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The Key To Global Life,
Digital Change Of Nature



Total Duration: 2 hours



Student's Age: 6-18 Years



Application Area:

- waste,
- upcycling



Keywords: Reuse, circular design, life cycle, design



E1 - Beyond shopping bags!
(Plastic bag to plastic fabric -
durable and waterproof!)



Module

- Environmental pollution

E1 - English Version

Materials:

- Plastic bags
- Heat press
- Iron
- Scissors
- Cutter knife
- Pen and Paper
- Sewing Materials



Notes:

- Challenge: Design and make a product out of a fabric made from single use plastic bags.
- Melt Plastic bags to create fused plastic fabric. This fabric is great for making things that need to be durable or waterproof. Once you've made your plastic bag fabric, use it to make a useful product: lunch sacks, wallets, or make a sunglasses case or even clothing.
- Experiment with different bags, different layers and different temperatures. Look for the best recipe!



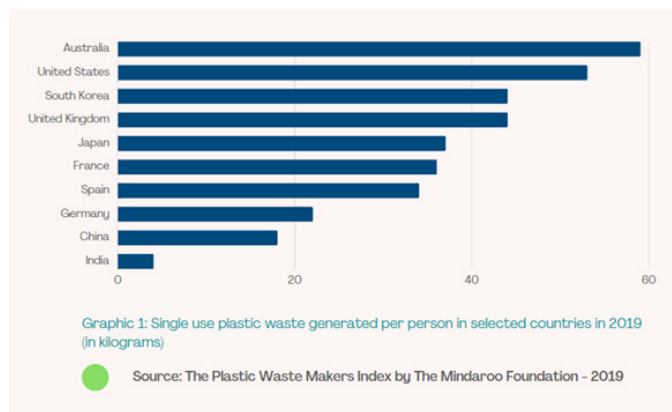
@digitalchangeon

Introduction

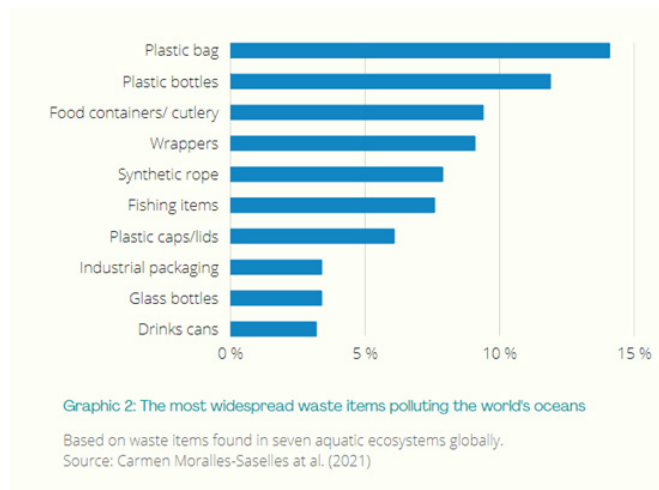


Picture 1. Plastic wastes from our environment

Every person on our planet uses on average 83 plastic bags every year. That's one bag per person every four and half days. How many plastic bags would you use each week? How does this affect the environment? Plastic bags were rarely found during the 60's and 70's, their usage has increased at an alarming rate since they became popular during the 80s. Just take a look around you. Plastic bags can be seen hanging from the branches of trees, flying in the air on windy days, settled amongst bushes and floating on rivers.



You can see some interesting graphs. The first one shows the per capita production of plastic waste. The highest producer of plastic waste in 2019 was Australia with almost 60 kg per person.



The second graph shows what kind of waste items are more frequent in the oceans, showing that plastic products are the dominant form of pollution in oceans. Plastic bags and bottles make up the largest proportion of oceans' waste. Bags are almost 15% of this waste and bottles were the second most common item with over 11%.



Make the students aware of the lifecycle of a plastic bag. See these visuals. In this activity we pretend the council of your city has set up a recycling contest; create a daily product out of single used plastic bags.

Considerations

- Safety precautions must be taken when using cutting and drilling tools.
- The goal in this activity is learning by doing and applying the scientific method.
- Safety measures must be taken when using the heat press.

Aim of the Activity

It is our duty to protect the environment we live in. In order for recycling to become a habit, environmental and recycling awareness must be gained from a young age. This is why the aim of this activity is to:

- Define environmental protection/conservation,
- Explain reducing, reusing, and recycling and their importance to environmental conservation/ protection
- Design your concept/idea and plan the necessary steps to execute it,
- Experiment with melting plastic bags into fabric
- Make fabric out of thin plastic bags

Activity Process

Before Activity

Let's Start

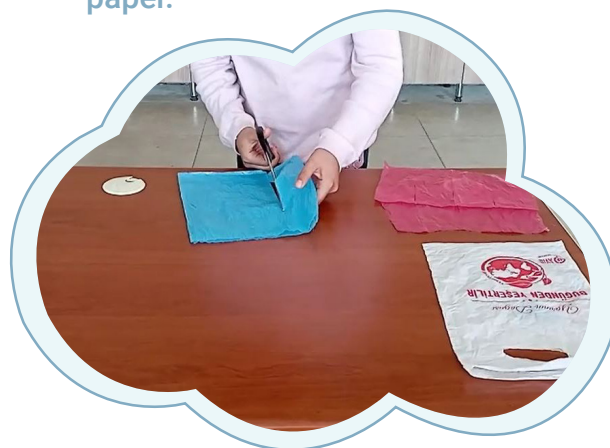
1

Collect plastic bags and wrapping plastic, most of the plastic will work to make fabric out of it. You can flatten them to make the melting later easier (Picture 1).



Picture 1. Collect plastic bags

- Activity area is organized before for activity: make sure the room can be ventilated or work outside
- This can be group work or individual work.
- Necessary materials for the activity should be provided before the work.
- If you work with irons, make sure to have iron boards or enough towels on the table. Make sure to have enough baking paper.



Picture 2. Plastic bags

2

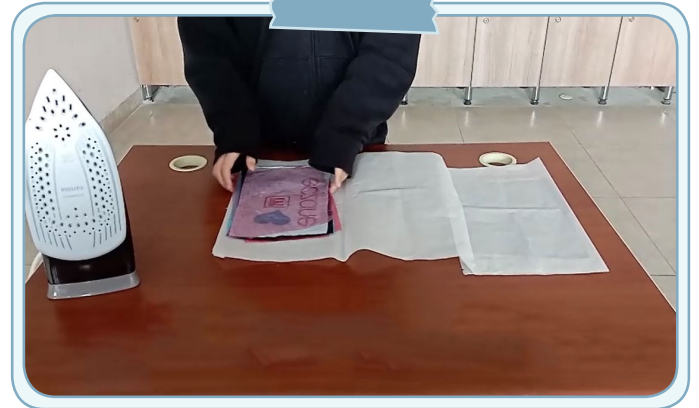
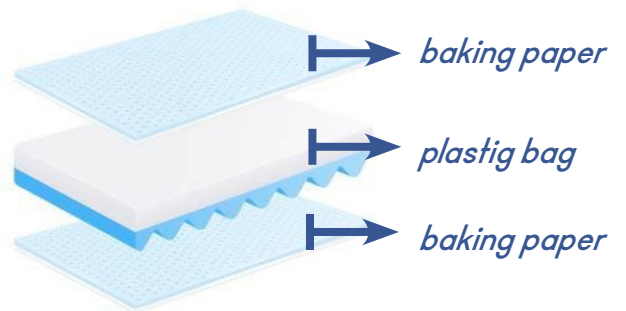
A roller cutting blade is the fastest tool to cut seams, handles, and labels off of the bags. Use the cutting board and roller off the parts you do not want. You might want the labels, or not. Cut the plastic bags in small pieces if you want a play of colors (Picture 2).

3

Sandwich Plastic Between baking Paper before heating.

You will need 2 - 6 layers of plastic to make the fused fabric.

- Use less [2 sheets] to create a more transparent, flexible fabric.
- Use more [4-6 sheets] for stronger, more durable fabric.
- If you want a more colorful product, cut plastic bags into small pieces.
- The appearance of the layer is Picture 3.



Picture 3. Layer of the materials

4

- Test different settings (material, temperature, duration of the heating, number of layers) on the machines (iron/heat press). What is the best way to melt it together? Experiment for the right setting before you make your final product. In this step you follow the scientific method, and keep track of the results of the various settings.
- For example, too hot/too long in the press can create holes.
- Start the iron on a low setting and move it. Continue trying at different temperatures. Move iron temporarily in order not to damage the baking paper or plastic bags. If you have a hole you either are staying in one place too long or your temperature is too high (Picture 4).



- Don't forget, the bags will melt fast!

5

- Now, design something with the plastic fabric (Picture 5)



Picture 4. Ironing the plastic bags



Picture 5. Design

Closure



- Organize a fashion show with the new products and accessories! Here is examples for you



Assesment

Evaluation

- The design of students can be displayed within the school. Different products can be created by diversifying waste materials used.

Goals	Must be Improved (1)	Medium (2)	Good (3)	Very Good (4)
Express yourself	(....)	(....)	(....)	(....)
Present an idea	(....)	(....)	(....)	(....)
Collect materials	(....)	(....)	(....)	(....)
Abide by required Safety Precautions	(....)	(....)	(....)	(....)
Design visualization	(....)	(....)	(....)	(....)
Total				



- **The Breathing Wall Installation**

(<https://sensoree.com/artifacts/the-breathing-wall/>)

illuminates the current evolution of the Great Plastic Island within the aquatic environment – suspended plastic mimics and actually becomes the new sea life.

BREATHING WALL responds to human presence with bio-luminescent inflatables. Inspired by sea anemones and puffer fish, this interactive installation reacts to touch and flow of movement. Made from recycled materials; single-use plastic bags are fused together to create inflatable fabric with organic textures. Then, motion sensors connected to CPU computer fans respond to movement and begin to inflate the fabric. In this way, the interaction promotes an architectural dialog.



Links

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Simple tips to reduce single use plastic use: <https://supersimple.com/article/reduce-plastic/>
<https://carleton.ca/sustainability/2020/weekly-sustainability-tip-going-plastic-free-a-guide-for-beginners/>