

Wara Bilong Life

Design and make a prototype of a method of washing hands that requires very little water, produced from recycled materials.



Our Concept Design and Additional Information

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Brief

Situation

In schools in the Eastern Highlands of Papua New Guinea many school children are at risk from getting deadly waterborne and contagious diseases. This happens because students do not have the facilities and are not educated to wash their hands as often as they should be.

Objective

Our aim is to design and make a device that will wash hands effectively. We also would like to find a way to help persuade students to wash their hands frequently.

Constrictions

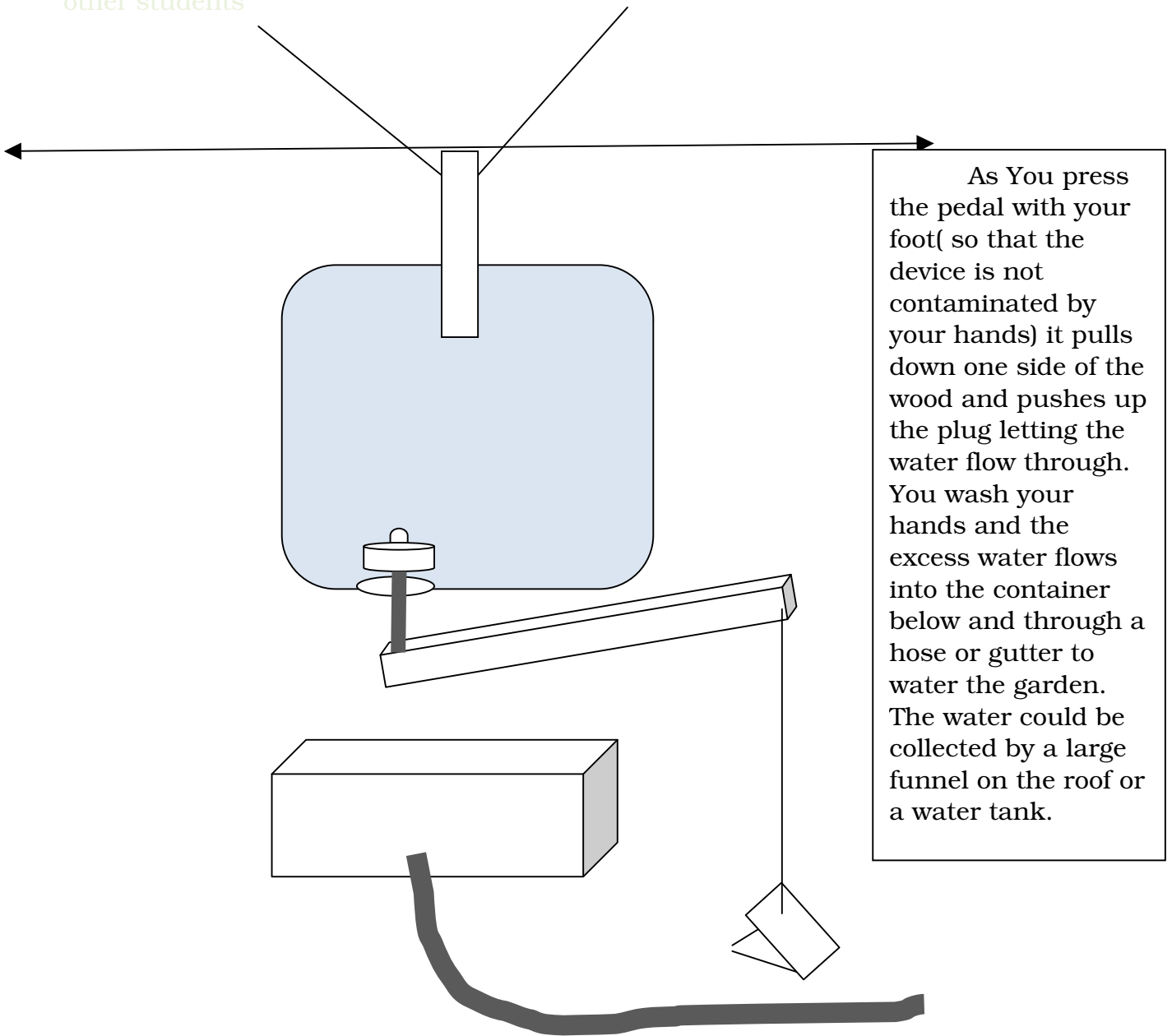
Our device must only use a small amount of water as the students living in the Eastern Highlands only have 500mls of water per person per day. Our device must also be cost effective as the schools do not have large sums of money. Our device will also need to be easy to use.

Key Messages of our Project

To show the importance of washing hands and the consequences of not doing so- To inform students about water related diseases and diseases that are caught by not washing your hands

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How to By Kendall, Amanda, Karenza and Amber could you persuade other students



How our device works

First there is a funnel to assist in collecting some of the water. The funnel has mesh at the top to prevent leaves or other debris from infiltrating the water. The water is then funnelled down to a bucket or container. The container has a non-return valve at the bottom and a plug is used to keep the water from leaking out through the hole. An arm of wood pushes up the plug to let water out when the pedal is pushed.

The water, as it is falling, is available to use for washing your hands. When you stop pushing on the foot pedal, the plug will fall and cover the hole, releasing no more water. The water is then caught in the container sitting below and is carried through a pipe or hose to water the garden.



How to use our Device and Wash your Hands

1. Make sure the top container is filled with water
2. If soap is available, lather your hands with soap.
3. Press down on the foot pedal to release water.
4. Wash hands under water for at least 20 seconds.
5. Dry your hands thoroughly, making sure there is no moisture left lingering on hands
6. Watch as the water is caught and travels to water your garden.

Sanitation and Health Education in your own School

In my school health and sanitation doesn't seem to be pushed very much, but we have all been educated as we grew up about it. Almost all of the school do not wash their hands before or after they eat. We have all the resources we need and they are all good quality and safe for us to use and we seem to take it all for granted as the majority of us have never had to live any other way. It doesn't seem as important to us because there are not so many life threatening diseases that we are exposed to.

Investigate similarities and differences between their schools and schools in the Eastern Highlands of Papua New Guinea

| Our school (Botany College) | Similarities | Highland schools |
|---|--|--|
| # clean safe water | # both have students and staff that have human needs | # unsafe dirty water |
| # no serious life threatening common diseases | | # serious life threatening common diseases |
| # large roomy classroom | # both learning environments | # thatched roofing |
| # proper safe roofs | # both have toilet facilities | # lack of water |
| # very expensive and luxury equipment | | # dirty small crammed classrooms |
| | | # bare minimum of equipment |

The importance of clean water, and investigating how it is supplied to keep it clean

It is important to have clean water so that humans can use it without being in risk of sickness and disease. Serious diseases can be carried in water so if you drink or touch it you would be in danger of getting diseases. Because of this, water has to be contained and cared for properly. It needs to be collected in ways to keep the water from getting contaminated and spoiled.

What is needed to clean hands to prevent disease?

Your hands need to be washed thoroughly with soap and water, making sure you wash all areas of your hand. Afterwards dry your hands for at least 20 seconds. It is just as important to dry as to wash your hands. This is because the water left on your hands will contain bacteria. It is important to dry this off.

How waterborne diseases are passed from one person to another

Waterborne diseases are passed from one person to another by the water you drink and handle. This is because the diseases are carried as tiny microbes in the water. Therefore when you drink the infected water you are ingesting the disease. When many people drink and handle contaminated water that came from the same place it could easily affect every person involved with this water.

Exactly what hand-cleaning is required to prevent disease?

To prevent disease, hands need to be cleaned well with soap and water using the 4 step method; wet hands, rub with soap for 20 seconds, rinse off and dry thoroughly. If hand sanitiser is available, it is good to use this after washing and drying to kill any germs that may still be on your hands.

Whether all hand-cleaning methods require water

There are two main cleaning techniques to clean hands, they are, hand sanitisers and washing hands with soap. Hand sanitisers clean hands by killing all the bacteria that causes sickness but they are not effective for cleaning hands that have visible dirt on them. Washing hands with soap and drying is better if done well because it cleans off dirt and kills bacteria. The most effective way is to clean hands with soap and water and then sanitise.

How would you teach other students about the importance of cleanliness?

It is important to educate them in a way that appeals to kids. You could incorporate the message into games, posters, songs, books and educational speakers. Kids learn by having fun and will remember something if it is learnt enjoyably. It is still essential though to inform them of the serious risks without being too harsh or abrupt.

Our device that we have designed has only been created to control water flow, our design does not include a way to actually clean or sanitise your hands. We have come up with and researched 2 natural antibacterial products that could be dropped into the water to kill bacteria.

Tea Tree – New Zealand Manuka

Tea tree oil has antibacterial properties to kill germs, This oil could be dropped into the water tank to kill the possible disease in the water. The children will wash their hands with the tea tree oil in the water and it will kill germs and leave hands with a fresh, clean smell.

Vinegar

Vinegar kills 99% of germs mould and bacteria. It is naturally a disinfectant and is a great, cost effective product to put in the water supply. Washing your hands with a solution of vinegar and water will kill almost all of the germs on your hands. The vinegar diluted with water the smell would not be so strong and just leave your hands with a pleasant, clean fragrance.



Lemon

Lemon is also a natural disinfectant; it is also very cost effective. It is naturally a sanitizer which leaves you with a fresh, crisp aroma. This could be easily grown if the conditions and climate are right. Each day lemons could be squeezed into the water supply to kill the germs, after the students wash their hands they will be left with a pleasant smell. If you did not want to squeeze lemon juice into the water supply it could be squeezed directly onto students hands.



Educational Material – Promoting Clean Hands

We have designed a poster to promote how important it is for the eastern highlands children of Papua New Guinea to wash their hands. It is visually appealing and will be of interest to the students which is a good way to get them interested and involved. We have written a poem on the poster which portrays the message that washing and drying your hands is very important. The poem is very catchy but is in English, if used it would need to be translated to Pidgin English so that it could be read in Papua New Guinea.