

Hwa Chong Institution
Project Work
Category 3 Inventions Log Book

Title of Project:

Angklung Rack

Group Name:

Group Members:

- 1) Dave Lim
- 2) Ethan Ng
- 3) Lucien Tey
- 4) Ang Hao Jun

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. The angklung instrument is often overlooked as compared to instruments like the guitar
 - it is our responsibility as Singaporeans to help promote this traditional malay instrument
2. It is important to help maintain the multi-rational culture in Singapore
 - playing the malay instrument will help Singaporeans understand more about the malay culture and learn how to appreciate it.
3. Several schools and community centres have already tried to promote the Angklung instrument
 - we feel our product is able to help these schools as our product would spark interest in students to want to play the instrument more.

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

- Height restrictions
- Taking too much space
- Mobility
- Some racks are unable to store multiple angklungs

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	#2	#3
Consideration 1			
Consideration 2			
Consideration 3			
Total Score			

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)

We have come to realise that music should be a form of relaxation that everyone should be able to enjoy, even people with disabilities and the young. Hence we have identified these three problems angklung players : Non Adjustable height, Storage space, mobility and unable to store multiple angklungs.

2 B Compare and contrast the existing or similar solutions.

Comparison with other products



Uses of these angklung racks

- Store individual angklungs



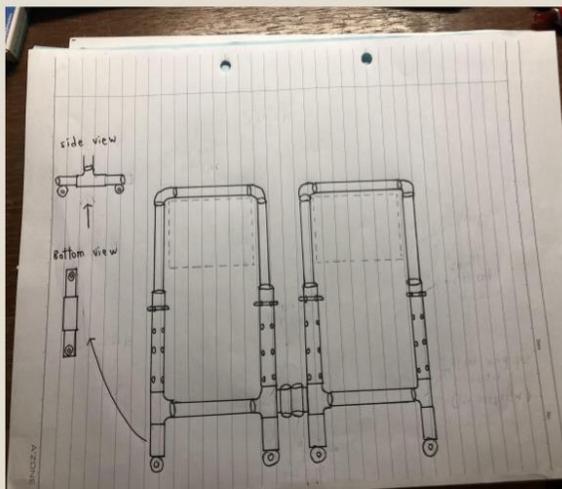
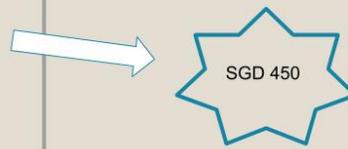
Uses of these angklung racks

- Store multiple angklungs
- Allow the rack to be easily moved around



Uses of these angklung racks

- Store multiple angklungs
- Allow the angklung rack to be easily moved around
- Allow the angklung player to play the angklung while its on the rack



Uses of OUR angklung rack

- Store multiple angklungs
- Allow the angklung rack to be easily moved around
- Allow the angklung player to play the angklung while its on the rack
- Let the player adjust the rack to their desired height
- The angklung rack is foldable, which makes the rack more compact and less space consuming

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 one that helps to make it easier for angklung players to play the instrument without facing too many problems

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

Our purpose of invention is to ensure that everyone can enjoy and play the instrument including children with disabilities or children

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

Our invention will solve many problems angklung players face such as a non adjustable height

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

1. Tedious process of making this product
2. There are many precautions we need to take note of before we can start on the product\
3. The materials needed are hard to find
4. We needed to make several changes to the product

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

1) Material type for prototype

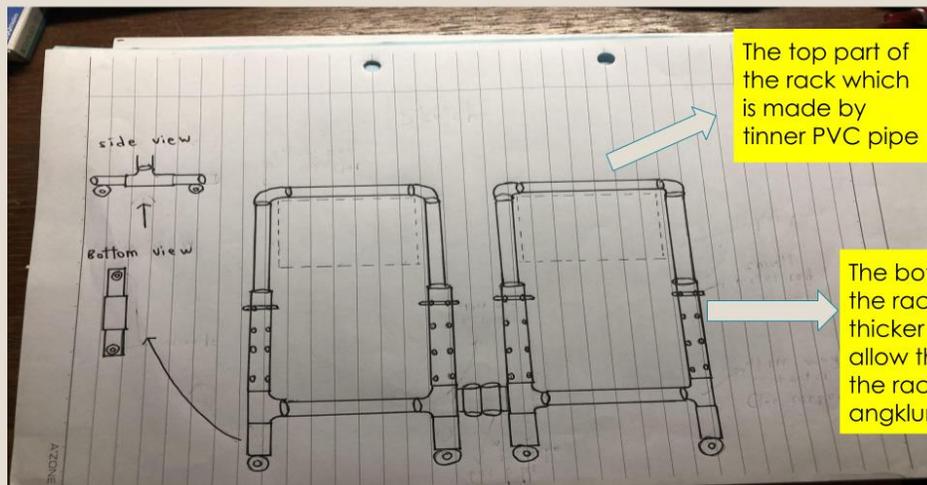
-From wood to pvc pipe

Reasons:

- cheaper and easier to find
- easier to work with compared to wood



Our finalized sketch of the product



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

(Addressed together with part a)

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

2) How to hang the angklung

-From a pole passing through the angklung **TO** hanging the angklung with hooks

Reason:

- > The initial method will cause the angklung to be unstable resulting in double sound
- > By using a hook or string the angklung to the pole we can make the bottom of the set of angklung aligned and straight, allowing the the player to play the angklung easily.



Place where the angklung would be hung at with hooks

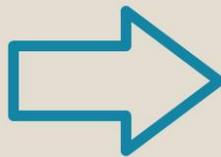
1) Added weights below the rack

Reason : By adding extra weight (Beanbags) to the bottom of the anklung, it would lower the centre of gravity of the rack and preventing it from easily falling



2) Increase the size of the base of the rack

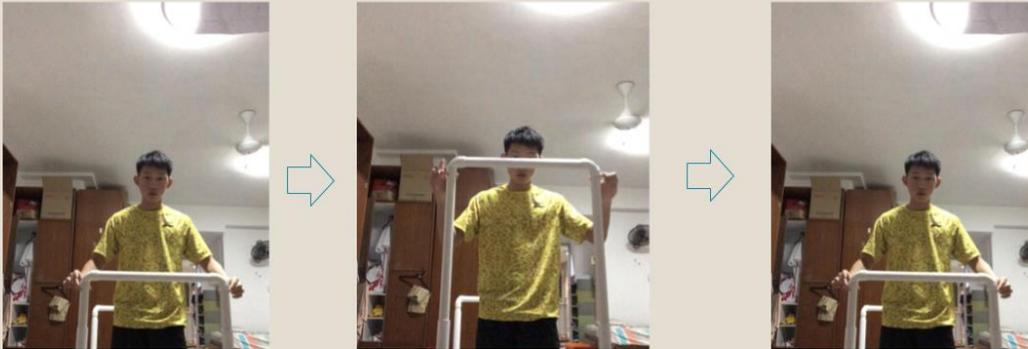
Reason : After increasing the base of the rack, the rack would more stable and not topple so easily.



3) Way we adjust the height of the angklong rack

From moving the pole of angklong to moving the top part of the frame TO moving the whole set of angklong up and down to sliding the rack frame up and down

Reason: Easier to store

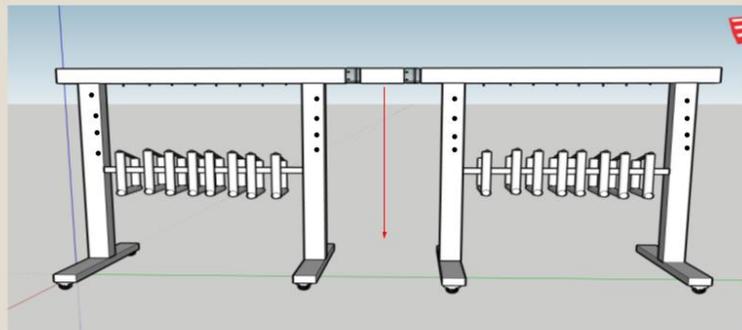


4) Position of hinge

-From the **top** to the **bottom**

Reason

- Moving the hinge to the bottom will help adjusting the height become easier as if it were put at the top, it may cause obstruction



3) Tying a string to the top of the rack

Reason: This is to prevent the angklung from shaking too much and causing double sound or it from falling.

The string is tied on the tinner PVC pipe so that it can prevent the angklungs from shaking too much



Opened up, at the lowest height



Opened up, at the highest height



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.*

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: 17/06/19	Pass	Fail	Potential Failure	
Test 1 Height Adjustment	pass			The Wooden stick might come out and hence, need to fix it in the final product

Test Criteria 2 Foldability	pass			The rack is pretty easy to fold
Test Criteria 3 Mobility	pass			The wheels are in working condition and we have added lubrication to make it easier to move around

*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 (eg books, magazine, websites, journal articles, interview, photographs, product brochure, reviews etc.)

<https://omeka1.grinnell.edu/MusicalInstruments/items/show/376>

<http://jamesecunningham.org/ethnosfl/2016/03/20/dapper-dans-angklung/angklung-rack/>

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<https://www.disabled-world.com/calculators-charts/height-weight.php>

<https://www.tinystep.in/blog/height-weight-chart-for-your-child-based-on-their-age-xyz>

<https://mavensocial.co/female-weight-chart/female-weight-chart-new-unique-weight-height-chart-female-chart-and-template-world/>

<http://indonesianculture-nasrul.blogspot.com/2011/06/angklung-music-instrument.html?m=1>