Àrea - TECHNOLOGY

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Ten tips for learning success

- Identify different energy transformations.
- Know where our power electricity comes from.
- Learn about all the other energetic sources.
- Be aware about environmental advantages and disadvantages of each kind of energy.
- Focus on the energy coming from sea and oceans.

Project: collaborative problem solving

Following with the energy chapter, started with the very important relationship between magnetism and electricity, you will have to present a final microproject basically based in the construction of an access database table with all the energies actually used and their main characteristics.

Previously, you need to discover and get use to a few definitions.

1. Discuss with your partners and match the following definitions with their names:

1	Primary energy	When sources are considered to be inexhaustible		
2	Turbine	Device transforming kinetic energy, produced by a turbine, into electrical energy		
3	Power plant	When sources are derived from organic material fossilization, such as coal, petroleum and gas		
4	Energy source	Industry which goal is to transform a certain type of primary energy into electrical energy		
5	Renewable energy	Energy obtained directly from nature		
6	Secondary energy	When sources are limited and decrease as consumption occurs		
7	Alternator	Resources that provide some form of energy		
8	Non-renewable energy	Energy that has been obtained after a transformation of a primary energy		
9	Fossil energy	Device transforming primary source into kinetic energy		

Then, make the sentences:

- 1. Primary Energy is the energy obtained directly from nature.
- 2. Turbine is
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 2. Fill the gaps

Use the next words and make as many sentences as energies kinds there are.

ENERGY SOURCE

Coal, natural gas, petroleum, uranium, sun, wind, river water, water sea, thermal difference in the Earth, organic wastes, agricultural and forestry wastes...

POWER PLANT

Hydraulic power plant, tidal power plant, sea waves, thermal or conventional plant, thermal solar plant, nuclear power plants, biomass thermal plant, photovoltaic power plants, wind farm, geothermal plant...

Follow the next example:

If the energy source	comes from _	"water sea"	the power	plant is	named
_"tidal power plant"					
	- ,				

If the energy source comes from _____ the power plant is named

3. Create an *access table* with the following fields:

Text FIELDS: Primary source, Mechanical energy produced by, power plant, AC* or DC*?

Yes or Not FIELDS: Renewable

Hyperlinks FIELDS: Pollution emissions, Advantages, Disadvantages

Look at the example:

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»		ENERGY						×
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	I	Uranium	steam		Nuclear	AC		Radioactivity
		Water sea	waves					
		Coal						Acidic rain
		Sun						
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rac		Thermal dif.Earth						
음		Water sea						
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Figure 1. Ana FRAU, INS Viladecans V, Barcelona, 2014

Use either your text book as Internet in order to search for information, definitions or the required links.

THE ENERGY FROM SEAS AND OCEANS; A BIG UNKNOW!!!

Marine energy does not generate visual or environmental impact and it's a significant energy resource. However the force of the waves and marine corrosion, as well as the need for mechanisms to transfer power to the ground, makes this technology to be large investments demanding. That's why, water sea energy is still, unless some exception, in a research and pre-commercial phase.

Your work is therefore to study and research on the potential energy of the sea (tidal energy, wave energy and offshore wind energy from seas and ocean currents). As you know, the strength of the sea gives us the mechanical energy necessary to move the turbines through the principle of electromagnetism we provide electric power so indispensable nowadays.

1. Firstly, search the definition of each of these energy sources with pictures or drawings that illustrate them.

Clue: points 2.1, 2.2, 2.3 of this article <u>Marine Renewable Energy in the Mediterranean</u> <u>Sea: Status and Perspectives</u>

Energy	Definition	Image
Tidal		
Waves		

Offshore wind farm	

https://www.mdpi.com/1996-1073/10/10/1512/htm#B6-energies-10-01512

2..In this activity you will have to share, in a moodle forum, with your classmates your opinions regarding 3 questions:

Which is the meaning of ENSEA?

Which are the counties/regions involved in this project?

Which 5 top European countries have the highest amount of offshore wind farms in Europe?



Figure 2 from Northsearegion.eu

https://northsearegion.eu/northsee/e-energy/offshore-renewable-energydevelopments-offshore-wind/ Figure 1. Ana FRAU, INS Viladecans V, Barcelona, 2014

Figure 2. <u>https://northsearegion.eu/northsee/e-energy/offshore-renewable-energy-developments-offshore-wind/</u>

https://www.mdpi.com/1996-1073/10/10/1512/htm#B6-energies-10-01512

https://northsearegion.eu/northsee/e-energy/offshore-renewable-energydevelopments-offshore-wind/

Assessment

CATEGORY	4	3	2	1
Data Collection	Data was	Data was	Data was	Data was
	collected several	collected more	collected more	collected only
	times. It was	than one time. It	than one time.	once and adult
	summarized,	was summarized,	Adult assistance	assistance was
	independently, in	independently, in	was needed to	needed to clearly
	a way that clearly	a way that clearly	clearly summarize	summarize what
	describes what	describes what	what was	was discovered.
	was discovered.	was discovered.	discovered.	
Table display	Each element in	Each element had	Each element had	The display
	the display had a	a function and	a function and	seemed
	function and	clearly served to	clearly served to	incomplete or
	clearly served to	illustrate some	illustrate some	chaotic with no
	illustrate some	aspect of the	aspect of the	clear plan. Many
	aspect of the	contents. Most	contents. Most	labels were
	contents. All	energies,	items, images, etc.	missing or
	energies, all	properties,	were correctly	incorrect.
	properties, all	images, etc. were	labeled.	
	images, etc. were	neatly and		
	neatly and	correctly labeled.		
	correctly labeled.			
CONCLUSION II	Student provided	Student provided	Student provided	No conclusion was
	a correct	a somewhat	half conclusions	apparent OR
	conclusion clearly	correct conclusion	with some	important details
	based on the data	clearly based on	reference to the	were wrong.
	and related to	the data and	data.	
	previous research	related to the		
	findings and the	hypothesis		
	hypothesis	statement(s).		
	statement(s).			

Evaluating rubrics for Access and regular Energy tables & Conclusions

Checklist

In this unit you have...

- Identified different energy transformations.
- Known where our power electricity comes from.
- Learnt about all the other energetic sources.
- Used the Access program learnt before.
- Been aware about environmental advantages and disadvantages of each kind of energy.
- Focused on the energy coming from sea and oceans.