Ways to make clean water filters

5th grade

[redacted]

The purpose and the community problem being solved

The purpose of making water filters is because many people don’t have access clean water.Most countries don't have clean water so what we are doing is good for the communities that don’t have clean water.

Background Research

We found out that there are millions of dirty water particles which can make you sick and its unhealthy. So we decided to make a water filter for the people that have dirty water in their country. We decided to do this cause 99.7% of Earth's water is not useable which makes it hard for people who already have dirtier water. We want to improve the water filter and quality by getting rid of chemicals. This dirty water has things like industrial waste or agricultural chemicals/pesticides.

What materials are the best at cleaning water.

Activated charcoal because it absorbs chemicals and odors.

Sand because it collects debris for physical filtration.

Cotton because it cleans out the dirty water.

Brainstorm Ideas to make the experiment happen

We decided to get three plastic water bottles because we think two can be different kinds of water filters and the final one can be the one mixed together. We also think if we added to much rocks or stuff not related to water filters it can turn really odd or it can change differently. And if we cut the plastic water bottles really short it can ruin the experiment for the water filter but if we cutted in the middle it be perfect for the experiment.

Limitations

We have to make the dirty water instead of getting it from the river and getting leaves from outside.

Any changes made from first idea

First we wanted to change how big plastic bottles. We were going to have big plastic bottles but realized it was too much material so we are using smaller bottles. We also had to change how much stuff and what we put in it by putting less materials by changing it to come out clean.

Procedures (Step by Step)

1.We marked the bottles where we wanted to cut the three plastic water bottles.Then cut it there.

2. Then we got all our materials that are: Cotton, Dirt, Coal, and Rocks/Pebbles Then rinsed the rocks with water. The materials varied for all 3 water filters. And put the materials in the 3 different plastic bottles. We put cotton, dirt, and coal in one. Just pebbles and cotton for the second one.And for the last one there was cotton, dirt, coal, and rocks.

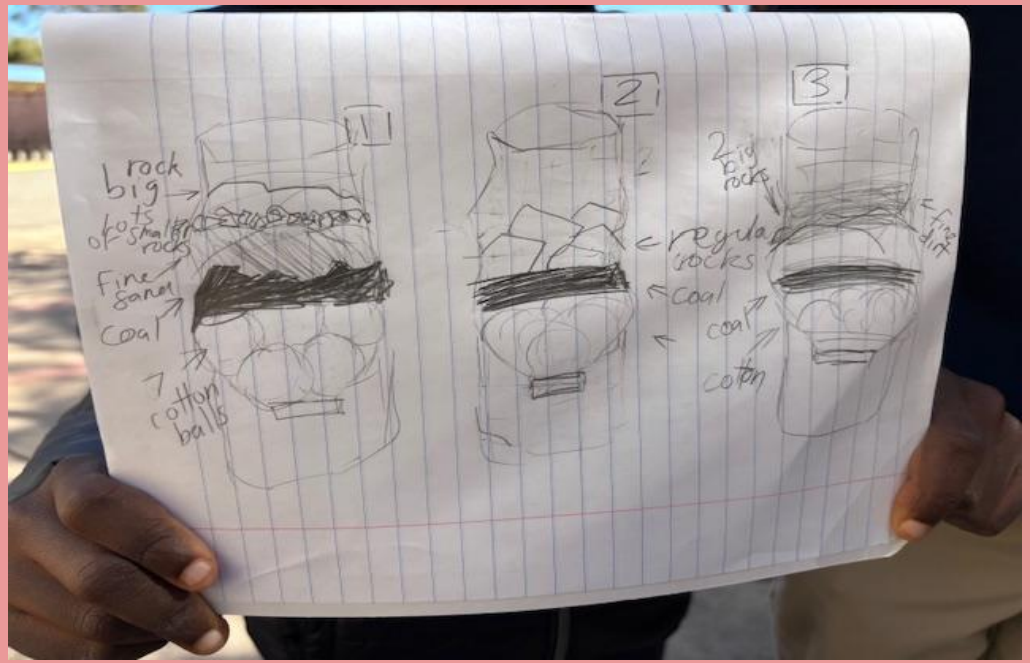
3.After that we went to the bathroom to fill 3 empty cups with dirt, clean, and water with leaves in it.

4. And we poured it in the 3 plastic bottles with material.

5.Then the water came out ether dirty, clean, or in the middle with it still being a little bit brown.

6. After the water came out we compared all the water types.

Draw out your final idea



Materials used to create your project

Three empty water bottles

Scissors

Charcoal

Sand/dirt

Rocks / small rocks

Cotton balls

Tap water and dirt with tap water

Data collection how will you collect it?

We collected it by comparing how dirty the water is. Here is a graph of how dirty each bottle is.

	Dirty water	Clean water	Water with leaves	
Bottle1	Came out okay but didn't filter.	Came out clean meaning the filter didn’t make it dirty.	Filtered all the leaves meaning can filter bigger things than dirt.	
Bottle2	Filtered but not the first time we had to do it multiple times.But we think that's because the pebbles were not wet	Came out clean also.	Also can filter out leaves.	
Bottle3	It came out very dirty didn’t fliterat all.	Came out dirty meaning the filter made it dirty.	Did filter, filtered only the leaves.	

Photos

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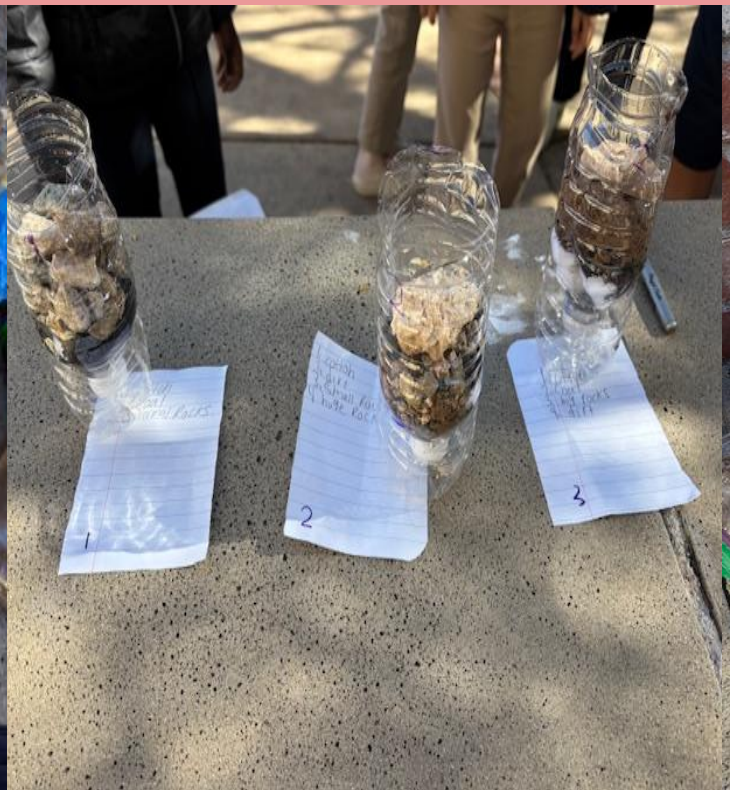

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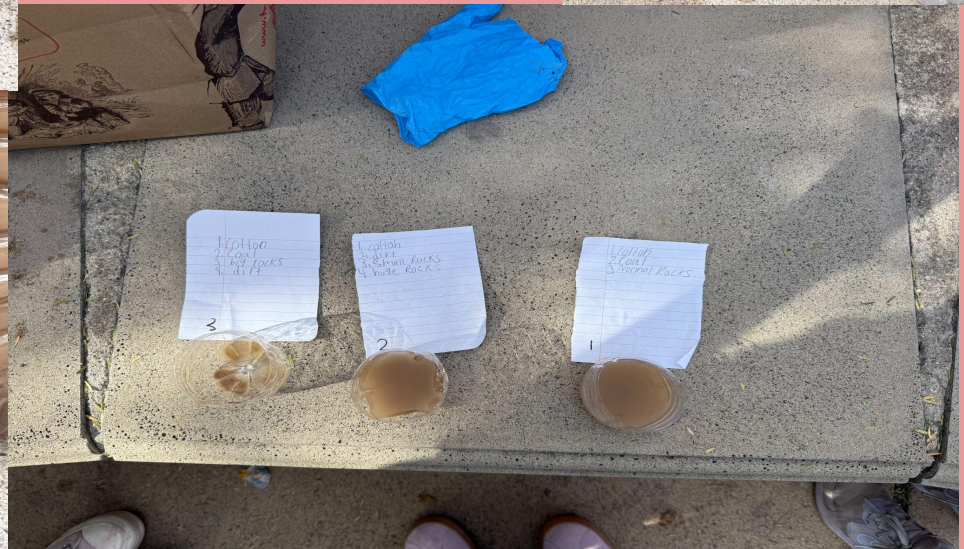

Data

We used clean water, dirty water and water with leaves to see which filters out the best. We tried adding less stuff as well. After we added clean rocks, and dirt with less stuff to bottle 2 it somehow came clean!

Data explained

So far it looks like we need to do some changes, or else it will stay dirty so we have to wash the gravel cause rocks from outside are dirty so we decided to wash it with just water then with cotton you can't get arts in craft cotton you have to get cotton that can rip easily the best thing to know is that arts and craft has a hard thing in the middle the other does not.

Was your project successful?

Yes, our project was successful because we added dirty water with clean rocks and cotton and we added less things than the other filters.

How can you improve your project? How will the improvements help?

We improved the water filter by a little bit to make it cleaner instead of dirtier. We tried adding clean rocks and dirty water but it was a little dirty. So after combining them we thought if we added clean water and cotton and clean rocks it will become clean water. When we tried that, it was actually clean.

Conclusion of your project

This project is important because in some poorer places, there isn't even that much water, and if there is water, it would be dirty. However, you still can't drink the water that was filtered. You can’t drink your experiments.

We used three bottle with different things inside-rocks, pebble rocks, dirt, and cotton balls- to filter out the water

Yes, we were successful because one of the water filters filtered out clean water. However, we learned that the less materials in the water filter, cleaner it filters out.