LEARNING FOR LIFE

TEACHERS' GUIDELINE

LET'S PRODUCE GREEN ENERGY RECYCLING WASTE!

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TABLE OF CONTENTS

PROJECT DETAILS

SCHOOL YEAR	2016-2017
SCHOOL YEAR LEVEL	9th grade (14-15 years old)
TERM	
SESSIONS	
TITLE	**LET'S PRODUCE GREEN ENERGY RECYCLING WASTE!**
SUBJECTS	Sciences (Biology, Chemistry, Physics), Mathematics, Languages, ICT
UNIFYING THREADS (DRIVING QUESTIONS)	Why is it so important to recycle waste? What means waste? How can we reuse the waste? The waste affects the environment and the people health? What is the "green energy"? How can we produce energy from waste? Is it the people education useful and necessary for collection, selection and reuse the waste?

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KEY COMPETENCES

A: TRANSVERSAL COMPETENCES

COMPETENCE (EU)	TASKS
1.Learning to learn	4-8-9-10-13-14-15-21-22
2.Sense of initiative and entrepreneurship	3-4-5-6-7-8-9-10-13-14-15-21-22
3.Social and civic	1-3-6-7-9-10-12-13-14-15-17-21-22-25

B: SUBJECT COMPETENCES

COMPETENCE (EU)	TASKS
4.Communicating in the mother tongue	2-6-9-10-13-18-19-20-23
5.Communicating in a foreign language	18-19-20-23
6.Digital	3-4-6-10-16-18-20
7.Mathematical, scientific and technological	5-6-7-8-10-11-12-14-15-16
8.Cultural awareness and expression	

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MULTIPLE INTELLIGENCES

INTELLIGENCE	TASKS
1. Interpersonal	1-2-3-4-5-6-7-8-9-10-11-12-13-15-18-21-22-23
2. Intrapersonal	1-3-4-5-8-9-10-11-12-13-14
3. Visual-spatial	9-11-13-15-16-18
4. Bodily-kinesthetic	15
5. Musical-rhythmic	
6. Verbal-linguistic	2-6-7-9-10-13-18-19-20-23
7. Logical-mathematical	6-7-10-11-12-14-18
8. Naturalistic	8-10-11-12-14-15-16

DISCIPLINARY OBJECTIVES and CROSS-DISCIPLINARY OBJECTIVES

What do we want students to understand?

(COMPREHENSION GOALS)

DISCIPLINARY OBJECTIVES and CROSS-DISCIPLINARY OBJECTIVES

MAIN OBJECTIVE

To acknowledge the existence of new sources of energy derived from waste recycling

0.General objectives

0.1. Learning to work in teams and control teamwork

1.Science

1.1. Identifying and description of the sources of green energy, the way of using and their advantages over conventional resources

1.2. Classify the sources of renewable and clean energy and know the ways to produce the renewable and clean energy

1.3. Identifying the recycling and useful waste in order to produce the renewable and clean energy

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	2.Mathematics 2.1. Apply mathematical knowledge to draw, read and interpretate the diagrammes, charts, graphs, to calculate costs and parameters useful to produce sources of green energy, calculation of percentage, international unit conversion **3.Foreign language; English** 3.1. Learn specific vocabulary: green energy, technology, environment, pollution, waste recycling, biofuels, wind power etc. **4. Mother Tongue** 4.1. Improve communication skills (oral and writing skills) **5. ICT** 5.1. Learn how to use software to produce photos, videos, Power Point presentation 5.2. Learn to write and edit brochures and posters
PROJECT PRESENTATION	Every year, many schools organize activities to promote the waste recycling. The results are not spectacular or useful, they just pull the alarm about their existence, which can harm the environment. At the same time, conventional energy costs increased, and using the green energy it has become imperative. Students will study the possibility to identify and use the waste, will learn to produce the green energy. They learn to promote the green energy sources and to acknowledge the people and the local community about the existence of new sources of energy derived from waste recycling. The project products will be presented and disseminated to the community. A short and relevant presentation of the project and it's results could be made by a representative of the Environmental Protection Agency, by another local community member or by a special guest, in a special place.
FINAL PRODUCT	**The main final product will be a brochure.** A poster, a video and a Power Point presentation will be made too. **Together:**

	1. A brochure will be produced (on paper and digital). The brochure will contain different ways to use the green energy. Publish and disseminate it. 2. A poster, a video and a Power Point presentation will be made too. The video will contain sources of green energy already used in the area. All these will be used in project presentation and dissemination. **In groups:** 1. Each team will write about one or two sources of green energy in the **brochure**. Together will work on a **poster** too. 2. Each team will make a sequence of the **film / video** about green energy sources used in the area. 3. All teams will work on **PowerPoint** presentation.

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SEQUENCE OF TASKS

Tasks in bold are necessary, and the rest are optional. They depend on the teachers involved in the project and the school facilities.

A. PREVIOUS TASKS

1. **Task: Task: Team dynamics**
2. **Task: Project presentation**
3. **Task: Team planning**
4. **Task: What I know-What I need to know**
5. **Task: Specify the pages of the brochure and appoint the responsibilities**
6. **Task: Ask for printing budgets, compare budgets and agree on the most appropriate**
7. **Task: Analyse and find the ways of financing the project**

B. RESEARCH / DEVELOPING TASKS

8. **Task: What is it the renewed and clean energy?**
9. **Task: I see, I think, I wonder**
10. **Task: Searching for information about the renewed and clean energy**
11. **Task: Methods for the production of renewable and clean energy**
12. **Task: Which are the advantages of the renewable and clean energy over the conventional resources?**
13. **Task: I see, I think, I wonder**
14. **Task: Understanding how to obtain energy**
15. **Task: Recycling waste**
16. **Task: Using recycling waste to produce energy**
17. **Task: Team planning assessment**
18. **Task: Work on brochure**
19. **Task: Writing a brochure**
20. **Task: Learn vocabulary in English**
21. **Task: Translate the brochure/brochure into English**
22. **Task: Submit the brochure layout to those who are in charge of the layout**
23. **Task: Visit the printing company**

C. FINAL TASKS

24. **Task: Brochure/power point/film presentation**

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25. **Task: Brochure dissemination**
26. **Task: Final team planning assessment**

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INDICATORS

MAIN OBJECTIVE

Knowing the negative effects of waste and conventional sources of energy production on the environment and human health, the students propose to realize a brochure about the use of unconventional sources of energy production through waste recycling.

0. General objectives

0.1.1. The student achieves team objectives

0.1.2. The students achieves individual objectives

0.1.3. The student fulfils his/ her responsibilities

1. Science

1.1.1. List the characteristics of non-polluting energy sources

1.1.2. Selecting polluting sources

1.1.3. Selecting non-polluting sources

1.1.4. Comparing the polluting sources with the non-polluting sources

1.2.1. Measuring the heat produced by a source (ex. Sun)

1.2.2. Conversion of the solar energy into thermal energy

1.2.3. Transforming wind energy into mechanical energy

1.3.1. Identification of waste used to produce energy

1.3.2. Waste classification

1.3.3. List of types of energy produced by using waste

1.3.4. List of sources of energy produced by using waste

2. Mathematics

2.1.1. Calculation of the thermal effect

2.1.2. Calculation of the production costs

2.1.3. Comparison of the production costs

2.1.4. Graphical representation of cost / benefit

2.1.5. Convert measurements for parameters used

3. Foreign language; English

3.1.1. States the terms: green energy, technology, environment, pollution, waste recycling, biofuels, wind power in the foreign language

3.1.2. States the names of seasons and months in the foreign language

3.2.1. Expresses technical verbs in the foreign language

4. Mother tongue

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4.1.1. Make the presentation of the project (oral and writing skills)

4.1.2. Make the presentation of the brochure (oral and writing skills)

5. ICT

5.1.1. Use software to produce photos, videos, Power Point presentation

5.2.1. Write and edit guides and posters

TOOLS:

- **Rubrics**
- **Reflections and evidences**

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TASKS

PREVIOUS TASKS

1. Task: Team dynamics			**Session:** 1 h
COMPETENCES	Social and civic	**INTELLIGENCES**	Interpersonal Intrapersonal
GOALS	Learning to work in teams and control teamwork		

Task description:

In order to know each other, everyone will tell his name and two qualities who begin with the same letters as his name (Ex. If the name is Paul Colbin, two qualities could be: persuasive and creative). Then, you will talk about your answers in groups and will try to identify another qualities of each other.

After you will know each other, you can choose another 3 or 4 colleagues to make a team. The teacher will help you, in order to create a real team. You may read the “Belbin for students” and define/choose your roles in your team.

See annexe: T1-T3-“Belbin for students”.

Websites to explore:

http://www.belbin.com/media/1336/belbin-for-students.pdf

2. Task: Project presentation			**Session:** 1 h
COMPETENCES	Social and civic Communicating in the mother tongue	**INTELLIGENCES**	Interpersonal Verbal-linguistic
GOALS	Learning to work in teams and control teamwork Improve communication skills (oral and writing skills)		

Task description:

You are a group of 2 or 3 responsible for the environment of your city council and you want to carry out an awareness campaign on waste and renewable energies.

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Therefore, you must prepare a brochure and a presentation (poster, video or power point) to introduce it to members of the community and interested companies. The video will contain sources of green energy already used in the area. For it, you will have 7 weeks.

In groups, you will study the possibility to identify and use the waste, you will learn how to produce the green energy. You will also learn to promote the green energy sources and to acknowledge the people and the local community about the existence of new sources of energy derived from waste recycling.

During this project, you will prepare, produce, publish and disseminate the brochure (on paper and digital). The brochure will contain different ways to use the green energy. The project and its products will be presented to the community (colleagues, teachers, parents, another people from the local community).

The presentation could be made by a representative of the Environmental Protection Agency, by another local community member or by a special guest.

Teacher's notes:

When we present the project we need to motivate the students. The presentation of the project needs to be appealing. It is very important to create a special atmosphere to attain motivation. This is the moment when we can boost their interest. In order to present this project the participation of the customer (headmaster, parents association, representative of the Environmental Protection Agency, another local community member or a special guest) is essential, considering that this person will be the one who will make the request for the brochure.

It is also convenient, when there is more than one class, to gather all the classes from your school or from another partner or net school and to present the project to all the students together. Apart from the customer, the teachers that will take part in the project will also be present in the project presentation, explaining their role in the project.

It's recommended to create a special moment in order to present the project.

3. Task: Team planning			**Session:** 1 h
COMPETENCES	Social and civic Sense of initiative and entrepreneurship Digital	**INTELLIGENCES**	Interpersonal Intrapersonal
GOALS	Learning to work in teams and to control teamwork		

Task description:

You will work in teams. So, each team will define its team planning, which will consist of three parts: team objectives, individual objectives and responsibilities. In this respect, every team may write on a piece of paper some objective. After that, you will discuss together and select the most relevant objectives.

All teams will have four objectives: two will be the same for every team, and the other two will be defined by each team.

Each of you will have 2 individual objectives: one suggested by your team and the other suggested by yourself. After each of you are agree with the objectives, the teacher will assign the responsibilities for each of you.

Teacher's notes:

A special approach by the teacher, as a project coordinator, for collaborative teams, is ***Management by Walking About***. This method assumes that the teacher reserves enough time to interact with the team, whether there is a specific reason or not.

See annexes: T1-T3-"Belbin for students" and 3T - TEAM PLANNING

Websites to explore:

http://www.belbin.com/media/1336/belbin-for-students.pdf

https://www.mindtools.com/pages/article/newTMM_72.htm (***Management by Walking About***)

and more

http://www.hbs.edu/faculty/Publication%20Files/12-113_9a2bc5e8-2f70-4288-bb88-aeb2de49e955.pdf

http://www.economist.com/node/12075015

http://fortune.com/2012/08/23/management-by-walking-around-6-tips-to-make-it-work/

4. Task: What I know – What I need to know			**Session:** 1 h
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Digital	**INTELLIGENCES**	Interpersonal Intrapersonal

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GOALS	Learning to work in teams and to control teamwork

Task description:

You will work in teams. You will consider what you already know about the project and what you need to know in order to carry it out. For this purpose, each team will receive a paper with two columns: 1. I know; 2. I want to know/What I need to know. Then, you must think about what you know and what you need to know to solve the problems about the project that you must prepare.

Example:

I know (in this column you note facts, elements you already know about the subject)	I want to know/What I need to know (In this column you note all the aspects, details you want to know/are necessary for the subject).

Teacher's notes:

The teacher will pay special attention to students' answers, and based on these answers he/she will suggest suitable tasks to carry out the project. The teacher will follow the existence of cognitive anchors in student mind and experience; he will try to help the students to find these anchors. The teacher can use the method "Johary window". The teacher will initiate discussions and will establish necessary correlations in order to illustrate the importance of the planning and running of the activities.

See annexes: 4T WHAT I KNOW - WHAT I NEED TO KNOW - WHAT I'VE LEARNT, 3T - TEAM PLANNING and T4-"Johary window"

5. Task: Specify the pages of the brochure and appoint the responsibilities			**Session:** 30 min
COMPETENCES	Sense of initiative and entrepreneurship Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Intrapersonal
GOALS	Learning to work in teams and to control teamwork		

Task description:

Your team will set the contents of the brochure. Thus, you will set the brochure dimension and number of pages; share the tasks of making the content and the illustrations. In order to do that, it is necessary that all of you reach an agreement.

Teacher's notes:

The teacher will support students in setting the brochure dimension, the number of pages and the agreement content.

6. Task: Ask for printing budgets, compare budgets and agree on the most appropriate			**Session:** 2 h
COMPETENCES	Sense of initiative and entrepreneurship Social and civic Communication in the mother tongue Digital Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Verbal-linguistic Logical-mathematical
GOALS	Learning to work in teams and to control teamwork Apply mathematical knowledge to calculate costs		

Task description:

As project presentation indicated, your team must contribute to the preparation of a brochure as final product of the project. In order to do this, you will need to know the economic cost of that. So, one student from each team will be in charge of requesting the printing estimated costs from different companies.

In order to do that, you will have to communicate with different printing companies, either face to face, by phone or by email. You will explain what you want, when do you need to be ready and that the cost must be lowest.

After you will have some offers from different printing companies, you will present them and your team will decide which is the most suitable budget for brochure printing.

For this objective you must define some aspects as:

- The number of brochures required for dissemination
- The number of pages for each brochure
- The paper quality
- The brochure dimension

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In order to obtain the final budget of this activity.

Teacher's notes:

As project presentation indicated, teachers must help the students to prepare the brochure – the final product of the project. So, the teacher will need to support students to find the most economic cost of that. You can suggest or help them to find some companies and the way to communicate with. After the students will have some offer, you can help them to appreciate the most appropriate for their budget.

The teacher will give the support to calculate the prices, VAT, total amount and to compare them. The teacher will support students to determine the number of pages for each brochure, the number of brochures required for dissemination, the brochure dimension and the paper quality.

7. Task: Analyze and find ways of financing the project			**Session:** 30 min
COMPETENCES	Sense of initiative and entrepreneurship Social and civic Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Verbal-linguistic Logical-mathematical
GOALS	Learning to work in teams and to control teamwork		

Task description:

Once you have decided on the budget, you will have to find ways to finance the brochure printing. You can use the brainstorming method in you team and you will discuss about the different ways, which later you will expose to the other teams in order to choose the best ideas. You can also address to the local or school council. In addition, you can also hold some events to raise money.

Teacher's notes:

The teacher will support students in selecting the right ways to get funding for the project from a legislative point of view.

RESEARCH / DEVELOPING TASKS

8. Task: What is it the renewed and clean energy?	**Session:** 2 h

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COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Intrapersonal Naturalistic
GOALS	Identifying and description of the sources of green energy, the way of using and their advantages over conventional resources		

Task description:

You will search on the web the unconventional sources of energy, definitions, characteristics, advantages, use. After that, you will search on the Earth chart (or/and on Google Earth) the zones/countries where there are used the unconventional sources of energy.

You need to identify and describe the advantages over conventional sources.

You will gather in a chart new sources of energy and their advantages over conventional sources. Of these, you will select those produced from the waste.

This chart will help you to realize the importance of waste in order to produce energy.

In order to ease your task, you will be handed out a template in order to fill in with the different unconventional sources of energy and waste used to produce them, vs. conventional sources.

Assessment tools (rubrics…):

This task is very important for the upcoming assignments. Therefore, the teacher will take into account that all students hand in their work completed.

The teacher must prepare an assessment tool for this task, with indicators:

1.1.1. List the characteristics of non-polluting energy sources

1.1.2. Selecting polluting sources

1.1.3. Selecting non-polluting sources

1.1.4. Comparing the polluting sources with the non-polluting sources

Teacher's notes:

In order to ease their task, they will be handed out a template in order to fill in with the different unconventional sources of energy and waste used to produce them, vs. conventional sources.

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Example:

Zone on the Earth/Country	Unconventional sources of energy: ***Name, description*** *(use different color for sources from waste)*	Conventional sources of energy ***Name, description***

9. Task: I see, I think, I wonder			**Session:** 1 h
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic Communicating in the mother tongue	**INTELLIGENCES**	Interpersonal Intrapersonal Visual-spatial Verbal linguistic
GOALS	To acknowledge the existence of new sources of energy derived from waste recycling		

Task description:

In this class we will see some pictures related with different environmental problems. Most of them represent pollution, waste, sources of energy.

First of all, you must think about the pollution and waste recycling. After that you will complete some rubrics with you conclusions about what you see, then you may ask the teacher about what you do not know or what you wonder.

You will share you conclusions with your team.

You will make list with:

1. information sources
2. what they have to know about the subject

Teacher's notes:

This routine encourages students to make careful observations and thoughtful interpretations. It helps stimulate curiosity and sets the stage for inquiry.

Use this routine when you want students to think carefully about why something looks the way it does or is the way it is. Use the routine at the beginning of a new unit to motivate student interest or try it with an object that connects to a topic during the unit of study. Consider using the routine with an

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interesting object near the end of a unit to encourage students to further apply their new knowledge and ideas.

Ask students to make an observation about an object - it could be an energy source, image, artifact or topic-and follow up with what they think might be going on or what they think this observation might be. Encourage students to back up their interpretation with reasons. Ask students to think about what this makes them wonder about the object or topic.

The routine works best when a student responds by using the three stems together at the same time, i.e., "I see..., I think..., I wonder...." However, you may find that students begin by using one stem at a time, and that you need to scaffold each response with a follow up question for the next stem.

The routine works well in a group discussion but in some cases you may want to ask students to try the routine individually on paper or in their heads before sharing out as a class. Student responses to the routine can be written down and recorded so that a class chart of observations, interpretations and wonderings are listed for all to see and return to during the course of study.

See annexes: 9T-13T I SEE- I THINK - I WONDER and_9T-13T-VT_SeeThinkWonder

10. Task: Searching for information about the renewed and clean energy			**Session:** 2 h
COMPETENCES	Learning to learn Social and civic Communicating in the mother tongue Digital Mathematical, scientific, technological	**INTELLIGENCES**	Interpersonal Intrapersonal Verbal-linguistic Logical-mathematical Naturalistic
GOALS	Identifying and description of the sources of green energy, the way of using and their advantages over conventional resources		

Task description:

You will participate in a puzzle activity. You will work individually and in teams. Each group of no more 3 students will have to read about one clean energy, dividing the content. Each of you will read some information about one clean energy, then you will explain to your team what you have read. After all of you will know well about the clean energy that you have read, you will present to the other teams the content of your team. At the final you will know about all clean energy.

Teacher's notes:

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If all clean energy will be the object of this task, you can design this activity as a puzzle activity

1. In each team they can select about what will read each student,
2. The students read about one of clean energies.
3. Then, all students (3 no more) that have been read about one clean energy will review the information that they have read, in order to ensure that they have understood the information;
4. Finally, the group of the first part of this activity will work together, but in this case each student will present the information about the clean energy that he/she has read.
5. All students know about all clean energies.

Websites to explore:

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/000625

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022397

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022398

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022399

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022400

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022401

http://www.alliantenergykids.com/EnergyandTheEnvironment/RenewableEnergy/022402

11. Task: Methods for the production of renewable and clean energy			**Session:** 3 h
COMPETENCES	Sense of initiative an entrepreneurship Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Intrapersonal Visual-spatial Logical-mathematical Naturalistic
GOALS	Classify the sources of renewable and clean energy and know the ways to produce the renewable and clean energy		

Task description:

Once you have analyzed the information from the websites or/and the experts, you will sit in you team and will classify all types of the renewed and clean energy. This will lead you to the next activity.

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You will make a list with some ways in order to produce the renewable and clean energy.

Teacher's notes:

Teachers will aid the students to classify all types of the renewed and clean energy, establish different criteria.

Example: Table

Classification criteria	Renewable and clean energy sources	Exemples
By origin	Natural	
	Artificial	
After the service life	Exhaustible	
	Inexpensive	
After the age of their use by people in historical periods:	Conventional	
	Unconventional	

Websites to explore:

http://www.biologydiscussion.com/energy/classification-of-energy-resources-primary-and-secondary-environment/16707

http://www.sdmcet.ac.in/sdmspace/webdeptdetails/wdd/203.pdf

12. Task: Which are the advantages of the renewable and clean energy over the conventional resources?			**Session:** 2 h
COMPETENCES	Social and civic Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Intrapersonal Logical-mathematical Naturalistic
GOALS	Identifying and description of the sources of green energy, the way of using and their advantages over conventional resources Apply mathematical knowledge to draw, read and interpretate the diagrams, charts, graphs, to calculate costs and parameters useful to produce sources of green energy, calculation of percentage, international unit conversion.		

Task description:

After the previous activity, we will start to focus on the amounts in order to make comparisons.

We are going to add up the amount the parameters and costs of each source of energy identified and compare the results, using charts, graphs, diagrams.

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Teacher's notes:

Compare the energy sources, by their performances or costs.

Example: Table

renewable and clean energy		**conventional resources**	
Example 1		Example 2	
Advantages	Disadvantages	Advantages	Disadvantages
• x • x • x	• x • x • x	• x • x • x	• x • x • x
Example 3		Example 4	
Advantages	Disadvantages	Advantages	Disadvantages
• x • x • x	• x • x • x	• x • x • x	• x • x • x

Depending on the previous knowledge of the students about fractions and percentages, international units conversion, graphic representation, the teachers will have to explain how to use it to the students,

We will use the next table to reflect about what they have learnt, and they will fill in "What have I learnt?" cells of the table.

What have I learnt?
1.
2.
3.

13. Task: I see, I think, I wonder			**Session:** 1 h
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic Communicating in the mother tongue	**INTELLIGENCES**	Interpersonal Intrapersonal Visual-spatial Verbal-linguistic
GOALS	To acknowledge the existence of new sources of energy derived from waste recycling		

Task description:

First of all, you will think about the most appropriate source of energy and later you will share you conclusions with your team members.

In this purpose each of you will see some sources of energy from waste, you will use the research already made about each source, using comparisons about advantages and disadvantages, photos and video founded on web or offer by the teacher.

Teacher's notes:

The teacher will guide the students to make a research about sources of energy from waste, using the method I see, I wonder, I ask.

See annexes: 9T-13T I SEE- I THINK - I WONDER and 9T-13T-VT_SeeThinkWonder

14. Task: Understanding how to obtain energy			**Session:** 1 h
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic Mathematical, scientific and technological	**INTELLIGENCES**	Intrapersonal Logico-mathematical Naturalistic
GOALS	To acknowledge the existence of new sources of energy derived from waste recycling		

Task description:

You will work in groups. Each group will choose a theme and will make research about it:

Theme 1: types of energy (mechanical, chemical, electrical, thermal)

Theme 2: renewable energy sources (coal, oil, gas)

Theme 3: non-renewable energy sources (solar, wind, hydropower).

Theme 4: problems caused by non-renewable energy sources.

After that, each group will represent found information making a map with, classifying and present it in a personal way. You must search photos for each found subject and use it in the map and in the brochure too.

This will be the first part of the brochure, each project group will have to interpret the chart and get their own information.

Assessment tools (rubrics …):

Can be used the colleague assessment, after each group will present their map.

Teacher's notes:

In order to find information it is convenient to split the group into pairs. After having found the relevant information, they can share it in groups to complete missing information.

15. Task: Recycling waste			**Session:** 1 h
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Bodily-kinesthetic Visual-spatial Naturalistic
GOALS	Identifying the recycling and useful waste in order to produce the renewable and clean energy Learning to work in teams		

Task description:

The research will continue, on web or in some specialized institution in the area, this time about waste recycling, especially about biomass.

Steps to follow:

1. Identifying the recycling and useful waste in order to produce the renewable and clean energy, visiting specialized institutions and websites.
2. Make photos and videos or select by the web.
3. Classifying the recycling and useful waste.
4. Using of biomass

After the students finished the research, they must complete the scheme below, answer to the questions: what? and how?.

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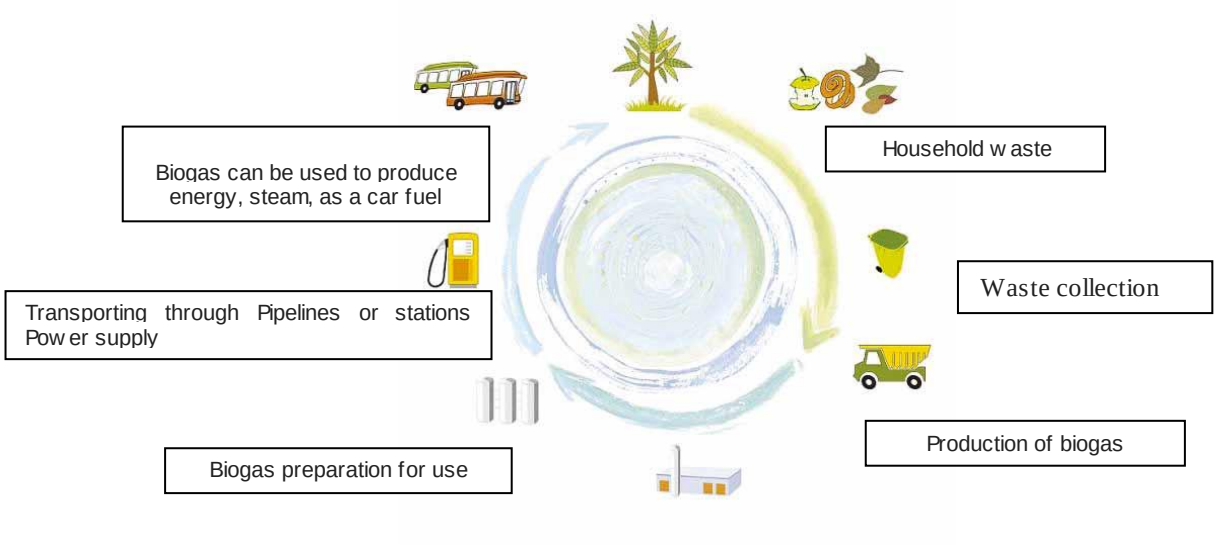

Scheme completed will be evaluated and corrected by the teacher and posted in the brochure.

Assessment tools (rubrics …):

For the observation and monitoring of the photos and videos, students will establish some rules which they need to follow. They will appoint a member of the team as the responsible for the observation.

Teacher's notes:

The students will work in project teams. Method to be used: Brainstorming – for identifying the recycling and useful waste in order to produce the renewable and clean energy

See the annexes: T15-Brainstorming rules

Websites to explore:

http://www.responsabilitatesociala.ro/stiri-csr/reciclarea-deseurilor-exemplul-de-succes-al-norvegiei.html

http://protectio.org/colectarea-selectiva-a-deseurilor-salveaza-viitorul-2/

16. Task: Using recycling waste to produce energy			**Session:** 3 h
COMPETENCES	Digital Mathematical, scientific and technological	**INTELLIGENCES**	Visual-spatial Naturalistic
GOALS	Identifying the recycling and useful waste in order to produce the renewable and clean energy		

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Task description:

It is part of the brochure. Each member of the team will have to select pictures about and with different sources of energy using waste. In order to do that, they will use the pictures provided by each team. Each picture will be described by a student or more from each team.

Teacher's notes:

The pictures that will appear in the brochure will be selected by the members of the team.

Website to explore:

http://www.biologydiscussion.com/energy/classification-of-energy-resources-primary-and-secondary-environment/16707

https://www.enwin.com/kids/electricity/types_of_energy.cfm

http://www.eschooltoday.com/energy/kinds-of-energy/all-about-energy.html

17. Task: Team planning assessment			**Session:** 1 h
COMPETENCES	Social and civic	**INTELLIGENCES**	Interpersonal Intrapersonal
GOALS	Learning to work in teams and control teamwork		

Task description:

You will assess all the objectives established in the 3rd task, individual and team objectives as well as the responsibilities to reflect upon the things you are doing well and the issues that must be improved.

Teacher's notes:

See annexes - 3T Team Planning and T1-T3-"Belbin-for-students"

Websites to explore:

http://www.belbin.com/media/1336/belbin-for-students.pdf

18. Task: Work on brochure, poster, Power Point presentation	**Session:** 2 h

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and video			
COMPETENCES	Communicating in the mother tongue Communicating in a foreign language Digital	**INTELLIGENCES**	Interpersonal Verbal linguistic Visual-spatial Logical-mathematical
GOALS	Improve communication skills (oral and writing skills) Learn how to use software to produce photos, videos, PowerPoint presentation Learn to write and edit brochures and posters		

Task description:

For this task you must use the computers. You will select the most appropriate application and computer tools in order to write the documents, insert pictures in it and make short films and PPT.

You will work in teams, you will produce a template for each application and show to the others.

Together you will select the most beautiful and complete template.

You can use Photoshop, Paint or any editor program.

Your team you will be responsible with one product (brochure, poster, video or PPT). After the selection of the template, you will work in team to fill in the content.

You must be careful to use correct words and expressions. You must describe the pictures and energy sources.

Teacher's notes:

Teacher will supervise the teams working and will give them suggestions to improve their work. The teacher will ensure logistic (computers and software).

19. Task: Learn vocabulary in English			**Session:** 1 h
COMPETENCES	Communicating in the mother tongue Communicating in a foreign language Digital	**INTELLIGENCES**	Verbal linguistic
GOALS	Improve communication skills (oral and writing skills)		

Task description:

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You will be handed out a template and in teams, you will write down the names of each source of energy and each kind of waste in your mother tongue. You will do the same with the verbs. Then, all of you will develop a common list that will be translated into English in the English class with the help of the teacher and/or the web, dictionary.

Teacher's notes:

Teacher will supervise the teams working and will give them suggestions to improve their work. The teacher will ensure logistic (computers and software). Teacher must survey the students work and correct them.

20. Task: Translate the brochure and technical sheet into English (It will be assessed)			**Session:** 1 h
COMPETENCES	Communicating in the mother tongue Communicating in a foreign language Digital	**INTELLIGENCES**	Verbal linguistic
GOALS	Improve communication skills (oral and writing skills)		

Task description:

After writing the brochure in the native language, you will translate them into English in teams. In order to do so, you will make use of the vocabulary list you have been working on beforehand. You can use dictionaries to make the translations. You can divide the contents and each of you will translate a sequence. At the end, you will put together the texts and compiles it.

This task will be assessed:

- Each team will assess the part of brochure translated by another team, assisted by an English teacher, who will correct them. The students will use the vocabulary list to correct the texts. Finally, the brochure will be in a correct form, ready to be printed.

Teacher's notes:

Teacher will supervise the teams working and will give them suggestions to improve their work. The teacher will ensure logistic (computers and software). Teacher must survey the students work and correct them.

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21. Task: Submit the brochure and poster layout to those who are in charge of the layout			**Session:** 30 min
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic	**INTELLIGENCES**	Interpersonal
GOALS	Learning to work in teams and control teamwork		

Task description:

Once you have finished the brochure layout, you will give to those who are responsible to verify and correct it. If is necessary, you will modify so make sure the layout is well organized and structured

Once the layouts are done, you will revise the brochure and the poster thoroughly in order to avoid possible mistakes.

Teacher's notes:

Teacher will supervise the teams working and will give them suggestions to improve their work. The teacher will ensure logistic (computers and software). Teacher must survey the students work and correct them.

22. Task: Visit the printing company			**Session:** 30 min
COMPETENCES	Learning to learn Sense of initiative and entrepreneurship Social and civic	**INTELLIGENCES**	Interpersonal
GOALS	Learning to work in teams and control teamwork		

Task description:

After the layouts are done, you will move forwards to the printing. In order to follow this process, it is convenient to pay a visit to the printing company.

FINAL TASKS

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23. Task: Brochure, video and power point presentation			**Session:** 1 h
COMPETENCES	Communicating in the mother tongue Communicating in a foreign language	**INTELLIGENCES**	Interpersonal Verbal linguistic
GOALS	Improve communication skills (oral and writing skills) Learn how to use software to produce photos, videos, Power Point presentation		

Task description:

You will designate a member of your team who will organize the event in order to present the final products of your project. You will organize the event as well as possible and you will invite more people apart from parents and you will make a scenario to present the project to the audience.

Two or three students will be selected to present the project to the audience. Some of you will be in charge with logistics.

Before the event, you will practice the presentation in front of your colleagues and you will receive feedback to improve your presentation. In the same time, the poster will be displayed.

24. Task: Brochure dissemination			**Session:** 3 h
COMPETENCES	Sense of initiative and entrepreneurship Social and civic Communicating in the mother tongue Mathematical, scientific and technological	**INTELLIGENCES**	Interpersonal Verbal linguistic
GOALS	To acknowledge the existence of new sources of energy derived from waste recycling Improve communication skills (oral and writing skills).		

Task description:

You will need to prepare in class by hand and orally what you will say when you will disseminate the brochure. You will also rehearse in class.

You must identify the appropriate places where we could disseminate the brochure:

- Places which have helped as with the printing financing
- Local market
- Nearby local markets
- Local shops
- Radio

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- Tv
- Schools partners
- Another schools

After identifying the places, you will work in teams to complete the task. All teams need to take part in the activity.

25. Task: Final team planning assessment			**Session:** 1 h
COMPETENCES	Social and civic	**INTELLIGENCES**	Interpersonal
GOALS	Learning to work in teams and control teamwork		

Task description:

You will assess the objectives and responsibilities established in the team planning before to reflect upon the things you have done well and the issues that must be improved.

Teacher's notes:

See annexes - 3T Team Planning and T1-T3- "Belbin-for-students"

Websites to explore:

http://www.belbin.com/media/1336/belbin-for-students.pdf

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