

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: Half boiled egg cooker
Group Name: 03-31, Perfect Masters Egg
Group Members: 1)Ng Kai Jie , Ethan 2)Calum tan Kok Yuan

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.

1. When they use the hairdryer they would not know that the air is getting too hot and might spoil their hair if they keep using the hair dryer at a very high temperature. When I was searching online for a new hairdryer, I found out that the people who use the hairdryer at a really high temperature would spoil their hair.
2. When the elderly have a fall, they cannot just shout for help or get up by themselves. We found this when one of our grandmothers fell down and could not shout for help. His family only heard a crashing sound and went to check what was happening. If the people could not hear the crashing sound they would not have realised that his grandmother had fallen down.
3. When we are cooking half boiled eggs we would never know what is the right temperature to cook the egg and may end up eating the egg hard boiled. Our group figured this out as one of our group members was trying to boil half boiled eggs but kept getting hard boiled eggs

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

The first consideration is if the problem is worth solving. The problem must have an impact in our daily lives to allow our invention to have the same impact.

The second consideration is the cost of materials. If the materials are too costly, we might not be able to get the most suitable materials for our invention. It also affects the feasibility of people wanting to use the end product.

The third consideration is the regularity of people having the problem. The problem must be widespread, experienced by a significant number of people and also how often the problem is experienced by people. This is also to allow our invention to have the impact on our daily lives.

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		
	half boiled egg being too hard	hairdryer being too hot	the elderly not being able to call for help
worth solving	4	3	4
cost of materials you need	3	3	1
the regularity of people having that problem	2	2	3
Total Score	9	8	8

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 people who make half boiled eggs and does not like hard boiled eggs, they would be very frustrated if the egg comes out hard boiled, especially if that was the last egg the person has. The problem is that half boiled egg eaters might not create good half boiled eggs and might end up with a hard boiled egg. The half boiled egg eaters are

usually the ones having the problem. The problem usually occurs in the kitchen and it happens when people are trying to make half boiled eggs for them to eat. The problems impact the amount of eggs being used to cook a perfect half boiled egg as the half boiled egg eater might not like hard boiled eggs and might throw the failed half boiled eggs away.

2 B Compare and contrast the existing or similar solutions.

Our egg maker has a timer and a thermometer while other egg makers have only either a thermometer or a timer. Alternatively, you could go out and eat in cafés but it would be better to eat the egg in the comfort of your home

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 invention is a box-shaped container that has 3 layers. The top layer contains cold water that will be dispensed onto the eggs in the middle layer to stop the cooking. The middle layer is the layer where the eggs are cooked. The bottom layer is where hot water from the middle layer drains out into.

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

The purpose of this invention helps the half boiled egg eater to make a perfect half boiled egg without having to worry about the egg over cooking and turning into a hard boiled egg. It benefits the users by helping them maintain a perfectly cooked half boiled egg. One can also have the perfect soft-boiled egg at the comfort of his/her home, without having to pay the high prices outside.

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

Our proposed invention has a thermometer to tell the users if the water is too hot or too cold, helping them know to either let the water cool down for a little while before putting in the egg. There is also a chemical called thermochromism that helps the user detect easily when the eggs are cooked. A mechanism in the cooker also helps the eggs to stop cooking.

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

The thermometer might be a challenge to install as the thermometer might not be heat resistant and the installation might cause leaks. The wiring for the thermometer

might also be a problem. There might also be the problem that the thermochromism getting into the water making the eggs unsafe for consumption.

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

The major milestone in our invention is when we found the idea of the half boiled egg maker after researching for much information about the product

#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.

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 chose for our prototype are plastic as plastic is water resistant and can withstand high temperatures. It is also cheap to obtain

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

The cost of the raw materials and how user friendly it is and so that it doesnt break or spoil easily

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

OR

If construction of the prototype is not possible, then you have to create an animation / as a proof of concept that it can be applied in a bigger scale.

4A Explain why construction of a prototype is not possible and the proof of concept is needed in your case.

Due to the ongoing Covid-19 pandemic, several materials like thermochromism could not be obtained. As a result, we concluded that the best way to showcase our invention is to create a poster.

4B Briefly explain how the video / animation can effectively show how your invention will work and the different considerations.

The poster will include a drawing of the cross-section of the invention. This will allow people to understand how our invention works and the features of our invention.

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.*

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:	Pass	Fail	Potential Failure	
Test Criteria 1				
Test Criteria 2				
Test Criteria 3				

*Add more rows for more criteria

** Repeat table for next test iteration

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.

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.)

The times we and our mentor have met for project work.

EVENT	DATE	TIME
IVP Meeting	20 February 2020	2 - 3.30

IVP Meeting	27 February 2020	2 - 3.30
IVP Meeting	5 March 2020	2 - 3.30
IVP Meeting	12 March 2020	2 - 3.30
Project Mentor Meeting	24 March 2020	2 - 3.30
IVP Meeting	31 March 2020	2 - 3.30
IVP Meeting	7 April 2020	2 - 3.30
IVP Meeting	14 April 2020	2 - 3.30
IVP Meeting	22 April 2020	2 - 3.30
IVP meeting	30 April 2020	2 - 3.30
IVP meeting	7 June 2020	2 - 3.30
IVP meeting	17 June 2020	2 - 3.30
IVP meeting	24 June 2020	2 - 3.30
IVP meeting	1 June	2 - 3.30
IVP meeting	8 June	2 - 3.30
IVP meeting	15 June	2 - 3.30
IVP meeting	22 June	2 - 3.30
IVP meeting	29 June	2 - 3.30
IVP meeting	1 August	2 - 3.30
IVP meeting	5 August	2 - 3.30