

Hwa Chong Institution
Project Work
Category 3
Inventions Log Book
(Revised for 2020)

Title of Project: Eco ³
Group Name: Eco ³
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1. Problem Finding

(The beginning...)

Identify a problem you would like to solve. You may want brainstorm for problems using different approaches eg thematic, survey or general brainstorming etc.

1 A Document a list of problems you have identified. Your documentation should show clearly how your group came up with the problems.

We identified some commonly used public facilities in Singapore and researched problems that people faced while using them.

1. Toilets with showering facilities

- Dry clothes might get wet
- Inadequate space for clothes and toiletries
- Things such as shampoo might spill.

2. Gyms

- Unhygienic facilities at times
- No proper places for putting away their items which could be sweaty

3. Barbeque pits

- Some places do not have shelters
- Barbeque pits can be unhygienic, and there may be insufficient places to store food and items if there is a big group of people

1 B You should have selected a problem based on some considerations. Identify and justify these considerations.

We have selected the problems faced in toilets with showering facilities. After thorough discussion with many people, we have realised that many people, including ourselves, have faced many similar issues when using these facilities just as we have mentioned in 1a. While having our Physical Education lessons in Secondary 2 last year, many of us had difficulties finding a dry place to place our clothes, especially in the shower as we had to change inside. Furthermore, plastic bags were a common item used to store dirty or wet clothes after showering and were only used once before being disposed of and hence this would negatively impact the

environment as plastic bags are not being used wisely. The other problems we considered at gyms and barbeque pits were not really feasible as people already had bags(gyms) and storage boxes (barbeque pits) which could be used. As most bags are not waterproof, most people when using toilets with showering facilities, would be using plastic bags instead. However, we believe that this is a waste of plastic bags and hence we decided to create a product that is portable for one's convenience, eco-friendly and waterproof.

1 C List some problems your group would like to solve. List also the considerations for selection of problem in the evaluation grid below. Score the considerations, against the problems, with points 1 (least significant) to 4 (most significant). Sum up the total points for each problem. Identify that problem you would like to solve.

Problem Evaluation Grid

*add more columns and rows where necessary

Considerations for Selection	Problems		
	Toilets with showering facilities	Gyms	Barbeque pits
Existing products	3	1	1
Cost of existing products	3	2	3
Eco-friendliness	4	2	3
Total Score	10	5	7

2. Define the Problem

(This is one...)

Now that the problem has been identified. It is important to gather information on the extent of the problem and/or evaluate the usefulness of existing solutions based on *some criteria*. You may need to conduct surveys and research on existing solutions.

2 A Extent of problem (Research and discuss the problem and write down the problem statement)

Many people face the issue of their clothes becoming partially wet when in public showers etc with no suitable place to separate and store them. Other also face problems such as spillage of their shampoo ruining their clothes or difficulties with finding dry places to store their valuables.

2 B Compare and contrast the existing or similar solutions.

Currently, some existing products include plastic bags , Ziplock bags , recyclable bags and drawstring bags. These bags are all cheaper than our existing product. However, our product is more durable,eco-friendly and also has many compartments to separate our items. Although existing products are waterproof and can also store items, it does not have any compartments to separate items which result in problems such as spillage of shampoo ruining clothes and valuables. There is also no way to keep one's dry clothes dry as there is no space to separate dry and wet clothes. Our product is able to combat these problems with its many waterproof compartments to separate items for storage. As such, one's items can be safely stored with no risk of such accidents.

3. Your BIG IDEA#

(Developing the idea....)

Write down your proposed invention and why you want to do it. State also how you think your proposed invention is better.

3 A Describe your proposed invention.

Our product is a waterproof and reusable storage space that is eco-friendly and durable. It is able to store people's belongings and valuables thus preventing them from being stolen. There are also many compartments within our product so as to be able to separately store your items and prevent accidents such as spillage of soap or wet clothes dirtying and wetting dry clothes. It is also waterproof with suction cups so as to be able to be used in public showers even when hooks are not provided in these showers to provide convenience to our users.

3 B Explain the purpose of your proposed invention and the potential benefits to users.

We made our product so as to provide an eco-friendly, affordable storage space for users such as swimmers and campers who frequently use public toilets. Our product will help to prevent others belongings from being stolen, providing a convenient storage space for people to their items when showering and to keep people's belongings and valuables dry

3 C In what ways would your proposed invention be different and/or better than existing solutions, if any?

Existing products include plastic bags, Ziplock bags, recyclable bags and drawstring bags. These bags are all cheaper than our existing product. However, our product is more durable, eco-friendly and also has many compartments to separate our items. Although existing products are waterproof and can also store items, it does not have any compartments to separate items thus resulting in problems such as spillage of shampoo ruining clothes and valuables there is also no way to keep one's dry clothes dry as there is no space to separate dry and wet clothes. Our product is able to combat these problems with its many waterproof compartments to separate items for storage. Our product also has suction cups attached to it to bring convenience to our users. Not all public toilets have hooks for people to hang their bags on when they shower, however, our product can be used anywhere as the suction cups are able to stick on to the walls for usage by our users.

3 D What are some problems you expect in the course of your proposed invention?

One problem we might face is that we might not be able to have a suitable model for our product; another problem might be that we might not be able to choose a good enough material to be used to make each section of our product which might affect its effectiveness and cost.

3 E What and when are the major milestone (project timeline) in your invention?

January: Formation of groups and research

February: Deciding on product and features of the product

March: Researching of materials

April: Working out the construction process of the product

June: Coming up with the model (3D Model)

July: Preparing for Final Evaluation + Written Report

4. Proposed Construction or Modelling Process*

(This first... then that...)

You are now onto the fabrication of your prototype/ product. You need to select material and understand how to put them together so that your prototype/ product can perform its function.

4 A Explain how and why the materials were chosen for the prototype/ product of your invention

We wanted to make the materials waterproof and environmentally friendly compared to plastics, hence we chose:

Silicone:

- Eco and ocean friendly as it does not break down much.
- Proven to be less harmful than plastics
- Waterproof
- Cheap
- Extremely durable
- Flexible and can be fabricated to be folded
- Can be moulded into different shapes

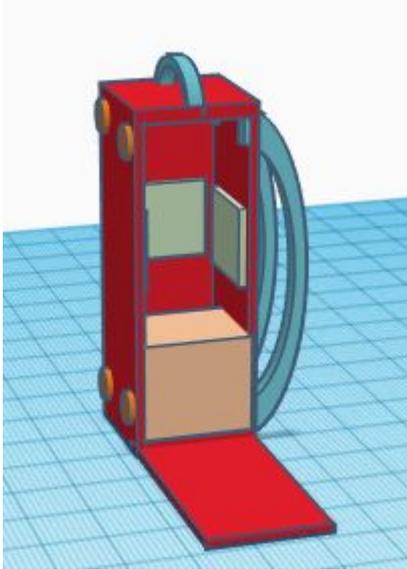
Recycled Polyester:

- Used to make our waterproof compartments and back straps
- Cheap
- Waterproof
- Eco- friendly
- Very durable

4 B Explore these considerations that may guide the construction of your prototype/ product.

We wanted to make the product portable, and have ample space to put clothes and toiletries, hence we created a backpack-like product which would enable users to carry them around easily. We also wanted the product to be able to be easily placed at areas which are not wet, hence also adding suction cups to allow users to stick the product onto any wall. This would be extremely useful in shower cubicles as there are some which do not have hooks on the walls around it or the door, and placing it on the ground would not be a logical decision. Hence the suction cups provide convenience in the placing of the product.

4 C Propose how the prototype/ product will be constructed or developed. You may use drawings and photographs.



There would be a zipper located on one side of the product to allow the product to be opened. Inside it, there is a beige coloured compartment which is used to store wet clothes or other items, and dry clothes can be placed right on top of the compartment. The blue pockets located on the sides are used for storing toiletries such as shampoos, allowing for a more secure storage of these items. 4 suction cups will be attached to one side of the product to allow the product to be stuck onto any surface for greater convenience. Backpack straps are located on the opposite side of where the suction cups are located, allowing the user to carry it around like a backpack. Should the user not wish to do so, there is a handle located at the top of the product, to allow the user to carry it like a briefcase.

Warning:

- *Video / animated simulation only if prototyping is absolutely no possible.*
- *Video / animated simulation must be logical and convincing that the invention works.*
- *Constraints must be clearly included in the logbook or the project will be heavily penalized.*

5. References

Read <http://www.bibme.org/citation-guide/apa/> on how to cite references.

6 A Cite the references you have used for your project work. Your source of reference should come from different types (eg books, magazine, websites, journal articles, interview, photographs, product brochure, reviews etc.)

- Noun Project. (n.d.). Retrieved from <https://thenounproject.com/> (non-copyrighted images)
- Stannard, P. (2007, November 3). WALTHAMSTOW: Pool thieves leave dad and son without clothes. Retrieved from <https://www.thisislocallondon.co.uk/news/1807346.walthamstow-pool-thieves-leave-dad-and-son-without-clothes/>