

Hwa Chong Institution

Project Work

Category 3 Inventions Log Book

Title of Project: <u>Personal Extendable Desk</u>
Group Name: Personal Extendable Desk Group
Group Members: 1) Darrius Lim Rui Jie 1P3(19) L 2) Nicholas Yaw (1P320) 3) Leong Wei Chan (1P318) 4) Wang Shao Kai (1P326)

1. Problem Finding

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.

- Blue-light
- Using one's devices for too long (Screen time)
- Spectacles getting blurry when getting off buses or trains or anywhere cold
- Spectacles falling off
- Looking too closely at books or devices
- Accidentally cutting yourself with a knife
- Food Tray Return Issues
- Not enough space for PLD and notes

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

- Blue-light filter (Blue-light)
- Screen time manager (Screen time)
- Spectacles auto cleaner (specs getting blurry)
- Spectacle hooks (Spectacles falling off)
- Knife cutting aid
- Food tray returning reminder
- Extension of the table for PLD

1 C List some problems your group would like to solve. List also the considerations for selection of problems 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		
	#1 Not enough space for PLD and notes	#2 Food Tray Return Issues	#3 Accidentally cutting yourself with a knife
Wide Target Audience? (Out of 3)	3	3	2
How solvable is the problem? (Out of 3)	3	2	2
Will the audience use it?	3	3	2
Total Score (Out of 9)	9	8	6

2. Define the Problem

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

As students, we do not really feel that we have enough space for our notes, PLD and stationery all in one table. If we need to use all notes, PLD and stationeries at once, our tables would not have enough space for all these items.

2 B Compare and contrast the existing or similar solutions.

There are dining tables of similar solution where you can extend the table but that is for dining tables and not for school tables, which is a different case. A student is not able to use dining tables as their school tables in school for lessons as a table would consume too much space in a classroom, resulting in less students being able to attend one class.

3. Your BIG 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.

A retractable extension to our school tables where we can put our notes or PLD on so that we free up our table for other materials. The surface of the extension can also be lifted up so that the student can view his textbook better when placed on the raised surface.

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

It provides more space for the student to use with the PLD and notes taking their fair share of space on the table with the extension. The lifted surface provides a better view of the student's textbook without holding the book up for long periods of time.

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

It provides more space for SCHOOL tables and not DINING tables. Hence, our invention would provide space for a student in school and not at home.

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

The table toppling over because of the weight of the PLD or the textbook

The extension breaks off from the weight of the PLD or textbook on it.

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

On 22 April, we got the issue of the PLD and notes not fitting well in one table. On 22 April, we found an invention to help solve the problem of this insufficient space with the extension.

#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

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

Covid-19 is making it hard for us to gather together to build the prototype and we have many tests and are busy studying for these tests, and have no time to build the prototype together, so we decided to make an animation.

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

The animation will show how extension will provide more space for a student and how it extends in general, and expresses how little space there is for the PLD and notes together. The animation will also show a prototype of our invention, showing how it will probably look like.

<https://drive.google.com/file/d/1tCleBlkINId-F-YtUUjHw10zWEBXmNgZ/view?usp=sharing>

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
	Pass	Fail	Potential Failure	
*				-
Does the table extend without much effort needed?	v		There is a possibility that the table might get jammed and is hard to use.	-
Can the extension withstand much weight?			v	-
Can the table extension fit the original space meant for a normal table?	v			-

*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.

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 (e.g. books, magazines, websites, journal articles, interview, photographs, product brochure, reviews etc.)

EKEDALEN Extendable table, white, 80/120x70 cm. (n.d.). Retrieved from

<https://www.ikea.com/sg/en/p/ekedalen-extendable-table-white-50340827/>

Ingatorp Extendable Table, White, 155/215x87 Cm

<https://www.ikea.com/sg/en/p/ingatorp-extendable-table-white-70428206/>

Vangsta Extendable Table, White, 120/180x75 Cm

<https://www.ikea.com/sg/en/p/vangsta-extendable-table-white-30361566/>

Seb Extendable Dining Table with Bench and 2 Chairs

https://www.castlery.com/sg/products/seb-extendable-dining-table-with-bench-and-2-chairs?gclid=CjwKCAjw3riIBhAwEiwAzD3Tib2EpxDYeoNtNg8mCZNM3-yudjuF-2qT5fYDEta4f4DtUxouLiinGRoCpvQQAvD_BwE

Double Extendable Dining Table

<https://www.soulandtables.com.sg/teak-double-extendable-dining-table-200-300-100-76>

Model Elevator Extendable Table by Kai Kristiansen for Vildbjerg, 1960s. (n.d.).
Retrieved from

<https://www.pamono.eu/danish-teak-trioh-metamorphic-coffee-dining-table>

City Extendable Table

<https://www.nookandcranny.com/collections/living/products/city-extendable-dining-table-singapore-acacia-wood?variant=28890299976>

Cherry Tree Furniture 2-In-1 Extending Folding Computer Office Desk PC Workstation
Table with Storage Shelf & Rolling Castors (White). (n.d.). Retrieved from

https://www.desertcart.sg/products/60974773-cherry-tree-furniture-2-in-1-extending-folding-computer-office-desk-pc-workstation-table-with-storage-shelf-rolling-castors-white?gclid=CjwKCAjw3riIBhAwEiwAzD3TiXjecSoArPNx4Ia2KZsnGZBQvAgGtdP6Yu_J0rP0ydOydb9CAuow-hoC06AQAvD_BwE

Foldable Computer Table Portable Rotate Laptop Desk Table for Bed Can be Lifted
Standing Desk Home Furniture

<https://www.lazada.sg/products/foldable-computer-table-portable-rotate-laptop-desk-table-for-bed-can-be-lifted-standing-desk-home-furniture-i1877926860-s10013987185.html?exlaz=d 1:mm 150050845 51350205 2010350205.:12:12261804687!120300669351!!!pla-297963845945!c!297963845945!10013987185!396084762&gclid=CjwKCAjw3riIBhA>

[wEiwAzD3TidNeSfbV0iUWcoA03BlglAbWzil3Gbp5VzCFZ4u5btcYGojVDKAKTRoC72kQAvD_BwE](https://www.lazada.sg/products/foldable-computer-table-portable-rotate-laptop-desk-table-for-bed-can-be-lifted-standing-desk-home-furniture-i1877926860-s10013987185.html?xlaz=d_1:mm_150050845_51350205_2010350205::12:12261804687!120300669351!!!pla-297963845945!c!297963845945!10013987185!396084762&gclid=CjwKCAjw3riIBhAwEiwAzD3TidNeSfbV0iUWcoA03BlglAbWzil3Gbp5VzCFZ4u5btcYGojVDKAKTRoC72kQAvD_BwE)
https://www.lazada.sg/products/foldable-computer-table-portable-rotate-laptop-desk-table-for-bed-can-be-lifted-standing-desk-home-furniture-i1877926860-s10013987185.html?xlaz=d_1:mm_150050845_51350205_2010350205::12:12261804687!120300669351!!!pla-297963845945!c!297963845945!10013987185!396084762&gclid=CjwKCAjw3riIBhAwEiwAzD3TidNeSfbV0iUWcoA03BlglAbWzil3Gbp5VzCFZ4u5btcYGojVDKAKTRoC72kQAvD_BwE

41 Drop Leaf Tables For Small Spaces With Big Style. (2019, July 16). Retrieved from <http://www.home-designing.com/buy-drop-leaf-tables-for-sale-online>

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