bulbs, one battery and 2 resistances connecting all receivers in parallel.
- c) an electrical circuit that has two bulbs connected in series, one battery and 2 resistances connected in parallel.

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Extension

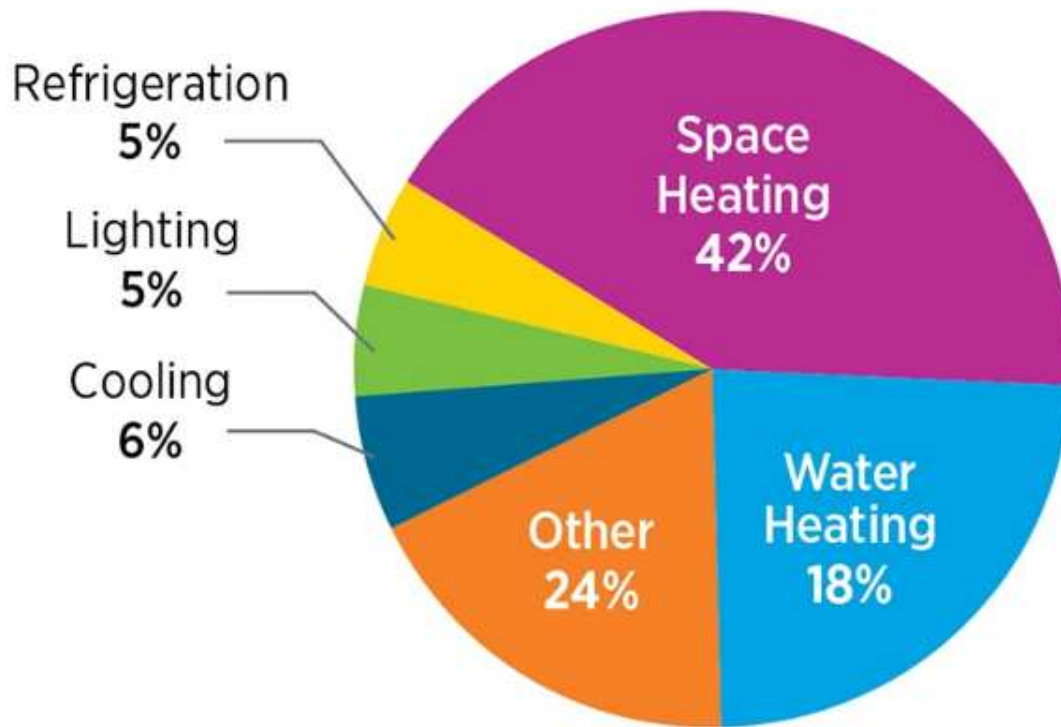
DIAGRAMS & CALCULATION

A) Look at the following diagrams, and answer the questions below



- A.1) How many times is petroleum over nuclear electric energy?
A.2) Which is the % of hidroelectric power out of the total?
A.3) How many times it represents aout of nuclear electric power?

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B) Talk about it at home. What kind of measures you believe that, according to your family, you could apply in your home?

C) Search the term power of the following appliances: Fridge Washing machine Oven Microwave Hair dryer TV Console (PS4, XBOX, etc.)

D) According to current Kw price (0,12438€/kwh), calculate how much money are you spending per day.

E) Calculate how much can you save of your electrical bill per week?

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Project: collaborative problem solving

APPLYING a concept

Let's go to computer room and try to solve electrical exercises by using a Ohm's law simulator

http://www.walter-fendt.de/html5/phes/ohmslaw_es.htm

Prepare your PC and open your moodle account

Choose 5 [activities](#) from the list

Use the simulator to Solve and Show it to your teacher (capture the screen and send a text file to teacher's mail)

ANALYZING a concept

Let's talk in depth about Ohm's law...

Watch both videos and

<https://www.youtube.com/watch?v=Cztil0re5Eo>

https://www.youtube.com/watch?v=iLzfe_HxrWI

Identify 3 formulas and name it

CREATING a new idea to become an expert!

How to make a lamp for your bedroom? Let's go to workshop classroom

Propose a solution and construct it. Follow the steps and ask teacher if you need help.

- Invent
- Design
- Plan
- Organize
- Develop and
- Produce your bedroom lamp

[*Student guide*](#)

CHECK OUT YOUR LAMP and EXHIBIT YOUR WORK to your classmates.

PROJECTION OF YOUR PRODUCT

Present your work to your classmates using a drive template.

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Furthermore information:

<http://practicalphysics.org/electric-circuits-and-fields.html>

<http://www.tecno12-18.com/>

References and related material

<http://www.tecno12-18.com/>

<http://www.uni.edu/>

<http://sa-assessment.uoregon.edu>

<http://odissea.xtec.cat/>

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Assessment

PRESENTATION ASSESSMENT RUBRIC

Student: _____

Mark: _____ x 10 =
12

Score:	(1p.)	(0,5p.)	(0p.)
Attitude			
Eye contact	Lots of eye contact	Sometimes make eyes contact	Doesn't make eye contact
Expressiveness	Lively and natural speaking	Sometimes expressive	Artificial and monotonous
Gesticulations and posture	Confident and appropriate body language	Body language is mostly appropriate	Rigid
Content			
Introduction, Content and Ideas	Well selected and well done. Presentation was correct and attractive	Contents are mixed or ideas are slightly justified	Some Ideas or contents are forgotten and presentation is wrong or unattractive
Electrical topic, examples and conclusion	Topics are treated in depth and examples are clarifying. Conclusion is concise	Topics are treated with some depth and examples are mostly clarifying. Conclusion isn't very concise	Topics are treated superficially and examples are not clarifying at all or Conclusion hasn't been done.
Props and visual supports	Are used effectively	Have been used with problems	Have not been used
Aspects of oral expression			
Speaking and rhythm	Speaking is clear and rhythm is appropriate	Speaking is mostly clear and rhythm is a little bit unequal	Speaking understandable or there have been too many obstacles
Pitch and Volume	Appropriate	Slightly high or low	Too high or low
Accuracy of the language has been	Appropriate	Moderate	unappropriate
Reaction of the auditorium			
Comprehension	Good	Difficult	Understandable
Enthusiasm	Helpful	Shortly helpful	Distracted
Answered the colloquium	Wide	Polarized participation	Null

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Checklist

In this unit you have...

Sustainability and Checklist

___ I watched the video “.....” and focused on the “phantom electricity and appliances”.

___ I paid attention and saw several “technology notes”.

___ I tried to implement the vocabulary highlighted in the oral presentations and in other communicative activities. By using vocabulary “mindfully” I will remember it easier and it will become part of your working vocabulary.

___ I used my intuition to project my ideas on things that are sustainable and why they are important.

___ I made intellectual connections between videos about electrical circuits and their relationship with sustainability.

___ I identified the need to give a little more information than I normally give when speaking in order to help my “audience” understand me more fully.

___ I improved my communication through repeated practice expressing ideas in class, in workshop, and in the oral presentation of lamp project.

___ I listened openly and honestly to my classmates in order to evaluate the information they tried to share with me.

___ I learned some history about bulb invention!

___ I used formulas to do calculations

___ I used a computer simulator to do calculations

___ I understood about the importance and uses of electricity today

___ I defined electrical concepts and used these concepts to justify our answers

___ I identified real-life problems, as electrical proform or phantom electricity

___ I used English as much as we could in order to improve our fluency

___ I worked in teams to overcome difficulty and learn together

___ I learned to assess our previous knowledge on the topic, express our learning interests and evaluate our learning progress.