



1. Proposed Solutions

Alternatives to Plastics

IES EUROPA (AGUILAS) TEACHERS TEAM (SPAIN) WITH COLLABORATION OF AAE STAFF

Description: Count the number of drinking water plastic bottles that we use in a month. To know the water filter available from the market and its advantages. Estimate the reduction of plastic bottles for drinking water in the educational community if we install water filter or springs instead of buying drinking water in plastic bottles. This activity is suitable for students aged between 12-18 years.

Aims: To become an environmentally friendly consumer and to educate for sustainable development.

A1: Consume in a responsible manner with the environment. Know alternatives to the use of plastic

A2: Raising awareness among students of the problem of plastics. Work oral argumentative texts. Respect the opinions of others and defend their own ideas.

A3: Raise awareness among the entire educational community and other centers that it is possible to reduce the use of plastics in their daily life

A4: Make students aware of the consequences of the misuse of plastics and our obligation to conserve the environment. Develop these skills in English.

A5: Make the students aware of the overuse of plastic in supermarkets.

A6: Know the alternatives we have so as not to abuse the use of plastics in our day to day.

A7: Analyze the different plastic recycling options, or the use of plastic as a recyclable material

A8: Recognize the ecological alternatives that we can select in our day to day.

A9: To make people aware of the terrible worldwide problem of micro-plastics in the sea. Show the alternatives to their use. Teach new generations to live avoiding plastics. Carry out investigations about the topic and exhibit the results to the educative community

A10. To build a greenhouse by using plastic bottles as building material.

To grow organic crops using compost and organic seeds as a sustainable action.





Outcomes:

1. Reduce the consume of plastic bottles
2. To be more aware about plastics production ,use, waste, and recycle plus alternative of replacement or re-use in our society
3. Several action and community outreach to reduce consumerism and plastic
4. Increase knowledge about plastic usage
5. When we are going shopping , we have to be more aware about what are we buying and packaging to start avoiding no recycling materials and to be aware about the need for zero waste production.
6. Be aware of the present alternative of plastic products in my daily life
7. New possibilities while thinking and using plastic at school or at home.
8. Innovative solutions and alternatives for plastics as a way to reduce plastic consumption
9. Knowing about the existence of microplastics in the whole world
10. How to build a greenhouse outside or at my school ground re- using plastic bottles.

Learning designer link: <https://v.gd/6pxUun> (<https://www.ucl.ac.uk/learning-designer/index.php>)



Activities

Title	Procedure	Time (min)
Presentation	A1. Drink Filtered Water From The Tap. A2. Discuss About Plastic . A3. We Do That At My School. A4. Life In Plastic Is Not Fantastic. A5. A More Eco-Friendly Supermarket. A6. My Daily Routine And The Use Of Plastic. A7. We Have Alternatives To The Use Of Plastic. A8 Ecological Alternatives To The Use Of Plastics In Our Daily Life. A9 Recent News About Microplastics And Its Alternatives. A10. Re-Use And Re Use Plastics.	120 120 1 year 120 120 60 60 60 280
Workgroup	Collaborative work, cooperation, peer to peer work	60
Discussion	Looking for improvement and dissemination / improvements / extension	60
Evaluation	Results , outcomes, outputs, and lasting period at the school community – Long term impact	120



Photo: Trash on the coastline. Isla del Ciervo, Mar Menor Lagoon (Murcia, Spain)



Photo: Volunteers in action (Murcia, Spain)

Teaching-Learning activities

A1. Drink Filtered Water From The Tap

Investigate *120 minutes* *students* *Tutor is available*

Description of the activity: Know the water bottles we use in a month, know the water filter system and use the most appropriate and calculate the reduction of bottles if the Entire educational community was decided by this form of consumption.

Necessary resources: Searching on the web information about water filters, responsible water use, and the negative impact of plastic in the environment.

Internet Resource: <http://www.dropson.es/lata-filtrante/>



Utilización sencilla

Incluye un adaptador universal para casi todos los grifos del mercado (en caso de necesitarlo).

La lata filtrante Dropson es capaz de filtrar al instante el agua del grifo de una manera sencilla y segura gracias a su tecnología de nueva generación.

Produce más de 300 litros de agua para beber de excelente calidad con un flujo de 1 litro/minuto.

www.dropson.es



Tecnología patentada de origen natural

FILTER MEDIA
Green Technology

La lata Dropson está equipada con una membrana micrométrica 100µm natural, compuesta por biomateriales: microfibras de origen vegetal, polvo de carbón activado y elementos bacteriostáticos naturales y sin químicos.

SGS
FABRICADO E INTEGRADO POR DROPSON EN ESPAÑA BAJE RIGUROSO CONTROL DE CALIDAD Y VALIDADO POR SGS SEGUN LA NORMATIVA AMERICANA EUROPEA CE Nº 1606204

www.dropson.es

A2. Discussion About Plastic .

Discuss *120 minutes* *students* *Tutor is available*

Description of the activity: Alternatives to plastic: advantages and disadvantages. In the first session the short Hybrids is projected. After this, the students, in groups of four, initiate the search on the Internet for information on the alternatives to plastic, and put them in common. The groups are established and the position that, around this issue, will be developed by each one. In the second session, the debate is established. The teacher acts as moderator and each group has five minutes to present their ideas. The rest is devoted to debate. A third session can be used to draw conclusions, which will be collected in a document, which will be made public.

Necessary resources: Internet connection and digital whiteboard or screen and cannon

Internet Resource : Link to the short: <https://www.youtube.com/watch?v=LNA7yoChBLc> / <https://youtu.be/6r8Tl8m6jOA> (Video – IES Europa Students – Testing the activity)





A3. We Do That At My School

Produce *minutes* *students* *Tutor is available*

Description of the activity: The idea is for the entire educational community to contribute with ideas to reduce or eliminate the use of plastics in the center. A school year First, explanation of the activity in the tutorials. After, collection of proposals. Third, selection of ONE or TWO of the more realistic proposals, with the commitment of all to carry them out. One day, we would dedicate to make this action visible, giving it the greatest possible publicity and even with the presence of public organizations and institutions. Then, we must evaluate the incidence of this action in the life of the center.

Necessary resources: For a start, the will of the participants is enough. For some other action money may be needed; for example, an action might be to buy bags of recyclable material to put the sandwiches and stop using aluminum foil and transparent film in the center. The bags would carry the logo of the center and the one of the projects. To buy them we can ask for collaboration to the AMPA, the town hall and even with money from the project and with small contributions from everyone.

Internet Resource <https://www.facebook.com/BuzzFeedEspanol/videos/428084367598722/>



A4. Life In Plastic Is Not Fantastic!

Produce *120 minutes* *students* *Tutor is available*

Description of the activity: Make lists in English of actions that can be done to present alternatives to the use of plastic, taking advantage of grammar lessons. 2-3 sessions Taking advantage of the curriculum of the subject of English, the session begins explaining how GOING TO is used (to express intentions or purposes) or modal verbs (especially those of obligation such as SHOULD, OUGHT TO, MUST ...) to address the evil The use we make of plastics. Once the topic has been introduced, the students will draw up lists of actions that we should do or intend to do and write them on cardboards so that they are visible in the classroom and all over the school. The same can be done in Spanish grammar, when the instructive texts are studied, or in French.

Necessary resources: Those available in the classroom, cardboards, colors, ...



Sorting rubbish to find out origin and most common type of materials

A5. A More Eco-Friendly Supermarket

Practice

120 minutes students Tutor is available

Description of the activity: Choose a local supermarket and see the use made of plastics and propose reusable alternatives to the use of plastics. The student will have to prepare a list of packages and packaged products and propose the alternative that is more respectful with the environment.

Necessary resources: What we have in the classroom, internet, ETC



A Grocery store offering plastic bags for vegetable and fruits. Shall we bring our own cotton bag or recycled plastic bag to avoid using new ones?

A6. My Daily Routine And The Use Of Plastic

Practice 60 minutes students Tutor is available

Description of the activity: The following text is presented to the class group: I get up at 7:00 in the morning and turn off my plastic alarm clock. Then I put on my plastic shoes and go to the bathroom. There I wash my mouth with my plastic toothbrush and rinse myself with my plastic cup. Then I take a shower and use the commercial shampoo from a plastic bottle. So that it does not get so cold on the floor and I do not slip, my plastic bath mat is lying in front of the sink. During the shower I close the plastic curtain. Finally, I put on cream and use a lotion from a plastic container. Next, I go to the kitchen and turn on the plastic kettle. I prepare an infusion and throw the tea bag into the plastic garbage can. Then I take a slice of toast bread from a plastic container and ... Rewrite the text and modify all the underlined words by putting alternatives to the use of plastic.

OBSERVATION: in the first part of the activity it could be proposed that the students elaborate their own daily routine, taking note of everything they handle and use every day made of plastic.

Necessary resources: Their school notebook and a file.



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A7. We Have Alternatives To The Use Of Plastic

Discuss

60 minutes

students

Tutor is available

Description of the activity: DEBATE After viewing the three videos there will be a debate on the alternatives we have seen in these videos and a conclusion will be reached. Resources: Computers, digital screen ,Wifi access.

Resources: The activity consists of visualizing the following three videos:

"Plastic to heat food" ([dw.com/p/2qWdy](https://www.dw.com/p/2qWdy)) (about 1 min.)

"Plastic trends: fashionable bags in Nigeria" ([dw.com/p/2qWUx](https://www.dw.com/p/2qWUx)) (about 1 min.)

"Organic algae-based plastic" ([dw.com/p/2qWSM](https://www.dw.com/p/2qWSM)) (about 1 min.)



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A8 Ecological Alternatives To The Use Of Plastics In Our Daily Life

Investigate 45 minutes students Tutor is available

Description of the activity: Select the 8 things that we can use daily and that allows us to be respectful with the environment:

- ✓ Biodegradable bamboo toothbrush with natural bristles. –
- ✓ Plastic toothbrush. –
- ✓ Natural fiber dental thread coated with beeswax. –
- ✓ Traditional dental floss made of nylon or Teflon. –
- ✓ Disposable plastic shavers. –
- ✓ Unlimited use shaving machine. –
- ✓ Natural shampoo in bar. –
- ✓ Shampoo in plastic packaging. –
- ✓ Sea salt and exfoliants based on plants. –
- ✓ Artificial scrubs. –
- ✓ Non-plastic reusable water bottle. –
- ✓ One-time water bottle –
- ✓ Non-plastic reusable cup for coffee or tea. –
- ✓ Single-use plastic cup. –
- ✓ Reusable cloth bags. –
- ✓ Disposable plastic bags.

Necessary resources: A file with images or a product show case.



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A9 Recent News About Microplastics And Its Alternatives

Investigate *45 minutes* *students* *Tutor is available*

Description of the activity: Students in groups will find out information about micro- plastics in the news, magazines and newspapers and will broadcast their own program that will be recorded. They will also work with texts related to the topic with a later debate. They will inform about the real situation of micro- plastics around the world and the most recent alternatives to them to inform their community. They will represent common situations of misuse of micro- plastics in a local beach

Necessary resources: Wi-Fi, newspapers, magazines, video recorder, a Chroma



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A.10 Re-Use Plastic Bottles To Build A Greenhouse And Grow Organic Vegetables.

Collaborate *1 hour* *Whole class* *Tutor is available* *F2F*
students

Description: Using plastic bottles, re use them as building material for making an outdoor real area as Greenhouse as a showcase . Additionally it could be use for growing organic vegetables.

Mode of delivery: Location-based

Ask for all school ground permits and define the building area size. Look for water and an open area nearby.

- c. Start collecting and storing water plastic bottles (Volume 1-2-5 lt)
- d. Look for Plastic bottles temporal storage.
- e. Get some building materials: Wood frame, long sticks (canes), stakes wire, nails, harmer, screwdriver, other carpenter tools, measuring tape, seeds, hose, string, signs, wheelbarrow, shovel, other agricultural tools etc.
- f. Start building the Greenhouse when you have enough plastic bottles.

Practice *2 hours* *students* *Tutor is available* *F2F*

- a. Start bringing selected organic matter from home (kitchen/ food waste). Not oily or prepared food wastes. No meat See recommendations for composting and start a Compost heap outdoors. Composting cycle and possible vermiculture.
- b. Build inside wooden bed for planting (ground + compost + seeds)
- c. Use organic procedures and biological agricultural techniques as green fertilizers, manures, favorable vegetable associations and bio-dynamics.
- d. Production; Harvesting crops, rotation, and plantation plan on a year-basis (seasons works-school holidays responsibility planning).
- e. Distribution and marketing (school agricultural fair; Bike community orders) Didactic tours. Personal and community healthily eating habits talks; Business plan. Expenses and incomes and taxes.
- f. Small Chicken/eggs Production (extension); If possible with community participation exchanging organic rubbish for eggs or organic veggies.

Discuss *45 minutes* *students* *Tutor is available* *F2F*

Experience evaluation, Feedback and re-investment. For continuous functioning (sustainability).



Produce

45 minutes

students

Tutor is available

F2F

Once vegetables are started to sell at a school fair or community street market with authorization of school and municipal authorities, try to keep records for replication and improvement.

		
<p><i>Inside the greenhouse</i></p>	<p><i>Outside view</i></p>	<p><i>Inside the greenhouse</i></p>

Notes

Depending on the area availability, plan ahead the size of the greenhouse. Try different plastic bottles sizes, while making the walls and roof. Building technique is based on piling up the plastic bottles. Make a hole on the bottom of each bottle and then introduce it into the cane/ wood log. The size of each log/cane stack can be 2 or 2,5 mts high and the diameter of the log could be 1-2 cms. See images for these details

Curriculum links: Technology, Social sciences, Life sciences, Math's and Economy

Check this website:

<http://www.lifslittlemysteries.com/does-recycling-plastic-cost-more-than-making-it-0383/>



Photo: a Green house made out of plastic bottles in the school yard. (Courtesy of JDL Giraldo)