

ENERGY WORLD: Electricity around us



Lesson Plans

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October –December 2008



UNIT 1. WHAT IS ELECTRICITY?

TEACHING OBJECTIVES

- To identify and classify electrical and non electrical appliances.
- To know where electrical appliances get electricity from (mains/ batteries).
- To reflect on the importance and the necessity of electricity in our lives.
- To experiment and understand how static electricity is created and to relate it to personal experience.
- To predict and check hypothesis when doing an experiment.
- To learn how an electrical circuit works.
- To identify and experiment with conductors and insulators.
- To create and design an electrical circuit (shaped as an 'electrical bug').
- To know and learn about electric animals.

LEARNING OUTCOMES

CONTENT	COGNITION	COMMUNICATION	CULTURE
	THINKING SKILLS	ACTIVITIES	
To know: - Where electrical appliances get electricity from (mains and/or batteries). - Electricity works through circuits with conductors and insulators. - How an electrical circuit works. - How static electricity is created. - Two electric animals. To be able to: - Classify electrical and non electrical appliances using a Venn diagram. - Identify where electrical appliances get electricity from. - Make predictions, check and experiment with static electricity. - Make and understand how an electrical circuit works. - Share information about electric animals. To be aware of: - The importance of making predictions before doing an experiment. - How to cooperate when working in pairs/groups.	- Identifying - Classifying - Reasoning - Ordering letters - Predicting - Describing experiments - Deducting from observations - Making conclusions - Matching - Hypothesizing - Interpreting results - Organising ideas	- Classifying objects - Ordering letters to form a word - Playing a game - Finding electrical appliances - Miming - Experimenting - Predicting results. - Checking predictions. - Making conclusions - Completing and explaining concept maps - Matching definitions with meanings (loop cards) - Imagining and drawing a torch inside - Making a human circuit - Making an electrical circuit - Identifying conductors and insulators - Doing a questionnaire and checking answers	To be able to: - Realize about the importance and necessity of electricity.
		SUPPORT STRATEGIES	
		LANGUAGE OF LEARNING VOCABULARY - Names of electrical / non electrical objects/appliances - Mains/batteries/both - Static electricity - Electrical charges - Positive/negative - Attract/repel - Parts of an electrical circuit - Parts of a torch - Names of conductors and insulators LANGUAGE OF LEARNING STRUCTURES Identifying/classifying - It's a... - I/we found a... - We classified...	

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		Explaining - It has... - It can... - It needs... - It is used for... - The ...is/are connected to the ... - The give energy to thethrough the ... - The ... is an electrical conductor/insulator because ... Predicting/Checking - I/we think it will... - I/we checked... - We were right to connect the to the - We need to change the... Giving reasons - Do you think...? - Why? Because... Playing - Who starts? - Throw the dice. - It's my turn // It's your turn. LANGUAGE FOR LEARNING FUNCTIONS - Explaining why objects are electrical or non electrical. - Predicting and checking when doing an experiment. - Explaining how static electricity is created. - Explaining how an electrical circuit works. - Giving reasons and justifying them - Playing a game.	
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CONTRIBUTION TO COMPETENCES

Students will be able to...

Communicative skills

- Relate observations, explanations, thoughts, emotions, give accounts of experiences, opinions and develop argument.

Methodological Skills

- Access and communicate information using different supports including ICT tools to learn.
- Transform information into knowledge activating thinking skills in order to organize, relate, analyse, synthesise, make inferences and deduct at different levels of complexity.
- Apply study skills that include strategic thinking, cooperation and self-evaluation

Personal skills

- Create, initiate, develop and assess individual or collective activities or projects with creativity, confidence, responsibility and critical thinking.

ASSESSMENT CRITERIA

Students should be able to:

- Identify and classify electrical and non electrical appliances.
- Reflect on the importance and the necessity of electricity in our lives.
- Understand how static electricity is created and to relate it to personal experience.
- Predict and check hypothesis when doing an experiment.
- Make an electrical circuit and understand how it works.
- Identify conductors and insulators.
- Know how two electric animals are.
- Cooperate when working in pairs/groups.



UNIT 2. ENERGY WORLD: WHERE DOES ELECTRICITY COME FROM?

TEACHING OBJECTIVES

- To identify and describe different sources of energy (renewable/ non renewable).
- Participate actively when watching a video or a Power Point (discussing, answering...).
- To predict how an electricity grid works and to check it.
- To make an electricity grid and to explain how it works.
- To be aware of the effects of electricity use.
- To self evaluate and to evaluate classmates' work.

LEARNING OUTCOMES

CONTENT	COGNITION	COMMUNICATION	CULTURE
	THINKING SKILLS	ACTIVITIES	
To know: - Renewable and non renewable energies. - How electricity gets to houses. - How an electricity grid works. To be able to: - Explain where electricity comes from. - Predict how an electricity grid is and how it works. - Check how an electricity grid is and how it works. - Make an electricity grid. - Self evaluate and to evaluate classmates' work. To be aware of: - The importance of consuming electricity responsibly.	- Identifying - Explaining - Reasoning - Organising ideas - Predicting/ Hypothesizing - Describing - Deducting from observations - Comparing - Evaluating	- Watching an interactive Power Point and answering questions in pairs/small groups. - Filling in a tree diagram. - Predicting how an electricity grid is and how it works. - Checking how an electricity grid is and how it works (online). - Comparing a tree diagram in pairs. - Self evaluating and evaluating classmates' work.	To be able to: - Realize about the environmental effects of different sources of energies.
		SUPPORT STRATEGIES	
		LANGUAGE OF LEARNING VOCABULARY - Renewable, non renewable - Power station/ nuclear power station - Fuels: coal, oil, gas / carbon dioxide - Uranium / radioactive waste - Global warming - Sun's energy/solar panel - Wind's energy/ wind turbine - Water's energy/ dam - Pylon, substation, house LANGUAGE OF LEARNING STRUCTURES Identifying - It's a... - There is/are ... Explaining - The chimneys are <i>at the top/at the bottom/on the right/on the left/ in the middle/in the corner</i> of the picture. - It is... - It has... - It can... - Electricity comes from... - We need a ... - First, we connected the to the - Then, we connected the to the - Finally, connected the to the	



		Questioning - Does it...? Predicting/Checking - I/we think... - We were right to connect the to the - We need to change the...to the... Giving reasons - Do you think...? - Why? Because... LANGUAGE FOR LEARNING FUNCTIONS - Answering questions in pairs/small groups. - Comparing a tree diagram in pairs. - Predicting and checking how an electricity grid works. - Presenting an electricity grid. - Self evaluating and evaluating classmates' work.	
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CONTRIBUTION TO COMPETENCES

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Methodological Skills

- Access and communicate information using different supports including ICT tools to learn.
- Transform information into knowledge activating thinking skills in order to organize, relate, analyse, synthesise, make inferences and deduct at different levels of complexity.
- Apply study skills that include strategic thinking, cooperation and self-evaluation

Personal skills

- Create, initiate, develop and assess individual or collective activities or projects with creativity, confidence, responsibility and critical thinking.

Personal Social and civic

- Interpret and use knowledge about facts and processes to predict consequences and take reflective action in order to preserve and improve living conditions for one's own, for the others and for the rest of the living things.

ASSESSMENT CRITERIA

Students should be able to:

- Participate actively when watching a video or a Power Point (discussing, answering...).
- Identify different sources of energy that make electricity and their environmental effects.
- Predict and check (online) how an electricity grid is and how it works.
- Make and present an electricity grid.
- Be aware of the importance of using electricity responsibly.
- Self evaluate and to evaluate classmates' work.
- Cooperate when working in pairs/groups.



UNIT 3. ELECTRICAL DANGERS AND ELECTRICAL SAFETY

TEACHING OBJECTIVES

- To identify electrical dangers.
- To be aware of the importance of electrical safety.

LEARNING OUTCOMES

CONTENT	COGNITION	COMMUNICATION	CULTURE
	THINKING SKILLS	ACTIVITIES	
To know: - Electrical dangers at school and at home. To be able to: - Identify electrical dangers. - Make a poster about electrical dangers and to present it. - Complete a questionnaire about electrical safety. - Fill in an 'electrical safety' diploma. To be aware of: - Electrical dangers and how to prevent them.	- Identifying - Reasoning - Deducting from observations - Making conclusions	- Finding electrical dangers in a house (online). - Making a poster. - Writing electrical safety warnings. - Presenting a poster. - Doing a questionnaire. - Filling in a diploma.	To be able to: - The importance of electrical safety in our lives.
		SUPPORT STRATEGIES LANGUAGE OF LEARNING VOCABULARY - Parts of the house. - Objects and furniture in a house. - Electrical safety/dangers. LANGUAGE OF LEARNING STRUCTURES Predicting - I think... can be dangerous Explaining - If you you could get an electric shock. - My is not electrically safe because... - My warnings are... - I scored points and I am an expert on/I know quite a lot/I know some things/I must learn a lot about electrical safety. Warning - Don't... - Always keep... - Put... - You must... Giving reasons - Do you think...? - Why? Because... LANGUAGE FOR LEARNING FUNCTIONS - Identifying electrical dangers. - Warning. - Presenting a poster about electrical safety. - Giving reasons and justifying them.	



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Personal Social and civic

- Interpret and use knowledge about facts and processes to predict consequences and take reflective action in order to preserve and improve living conditions for one's own, for the others and for the rest of the living things.

ASSESSMENT CRITERIA

Students should be able to:

- Identify electrical dangers and how to prevent them.
- Be aware of the importance of electrical safety in our lives.
- Make and present a poster.
- Work cooperatively.
- Complete a questionnaire and filling in a diploma.



UNIT 4. IMPORTANCE OF ELECTRICITY AND ENVIRONMENTAL IMPACT.

TEACHING OBJECTIVES

- To compare and value life with and without electricity.
- To make a survey to find out what people would miss the most/could live without if there was not electricity.
- To watch an interactive Power Point and to participate actively (answering, hypothesizing, discussing).
- To revisit sources of energy used to produce electricity and their environmental impacts.
- To reflect on the importance and the necessity of electricity in our lives and how to use it responsibly.
- To make and to present a leaflet to make people aware of the importance of electricity and how to use it responsibly.
- To do an eco-audit at school.
- To know some facts about energy use in Catalonia.
- To self evaluate and to evaluate classmates' work.
- To relate the content to personal lives and experiences.

LEARNING OUTCOMES

CONTENT	COGNITION	COMMUNICATION	CULTURE
	THINKING SKILLS	ACTIVITIES	
To know: - Renewable and non renewable energies and their environmental impact. - How to save electricity. - Some facts about energy use in Catalonia. To be able to: - Compare life with and without electricity. - Make a survey. - Give some advice to save electricity. - Do an eco-audit. - Make a leaflet. - Participate in a quiz - Self evaluate and evaluate classmates' work - To be aware of: - The importance of electricity in our lives and the necessity of using it responsibly to protect the environment.	- Identifying - Describing - Comparing - Reasoning - Predicting - Deducting from observations - Hypothesizing - Interpreting results - Organising ideas - Imagining - Presenting - Evaluating	- Guessing information about two villages with/without electricity from two pictures. - Watching a video about two Peruvian villages with/without electricity. - Complete an activity with concept cartoons. - Doing a survey following a model. - Miming a poem about a power cut. - Thinking about how to act in hypothetic situations. - Watching an interactive Power Point and to participate actively discussing, answering, hypothesizing... - Filling in a cause-effect diagram. - Playing 'The Electrisavers Game' - Doing an eco-audit. - Doing a pyramid discussion and decide some tips to save electricity. - Completing a questionnaire. - Making and presenting a leaflet - Self-evaluating and evaluating classmates work. - Participating in a quiz.	To be able to: - Realize about the importance using electricity responsibly to protect the environment.
		SUPPORT STRATEGIES	
		LANGUAGE OF LEARNING VOCABULARY - Names of electrical appliances - With/without - Wood fire, candle - Go to bed - Gloomy classroom LANGUAGE OF LEARNING STRUCTURES Explaining - I think in the <i>first/second</i> village <i>they are/aren't, they can/can't, they have got/haven't got...</i> - If there was not electricity <i>I would miss/I</i>	



		could live without... - ...(number) students/teachers/parents out of ... (number) would miss ... (electr. appliance) the most. - ...(number) students/teachers/parents out of ... (number) could live without... (electr. appliance). - Our survey is about... - We asked ...(number) students/parents/teachers. - Our bar chart shows that... - I would feel... - My wish would be to make... - I think this text should go <i>first/second</i>... - My slogan is... - The leaflet is... - The presentation was <i>clear, interesting, nice, funny</i> - I have a <i>low/medium/high</i> environmental awareness. Giving reasons - Do you think...? - Why? Because... - I think people are happier in ... because... - I prefer... because... - I like <i>the cover/the slogan/the tips</i> because they are... Giving some advice - We/You/They should <i>open-close the blinds/switch on-off the lights</i>... - <i>Open the blinds/Close the windows</i> when you... Questioning - What would you miss the most? - What could you live without? Playing - Who starts? - Throw the dice. - It's my turn // It's your turn. LANGUAGE FOR LEARNING FUNCTIONS - Guessing information about two villages from two pictures. - Comparing life with/without electricity. - Doing and presenting a survey. - Giving opinions about hypothetical and real situations. - Giving some advice. - Answering questions in pairs/small groups. - Playing a game. - Making and presenting a leaflet - Self-evaluating and evaluating classmates work. - Participating in a quiz.	
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Personal Social and civic

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ASSESSMENT CRITERIA

Students should be able to:

- Describe different sources of energy that make electricity and their environmental impacts.
- Compare living with/without electricity.
- Reflect on the importance and the necessity of electricity in our lives and how to use it responsibly.
- Make a survey.
- Participate actively when watching a video or a Power Point (discussing, answering...).
- Make and to present a leaflet.
- Do an eco-audit at school.
- Self evaluate and to evaluate classmates' work.
- Cooperate when working in pairs/groups.
- To relate the content to personal lives and experiences.