

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: <u>B.I.N</u>
Group Name: B.I.N
Group Members: 1)Zhang Dingzhang 2)Jiao Tian Jing 3)Ivan Yin Zhan Yi

1. Problem Finding

(The beginning...)

Identify a problem you would like to solve. You may want to brainstorm for problems using different approaches eg systematic, 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.

1. earthquakes

-Earthquakes are major events all across the world except some places, and affect millions of people each time it happens, not to mention the aftershocks and impacts of the earthquake after it happens, thus we need to minimize the amount of lives lost due to an earthquake.

2. small items getting lost

-Small items are hard to notice, and it is easily lost because it is very hard keeping track of the items, with people needing to constantly check if the items are still there incase they lost it.

3. dustbin too dirty

-Dustbins are very dirty as it is a place to throw garbage, and some people think that garbage cans are disgusting and do not want to touch them, leading to conflicts on who will be taking out the trash.

4. coins not sorted out

Coins are small items, and in large quantities, the value of the coins will be hard to take track of, and take up alot of space, not to mention easily dropping and losing coins due to the size of them.

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

small items getting lost, people have small items such as keys, wallets, ear phones, powerbank. We decided to come up with an idea that is able to help a person locate his things, so that he is able to find the items easily. (before going out, some people might have to take their ear phones or powerbank out, and they might not remember where they find it. they might spend a long time finding their items before going out.)(people might put their stuff randomly and lose their valuables.)

Earthquakes destroying buildings, trapping people. We decided to build a robot to navigate a collapsed building site and look for signs of life in the rubble.

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		
	Item locator	Earthquake robot	Bin contraption
feasibility	1	1	3
relatability	3	1	2
importance	1	3	1
Total Score	5	5	6

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)

The problem that we have identified is that people might be unwilling to empty their dustbins due to how dirty they are, and would very much prefer to leave the trash there for as long as possible before throwing it away. This can lead to pests and germs breeding in the dirty environment, and can lead to quarrels as to who is going to throw out the trash.

2 B Compare and contrast the existing or similar solutions.

Currently, there are tools used by cleaners to pick up trash bags. This tool consists of a claw connected to a handle which allows the cleaner to pick the trash bag up without touching the bag.

Next, there are also special dustbins created specifically for easier and cleaner usage of the bin.

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.

This will be a contraption that fits all the home and school dustbins, and allows the people using it, to lift out the trash from the dustbin with out coming into contact with the bin

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

The benefit is that using the bin will be a lot more hygienic, and the process of depositing trash from the dustbin will be a lot faster and less disgusting

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

This contraption will be able to fit many types(all types of supermarket bags) of plastic bags, unlike certain current solutions, which requires specially designed plastic bags, and that will not allow the user of the bin to reuse the bags they get from groceries, and with the additional use of plastic, it will be even more non environmentally friendly.

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

The contraption could potentially break apart, it could be hard to make, or the prototype could be unable to tie or pick up the trash bag properly.

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

Finding the problem, thinking about how to create the product itself, coming up with the basic outline of the product, and finally, making the products

#must be able to be constructed based on current / emerging technologies, must not violate the laws of Science or go against the laws of nature.

4. 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

The materials were chosen for their cost, and for their strength, so that it can be affordable, and can hold the weight of a full trash bag.

thus, we decided to use hard plastic for the prototype

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

4 C Document the prototype/ product development stages. You may use drawings, photographs or videos.

pictures and videos of the proto type will be in the google slides during presentation

5. Modification and Evaluation

Upon the completion of your prototype/ product, you would need to see if it is working the way you want it to work. Check if your product has met the identified purpose and the user's need; and implement necessary modifications and improvements. This process may take several rounds.

5 A Write down your prototype/ product test criteria and check against it if it works. Identify areas of weakness for modification. Indicate the test iteration and date of test.

Test Iteration:	Tick			Remarks
Test Date: 14- 8-21	Pass	Fail	Potential Failure	
remove bag without touching trash?	yes			the bag was easily lifted
resistance ?	yes			the hard plastic and hot glue stood strong
instant and neater?	yes			YES

*Add more rows for more criteria

** Repeat table for next test iteration

6. 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.)

<https://www.bloomberg.com/news/features/2019-07-11/how-the-world-can-solve-its-2-billion-ton-trash-problem>

<https://www.morclean.com/wheelie-bin-washers/>

<https://www.todayonline.com/features/trash-talk-no-time-waste-dealing-singapores-mounting-trash-problem>

<https://medium.com/@swachhcoin/top-5-challenges-of-smart-waste-management-59ecf3e24b6d>