

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: The Access-ory
Group Name: 3-17
Group Members: 1) Timothy Ng 3A1 2) Benson Ooi 3A1 3) Tan Sing Kuang 3A1 4) James Soo 3P2

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.

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

We identified many problems during the brainstorming process. After much thought, we came down to the following:

We first thought of problems that caused inconveniences during our everyday lives:

1. Earphones always get tangled when you store them
2. People find it difficult and inconvenient to take credit cards out of their wallet/purse, especially if they have a lot of cards.
3. There is an increasing number of missing pet posters and advertisements about missing pets.

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

- 1) Relevance. If many people face this problem, they will find our invention useful and purposeful
- 2) Existing products. If there are a lot of similar products on the market to solve this problem, people may not be inclined to make use of our invention, provided our invention is superior in functionality and cost, two important aspects that consumers consider when purchasing products.
- 3) Feasibility. Whether the problem is too simple or too complicated to be a one year project.

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 what problem you would like to solve.

Problem Evaluation Grid

*add more columns and rows where necessary

Considerations for Selection	Problems		
		Earphones always getting tangled when you store them	Many pets going missing each year
Relevance	3	4	3
Feasibility	4	3	4
Existing products	1	2	4
Total Score	8	9	11

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.

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

Problem number 1 : People find it inconvenient to access to their credit cards with tight slots in conventional wallets. This causes inconvenience when making payment

Problem number 2: People find it difficult to access coins when making payment or receiving change, once again making payment inconvenient.

2B Compare and contrast the existing or similar solutions



Fig 2.1

1. There are many wallets that are specially made to hold a lot of cards like this one. However, this requires you to carry two wallets around as this wallet cannot hold money, this wallet also requires you to flip through all the cards to look for the one that you want.

Fig 2.2

2. There is a wallet that fans out your cards so that you can see everything, however, it only can hold very little amounts of money as the notes are held on a clip on the outside of the wallet. Small compartment for coins and keys.



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 idea is a wallet/purse with a special section that holds credit cards. This wallet/purse will have a compartment that will fan out all the credit cards when the wallet is opened. It will also contain a coin dispenser/sorter which will make keeping and taking out coins much more convenient.

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

Our invention aims to ensure users have enough space in their wallet/purse to place credit cards and make it easier for users to find a certain card when they need it. It also aims to make it easier for

users to store coins and find coins. This would make it more convenient and less time consuming for users when they are using a wallet/purse.

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

Our invention would make it easier to look for a certain card than conventional wallets/purses and it would also be better than the wallet that fans cards out as it also stores coins and notes easily.

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

The building and installation of the fan mechanism onto wallets or purses. This is due to the fact that the parts will most probably.

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

April to May: Drawings, planning, buying materials

May to June: Prototype 1 and find out challenges

June to July: Prototype 2 and present at Mid-term Evaluation

July to August: Make final changes for final prototype

#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.

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

We chose wood and acrylic as they were cheap to buy, lightweight, relatively easy to work with and were not fragile. (Fig 4.1 - Fig 4.6) For our final product, we 3D printed the coin mechanism so that everything was accurate and for the card mechanism,

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

- Can it survive being used constantly?
- Is it easy to use?
- Does it bring more convenience to the user?
- Is it easy to carry around?
- Does the wallet keep its functionality?

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

Acrylic

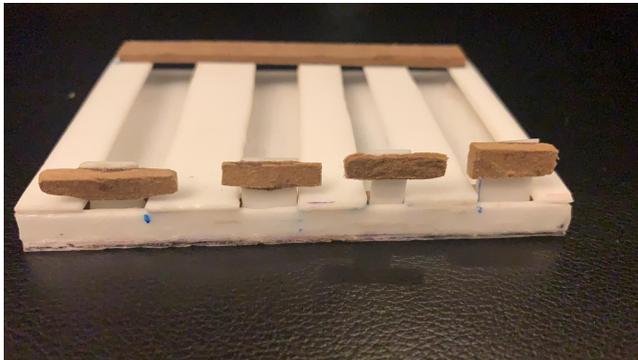


Fig 4.1

Wood

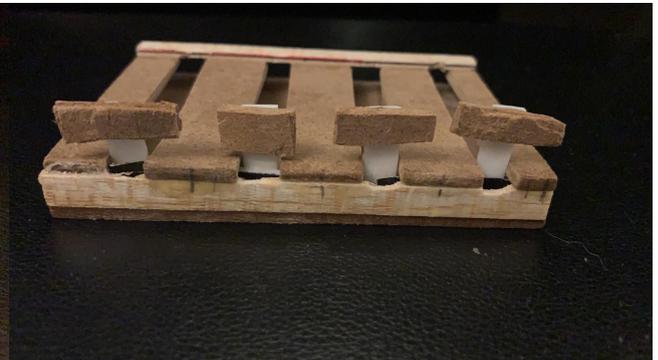


Fig 4.2



Fig 4.3

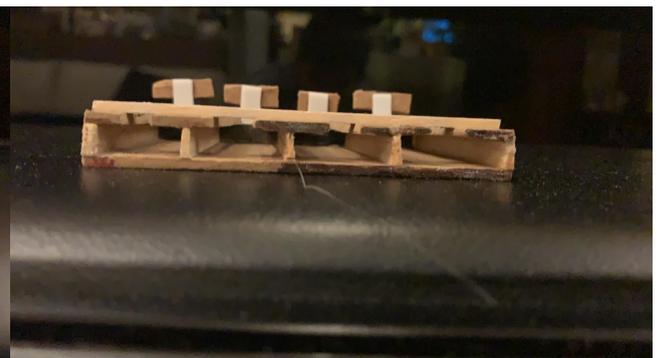


Fig 4.4



Fig 4.5



Fig 4.6

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. 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 the test.

- 1) Must be SAFE to operate
- 2) Must be Sturdy
- 3) Design of product
- 4) Must be Cheap (For our product to be affordable to the general public)

Test Iteration: Prototype (wood)	Tick			Remarks
	Pass	Fail	Potential Failure	
Test Date: 15 July				
Smoothness of mechanism			o	Dimensions not precise. Inconsistent smoothness when used.
Weight	o			Relatively comfortable to carry.
Durability			o	Some parts were flimsy, and were loose
Size	o			Fits nicely on wallet.

Test Iteration: Prototype (acrylic)	Tick			Remarks
	Pass	Fail	Potential Failure	
Test Date: 15 July				
Smoothness of mechanism	o			Smoother when used, due to the acrylic being smoother and easier to work with.
Weight	o			Relatively comfortable to carry, similar to wood.
Durability	o			Rigid, felt more sturdy than the wood version
Size	o			Fits nicely on wallet, similar to wood.

Test Iteration: Final Product.	Tick			Remarks
	Pass	Fail	Potential Failure	
Test Date: 28 July				
Smoothness of mechanism	o			Due to exact dimensions, the mechanism was very smooth, with little resistance when dispensing coins
Weight	o			Light weight.
Durability	o			Rigid, felt durable and did not scratch as easily as the prototypes.
Size	o			Fits nicely on wallet.

Conclusion : The final product as met our identified purpose and our expected user’s need.

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.)

1. Tran, C. (n.d.). Survey: Mobile Wallet Statistics. Retrieved from <https://www.creditdonkey.com/mobile-wallet-survey.html>
2. Browne, M. (2018, August 23). For customers, the waiting is the hardest part. Retrieved from <https://www.supermarketnews.com/retail-financial/customers-waiting-hardest-part>
3. Long queues still vexing shoppers, survey suggests. (2010, August 04). Retrieved from <https://www.bbc.com/news/business-10866718>
4. Quick Access Thin Credit Card Wallet. (n.d.). Retrieved from <https://store.fantomwallet.com/>
5. (n.d.). Retrieved from <https://www.ogondesigns.com/en/>
6. Considered Carry Goods: Wallets, Bags, Phone Cases & More. (n.d.). Retrieved from <https://bellroy.com/>

