

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

Title of Project: <u>Unbreakable Pen Tips</u>
Group Name: 3-33
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Problem Finding

(The beginning...)

Identify a problem you would like to solve. You may want to brainstorm for problems using different approaches e.g. 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.

During the brainstorming process we thought of the following problems:

- Packet drinks were causing a lot of plastic waste due to the straw that is always attached at the side.
- Sometimes when pouring water into another container the water may spill.
- Sometimes people knock cups over by accident and they spill all over.
- When you drop a pen, the tip may break, thus wasting the pen and causing a mess.
- The strings to blinds cannot be kept orderly and constantly run all over the floor, causing inconvenience
- Shoes for flat footed people.

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

We selected the unbreakable pen tip as it was the only viable option available that has not been sold in the market yet. The problem was relatable to us as students, hence we decided that it would be a worthwhile project to do.

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		
	#1 A "straw free" package drink	#2 A cup that will never topple	#3 An unbreakable pen tip
Consideration 1 Does it help the person who is using the product?	1	2	3
Consideration 2 Has the idea been on the market yet?	2	1	2
Consideration 3 Is it feasible?	1	2	3
Total Score	4	5	8

With that we have decided to make an unbreakable pen tip.

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)

People nowadays spend much time working or studying. Thus , pens are very essential to them. However, people may not be careful and accidently drop their pen onto the ground and the pen tip may break.This can cause much frustration as they have to use another pen or go buy another one. There will be even more frustration caused if the pen is a new pen or is very expensive. By inventing a pen in which the pen tip would not break, much frustration, waste of money and waste of resources will be prevented.

2 B Compare and contrast the existing or similar solutions.

Factors + Factor Ranking\ (x1)=most impt	The Unbreakable Pen Tip (score)	Gerber Impromptu Pen (score)	Karas Kustoms Retrakt Pen (score)
Durability (x1)	3	1	2
Price (x2)	1	2	3
Weight (x3)	1	2	3
Total:	8	11	17

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 proposed invention is to make a pen with a tip that will not break when it falls off a surface. People nowadays spend much time working or studying. Thus, pens are very essential to them. However, people may not be careful and accidentally drop their pen onto the ground and the pen tip may break. This can cause much frustration as they have to use another pen or go buy another one. There will be even more frustration caused if the pen is a new pen or is very expensive. By inventing a pen in which the pen tip would not break, much frustration, waste of money and waste of resources will be prevented.

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

The purpose of this invention is to help students save money to buy other pens as sometimes when they use their pens it can drop and the tip of the pen will break. This problem is very annoying as not only will you need to go and buy another pen but you will also have to waste your time doing that when you can actually use it for other purposes. The pen is cheap and can be sold readily anywhere.

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

Existing solutions include pens that have stronger tips that will not break easily, as it is made out of strong metals. However our pen will have its tip protected at any time other than using. It is also not as impregmatic as the other options, as such strong metal sold in large amounts will not be cheap and readily available for students or in general, the public to buy. If it is a matter of wasting money, I'm sure that everyone would agree it's a bigger waste of money. It is a huge waste of resources that could go into bigger problems than pens.

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

- The style of holding the pen is also limited. Different people hold pens differently and the design may not be able to cater to them.
- Limitations for making the pen too also includes the price of all the material used to make the pen. The unbreakable pen would however, be a way to save money by buying new pens. So the price of the pen might need to be a future survey question. (e.g. How much are you willing to pay for a pen that saves you money?)
- Do take note for the second point that the materials will not be expensive, but modifying a pen in real life is easier said than done. It will require professional equipment that we will not have, hence it will be hard to get someone to modify our pen too.

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

From 2020 to 2030(nowadays)or maybe later as by then, there may be even more inventions other than this as technology will be better then. However, this can still be an affordable and available type of pen regarding the time and century.

#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.

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.

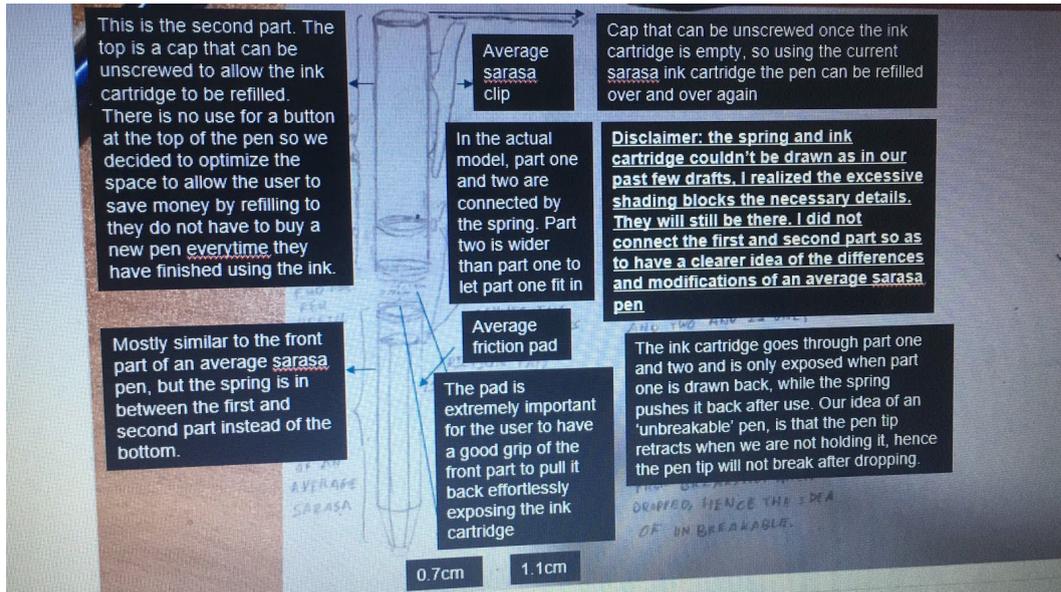
4 A Explain how and why the materials were chosen for the prototype/ product of your invention

It is cheap and readily accessible. It was also more or less similar to the original prototype, yet rearranged. This is to ensure that the pen company will not have to spend extra money to manufacture each pen, hence making it more accessible for the general masses who frequently use pens. It gets the job done and the pen tip will no longer break without having to make the pen strong by using strong metals.

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

So far we are still sticking with this idea as we could not find any flaws.

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



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.

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

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.*

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://coolmaterial.com/feature/nice-pens-that-last/>