

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: SMART cupboard
Group Name: RKZL
Group Members: 1)Ryan Pua 2)Eng Kian 3)Yin Cheng 4)Ying Hua

1. 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. Eye strain
2. Bad posture
3. Forgetting to do homework
4. Not wearing the appropriate clothing

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

Does this problem have serious consequences? This helps us to find out the severity of the problem and how much it affects people. How many people want a solution for the problem? Because, if nobody wants a solution, even if we make a fantastic solution, nobody would use it. Is there already a solution for the problem that works well? Because, if there already is a solution for the problem, and the solution works well, there is no need for another solution unless the other solution is better.

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 Eye strain	#2 Forgetting to do homework	#3 Not wearing the appropriate clothing/ having difficulty choosing clothes
Does the problem have severe consequences?	2	2	3
How many people want a solution?	2	3	3

Is there already a solution?	3	1	4
Total Score	7	6	10

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 we are facing is that we have trouble recalling which clothing to wear on specific days. For example, we have seen / experienced the problem of students forgetting to bring their PE clothing.

Additionally, sometimes, we are unaware of the weather ahead, as a result we are unprepared in terms of clothing when we are travelling. For example, the weather forecast predicts that there is going to be heavy rain later in the afternoon, however, we sometimes forget to check the weather, or are too lazy to check it, as such, we also get drenched in the rain.

2 B Compare and contrast the existing or similar solutions.

Online schedule management apps. Online schedule management apps can only be viewed from the phone while our product can be viewed on the phone and on the wardrobe. Our product can also help to prepare your clothing everyday while with online schedule management apps, you have to look at the schedule and prepare the clothes yourself.

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 invention is the SMART wardrobe, as the name suggests, it helps you to pick the clothes for that specific day, according to your schedule and the weather forecast. After picking the clothes, all you have to do is press a button and a nice fresh pair of clothing is prepared for you.

Another feature of our invention is that you are able to see how the clothes look on you before even putting them on. This is achieved by using a filter and a camera that allows you to pick specific clothing for combinations.

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

Our invention is designed to solve the problem of forgetting what to wear on that specific day or wearing the wrong clothes. Which may cause many problems for the people that make this mistake. Additionally, it makes the whole process of getting up early in the morning way more easier and smoother

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

Our invention is better as you do not have to pull out your phone to check the weather or your schedule, our invention has a built-in system which can prepare your clothing before-hand.

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

1. None of us from our group know much about designing wardrobes
2. We may lack the proper materials to make it

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

1. Thinking of an ideas
2. Choosing an idea
3. Developing the idea
4. Modelling the idea
5. Testing the idea
6. Documenting the idea

#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**
- 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.**

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.**

We do not have the materials to make the prototype

It is hard to make our prototype in a small scale

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

It shows how the cupboard works, by demonstrating its features and also the physical appearance of the cupboard.

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 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.

- It works as intended. (success)
- It partially works as intended. (partial success)
- It does not work as intended. (failure)
- It works better than expected. (success)
- It has slight bugs but works as intended. (partial success)
- It works differently than expected, but is still useful. (success)
- It works as intended, but breaks easily. (partial success)

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.)

Pooja, K. (23 July 2018) Best Material finishes for Wardrobes retrieved from <https://www.houzz.com.sg/magazine/what-are-the-best-material-finishes-for-wardrobes-stsetivw-vs~110844503>

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Why wearing a proper uniform is important (15 July, 2021) retrieved from <https://www.prudentialuniforms.com/blog/why-wearing-a-proper-uniform-is-important/>

Gregor, M. (2 November, 2017) Why forming a Morning Routine is so important retrieved from <https://thriveglobal.com/stories/three-little-known-facts-explain-why-forming-a-morning-routine-is-so-important/>