

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project:
Container for bone disposal
Group Name:
3-38
Group Members:
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1. Problem Finding

(The beginning...)

Identify a problem you would like to solve. You may want to 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.

Common places people go to:

1. School
2. Activity centers
3. **Eating Areas (Most visible problems)**
4. Home

Eating Areas:

Canteen

Hawker centers (Affects most people in Singapore)

Restaurants

Problems:

Long queues,
People do not return trays,
Oily tables due to people disposing food on it,
Difficult to manoeuvre through the hawker center,

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

- How many people it affects
- How common is the problem
- How many negative impacts does it bring
- How the public would respond to the solution
- The solutions are feasible

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

Considerations for Selection	Problems		
	It is inconvenient to return tray.	Long queues resulting it to be inconvenient in manoeuvring/ buying food.	People dispose food waste onto the table making it oily
The problem affects many people.	2	2	1
The problem has a feasible solution which would probably not be expensive.	2	1	3
People will be interested in using the product	2	2	3
The problem is widespread and common	1	2	2

Total Score	7	7	8
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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 discuss the problem and write down the problem statement)

Many patrons dispose the bones directly onto the table as they find it annoying to dispose the bones onto their plates or tray. In a survey, 20% of respondents admit that they do that, 22% of the people said that it was oily, 22% of the people found it inconvenient to other patrons and 33% said that they found it overall dirty.

This causes the eating place to be unpleasant, dirty and oily from the bones. During peak periods, it is very inconvenient to eat at the hawker centers as they are disgusting and there are not enough cleaners to clean them up.

It is also unhygienic as birds who are attracted to these leftovers make the tables messier and the dirty birds might even cause potential hygiene issues. Also, if the bones are scattered on the floor, it makes the eating area even dirtier.

2 B Compare and contrast the existing or similar solutions.

Many people directly dispose of the bones onto the tables, cleaners use the same clothes that they use to wipe the table to sweep the bones away and clean the table. This makes the tables oily and dirty.

Patrons have to wait for the tables to be cleared before they can use them, but it is very inconvenient and wastes time.

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.

It will be a container that will be placed or attached at every table for patrons to dispose the bones from their food.

The patrons would be able to directly discard the food bones into the container by pushing the lid down. When the cleaners walk past, they can place their dustbins on the trolley below the container, pull the catch at the bottom of the container and the bones would fall into the bin.

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

It makes it more efficient for the cleaners to clear up. Patrons who want to dispose of the bones also have a place to throw them. There would not be food waste on the table and birds would not come, making it a more pleasant eating area. Then, more tables will be clean and available for more patrons to use.

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

The tables would be less oily as cleaners which clean the tables would not wipe the oil over the table.

It is also more convenient to the patrons as they can discard the bones and they would not be annoyed by it.

This also saves time as the cleaners would not have to wipe the tables and other patrons can use the hawker center tables more, it is also more efficient to dispose of the bones.

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

- ★ It might be difficult to close and open.
- ★ The bottom might open by itself as the bones are thrown in with too much force.
- ★ It might not attach firmly to the table
- ★ It might be difficult to clean the inside of the container

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

Sketching - by 30th May

Modelling - by 15th June

Prototype test - by 30th June

Refinements - by 30th July

#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

Strong plastic/ tupperware plastic (for container itself)- strong for carrying the weight of the bones, translucent so that the cleaners can see when the container is full for clearing.

Wood (for lid and bottom) - strong and easy for construction

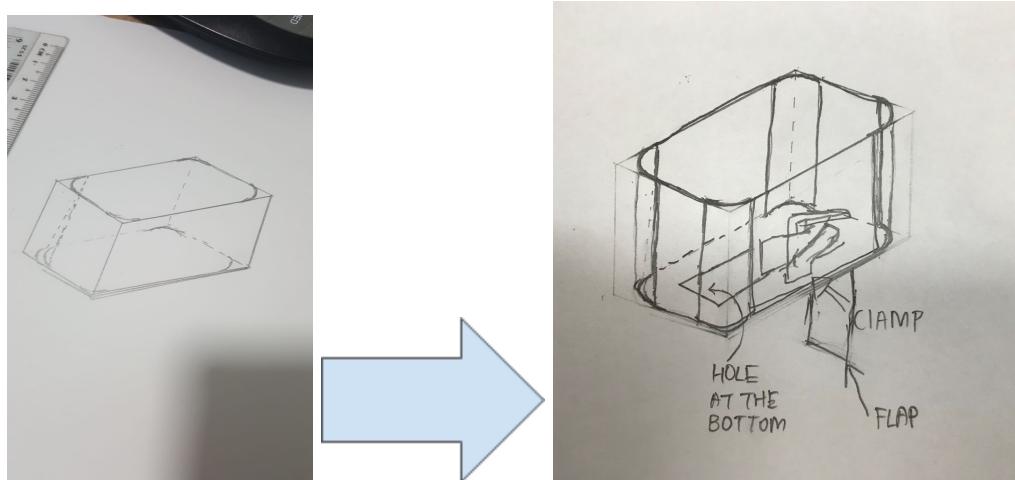
4 B Explore these considerations that may guide the construction of your prototype/ product.

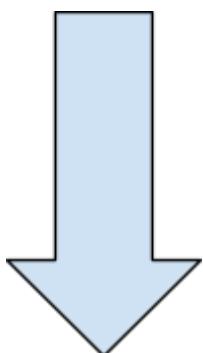
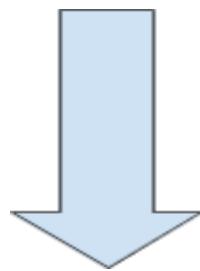
Make sure that the item would not drop from the weight, make sure it is attached firmly to the table.

Enable bottom of the container to open and close easily.

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

Sketches and photos of models/ prototypes :







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: Test 1	Tick			Remarks
Test Date: 27th June	Pass	Fail	Potential Failure	
<u>Test Criteria 1</u> Able to attach to table			✓	Lid tilts outwards from the table. May detach if the bones are too heavy.
<u>Test Criteria 2</u> Lid is functional and convenient		✓		Lid not completed.
<u>Test Criteria 3</u> Bottom can be open and closed easily.		✓		Bottom easily open by itself because it is not attached properly which causes bones to drop out.

** Repeat table for next test iteration

Test Iteration: Test 2	Tick			Remarks
Test Date: 3rd June	Pass	Fail	Potential Failure	
<u>Test Criteria 1</u> Able to attach to table	✓			Clip able to attach to any table steadily.
<u>Test Criteria 2</u> Lid is functional and convenient		✓		Having to open and close the lid makes the lid oily and it is even more inconvenient if the patrons have to open and close it to dispose of bones.
<u>Test Criteria 3</u> Bottom can be open and closed easily.		✓		It is difficult for the cleaners to find the catch at the bottom of the container and it is difficult to close.

Test Iteration: Test 2	Tick			Remarks
Test Date: 3rd June	Pass	Fail	Potential Failure	
<u>Test Criteria 1</u> Able to attach to table	✓			Clip able to attach to any table steadily.
<u>Test Criteria 2</u> Lid is functional and convenient	✓			Lid has been changed to flipping lid and user can gently push down the lid to throw the bones inside and the lid will close again.
<u>Test Criteria 3</u> Bottom can be open and closed easily.	✓			Bottom has a visible catch that the cleaners can pull out to let the bones fall out and the cleaners can push the bottom back in.

OR if you are creating an animation / video to show how your invention will work, write down the different possibilities / outcomes [success or failure) if a full-scale prototype is to be constructed.

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, magazines, websites, journal articles, interviews, photographs, product brochure, reviews etc.)

Citation: If you think the hawker centre is not clean enough, you are not alone (2017 October 11). *Channel News Asia Singapore* Pg 1 Retrieved April 1st, 2019 from Channel News Asia

The Big Read: Grumbling and rumbling at social enterprise hawker centres — what's the rub? (2018 October 20). *TODAY* Pg 1 Retrieved 21st July, 2019 from TODAY