POLITEKNIK
MALAYSIA
SEBERANG PERAI

TROLLEY SEMI - AUTOMATIC

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SESI JUN 2017

SUBMISSION OF FINAL REPORT DECLARATION

DECLARATION BY STUDENT (GROUP LEADER)

Please tick (/)

☑ We have made all the necessary amendments based on comments and suggestions given by Supervisor and Presentation Panel.

☑ All the writing format of Report is in accordance with the Coordinator format and style.

☑ We have abtained approval of our Report from Supervisor.

☑ This Report is the sole legal property of Seberang Perai Polytechnic.

Student's Signature:  Date: 11/10/2017

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ENDORSEMENT BY SUPERVISOR

Comment (if any):

Project accomplished.
Job well done!

Supervisor's Signature: Date: 11/10/2017.

Official stamp:

LEE CHEE ME
Pensyarah Teknik
Jabatan Kejuruteraan Mekanikal
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STUDENT'S DECLARATION

"We admit that this project is the result of our own work except citations of which we have outlined each of the sources"

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Thank God for the divine wish and peace and blessings upon the Prophet Muhammad SAW because of His grace and His mercy we can produce the final semester report and project to fulfill one of the requirements provided for the award of the Diploma in Mechanical Engineering.

And we also extend our appreciation to our ultimate project supervisor, Mr Lee Chee Me for helping us with about a year to produce the final project from the last semester and this semester. He also gave us great encouragement, support and advice, and did not give up on us to give us the final project in this semester.

Apart from that, we also have not forgotten the lecturers in Polytechnics who have been giving lectures and opinions to improve our group's final project. And we are grateful to both our parents as well as the many supporters of the family who are giving back support to complete the final project this semester.

Finally, to members of the group and colleagues who have done much in making this final project possible. Faithfulness, trust and collaboration are essential in every individual to embrace the warmth in shaping a harmonious society.

RECOGNITION FORM

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ABSTRACT

The semi-automatic trolley is a system of self-descending and the other advantages of lowering the trolley easily. The main objective of our final project is to make it easier for the public to bring some rubbish packaging from top to bottom. For example, those who occupy flats, dormitories and shop houses who do not have elevator facilities. By using only semi-automatic trolleys it can lighten the burden of people and not pollute the environment.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURE

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

The purpose of the project is to development design of Semi-automatic Trolley. This trolley would be different from another trolley. In this study, the trolley will be design and fabricated to ensure this trolley can help the cleaner workers. As a Diploma final year project allocates the duration of one semester, this project is need skills to handle several machines such as welding machine, drilling machine and grinding machine.

The title of this project is "Semi-Automatic Trolley". This project involves the fabrication of machine with a specification regarding strength, material and cost. Overall, this project will be acquiring the skills of installation and fabrication. In this project, the trolley can might be help the cleaner in their work.

1.2 PROBLEM BACKGROUND

From our research, the problems are common faces by the cleaner worker which is want to bring down the trash from each levels of building. Firstly, the cleaner has to use lot of energy to bring down the trash with their bore hand. Other than that, this will take a lot of time to collect the bagged of trash one by one from the up stair to down stair. As we know cleaner are aged, and they easily exhausted, they need some rest for their body. So it take a time to bring down the trash every level. Furthermore, environment care. The residual waste and the waste water will drop on the floor so the cleaner has to cleaned it after bring down the trash. So they need to do a lot of work to clean up the floor after they bring down the bagged. From the problem, we decide to make a facility for the cleaner in a Polytechnic. So it will their work more easily by put the bagged into the semi-automatic trolley and then pushing it down automatically.

1.3 OBJECTIVES

The main objectives of this project are:

i. To reduce the energy used when bring down the trash
ii. To reduce time taken for collected bagged of trash
iii. To ease the care of environment.

SCOPE OF PROJECT

Scopes of project are limited to method of carrying trash, energy saving and semi-automatic. This project can be ease to bring down as the trolley modified to semi-automatic. In other hand, this project will save energy it is about not to use lot of energy while the cleaners do their work. Next, fabrication process will use necessary manufacturing process including welding and joining. Lastly, material selection comes from mild steel.

EXPECTED RESULT

The trolley can going down by sliding using the rail

The speed can be controlled by friction drive that grab on the rail

1.6 DEFINITION OF TERMS

For better understanding of the study, the researchers gave several terms that were defined conceptually and operationally as used in the study,

Semi-automatic it is not fully automatic, such as operated partly automatically and partly by hand.

Self-descending this meaning for movement going down , with the word self it mean it can going down by itself.

Friction drive a power-transmission system that transmits motion by surface friction instead of teeth.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter is present about literature review trash and trolley cart such as origin, description and other else. Trash is the waste material that produced when the unused or rejected item that be thrown by people. The rejected and unused such as plastic, food, furnishing and other else. Trolley cart is A cart is a vehicle designed for transport, using two wheels and normally pulled by one or a pair of draught animals. A handcart is pulled or pushed by one or more people. It is different from a dray or wagon, which is a heavy transport vehicle with four wheels and typically two or more horses, or a carriage, which is used exclusively for transporting humans. Over time, the term "cart" has come to mean nearly any small conveyance, from shopping carts to golf carts, without regard to number of wheels, load carried, or means of propulsion. Carts have been mentioned in literature as far back as the second millennium B.C. The Indian sacred book Rigveda states that men and women are as equal as two wheels of a cart. Hand-carts pushed by humans have been used around the world. In the 19th century, for instance, some Mormons travelling across the plains of the United States between 1856 and 1860 used handcarts. The history of the cart is closely tied to the history of the wheel. Carts were often used for judicial punishments, both to transport the condemned – a public humiliation in itself (in Ancient Rome defeated leaders were often carried in the victorious general's triumph) – and even, in England until its substitution by the whipping post under Queen Elizabeth I, to tie the condemned to the cart-tail and administer him or her a public whipping.

2.1 ANALYSE THE EXISTING PROJECT

In this chapter researcher describes the literature review and the researches that has been made for this project. The study was conducted on several types of trolley semi-automatic project before. Furthermore there is a study of the components used in this project. By doing a study on a few trolley before, there is a difference in every project that has been made. The first difference is in how it functions and procedures used to move the trolley more efficiently.

Although there are differences in the way of functional improvement, many of which have similar uses. We have also selected some types of existing and unmodified trolleys. From there we are also trying to modify the existing trolley in the country. We trying to make a different trolley from the existing instrument. Here some trolley that we reviews.

2.1.1 Trolley Cart Barrow

Figure 2.1.1 Trolley Chart Barrow

Product description:

Condition: A brand-new, unused, unopened and undamaged item in original retail packaging (where packaging is applicable). If the item comes direct from a manufacturer, it may be delivered in non-retail packaging, such as a plain or unprinted box or plastic bag.

Manufacturer: Rhyas

GTIN: 5060244530096

Weight: 8.010 SKU: 53009

Manufacturer Part Number: 53009

Brand: **Rhyas MPN**: 53009

UPC: Does Not Apply

ISBN: Does Not Apply

EAN: 5060244530096

2.1.2 WHEEL STAIR CLIMBER

Figure 2.1.2 Wheel Stair Climber

Product description:

Condition: A brand-new, unused, unopened and undamaged item in original retail packaging (where packaging is applicable). If the item comes direct from a manufacturer, it may be delivered in non-retail packaging, such as a plain or unprinted box or plastic bag.

Brand: Ukmart365

Color: blue, red

Dimensions approx.: 25.5 x 18.5 x 45.5 inches (L x W x H)

EAN: 5007230217715 Once folded: 17 x 18.5 x 35 inches

MPN: SU9ucp0085

Material: Steel frame and rubber wheel

UPC: 675500129690

Max load: 200 kg

ISBN: Does not apply

G.W.: 17.2kg/38lbs

2.1.3 SHOPPING CART 60 LTRS

Figure 2.1.3 Shopping Chart 60 LTRS

Product description:

Type: 60 liters

Dk: P 71 x W 61 x H 93 cm

Material: Galvanized iron or chrome

Condition: 100% New

Caster: 4 "swivel rubber

Handle: Red, Green, Blue

Logo: customer request

2.1.4 TROLLEY NETTING

Figure 2.1.4 Trolley Netting

roduct description:

imensions: D60 x L90 x H93 cm

aterial: 100% new Iron

olor: Powder coating white cream

heels: 5 "rubber

itable for Hospitals, Clinics, Office, Warehouse, Hotel,

2.1.5 TROLLEY GARDEN

Figure 2.1.5 Trolley Garden

Product description

Dimensions: 1074 x 579 x 850 mm

Finishing Zinc Clear Coat

Caster 5 "PU

2.2 MATERIAL

As we know the means of material is a type of physical thing, such as wood, stone, or plastic, having qualities that allow it to be used to make other things: a hard/soft material. The sculpture was made of various materials, including steel, copper wire, and rubber. We also done some research on materials that we use in our project. There is some materials that we reviews.

1. STAINLESS STEEL SQUARE

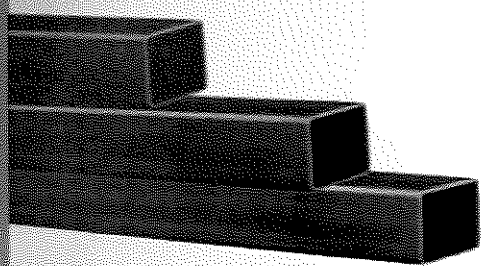

Figure 2.2.1 Stainless Steel Square

- As the foundation of the trolley.

2. STAINLESS STEEL TUBE

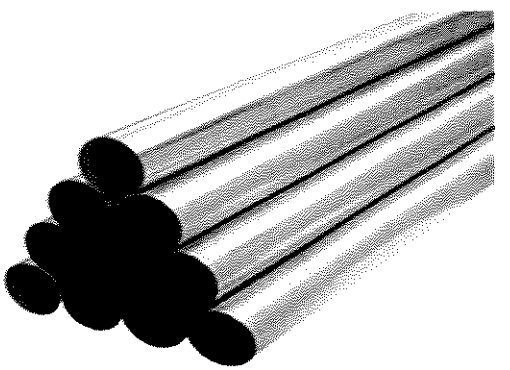

Figure 2.2.2 Stainless Steel tube

- The round mild steel hollow tube will be used as the rail for the trolley

3. MILD STEEL PLATE

Figure 2.2.3 Mild Steel Plate

- As the bottom surface

4. CASTER WHEEL

Figure 2.2.4 Caster Wheel

- to make sure the trolley can move easily

5 BANNER

Figure 2.2.5 Banner

- As the body of the trolley.

6. SMALL ROLLER

Figure 2.2.6 small roller

- help to control the movement of the trolley.

2.3 COMPONENTS

1. BEARING ROLLING

ure 2.3.1 Bearing Rolling

Placed it on the tire part to provided tire resistance.

2. FRICTION DRIVE

Figure 2.3.2 Friction Drive

- To control and grip the steel roller, And there by reducing the speed when going down.

3. GATE ROLLER

Figure 2.3.3 Gate Roller

- To make sure the friction drive can move smoothly on the rail.

4 THEORY RELATED

ewton's laws

ewton's laws of motion are three physical laws that, together, laid the foundation for classical chanics. They describe the relationship between a body and the forces acting upon it, and its tion in response to those forces. More precisely, the first law defines the force qualitatively, second law offers a quantitative measure of the force, and the third asserts that a single lated force doesn't exist. These three laws have been expressed in several different ways, over rly three centuries and can be 17 summarized as follows.

st law	In an inertial reference frame, an object either remains at rest or continues to move at a constant velocity, unless acted upon by a force.
ond law	In an inertial reference frame, the vector sum of the forces F on an object is equal to the mass m of that object multiplied by the acceleration a of the object: F = ma.
rd law	When one body exerts a force on a second body, the second body simultaneously exerts a force equal in magnitude and opposite in direction on the first body.
gravitational force	is a force that attracts any objects with mass. You, right now, are pulling on every other object in the entire universe! This is called Newton's Universal Law of Gravitation.
Friction force	is the force resisting the relative motion of solid surfaces, fluid layers, and material elements sliding against each other.

CHAPTER 3

METHODOLOGY

3.0 INTRODUCTION

A methodology is a system of methods used in a particular area of study or activity. The ethodology and principles to solve problems that emerge in the making or creating something y using method, research, technique, equipment and so on. In the process of Semi-Automatic rolley project, a systematic team work is needed so that the work is done smoothly. There are everal phases to go through the process of building an automatic Satay Rotating Machine. The hases must be passed in the correct sequence to allow the circuits involved can work well. In his chapter, we will pay attention to produce our projects. With this we have held a group iscussion with our project Supervisor, Mr. Lee Chee Me

3.1 Framework of the study (using the flowchart)

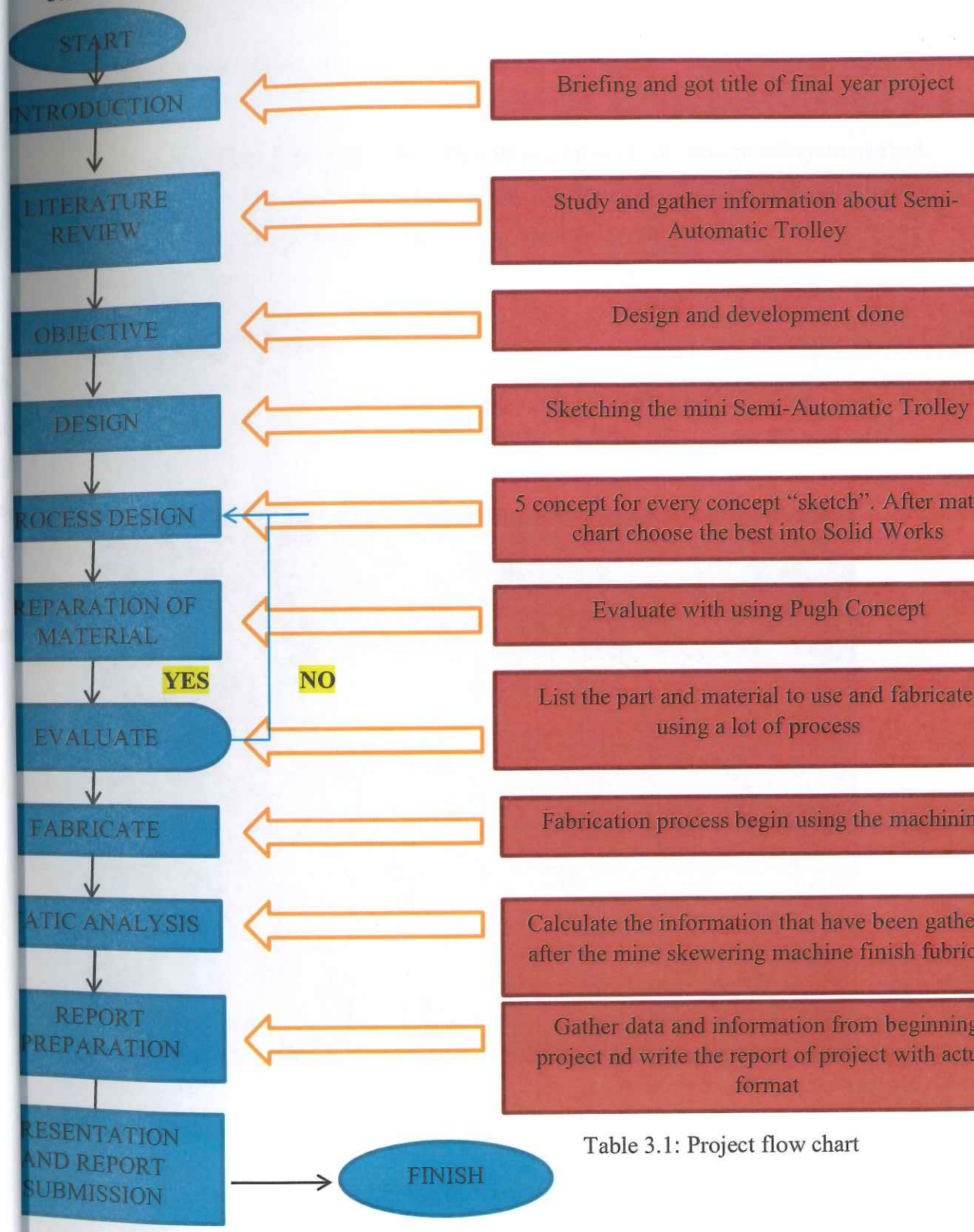

Table 3.1: Project flow chart

3.2 SELECTION OF CONCEPTUAL DESIGN / PROGRAMMING

3.2.1 Generate Conceptual Design

The design of semi-automatic trolley must through process of concept selection method. It includes sketching four types of semi-automatic trolley that have certain characteristic and advantages. The sketches design of semi-automatic trolley are:

3.2.2 Concept selection

Concept A

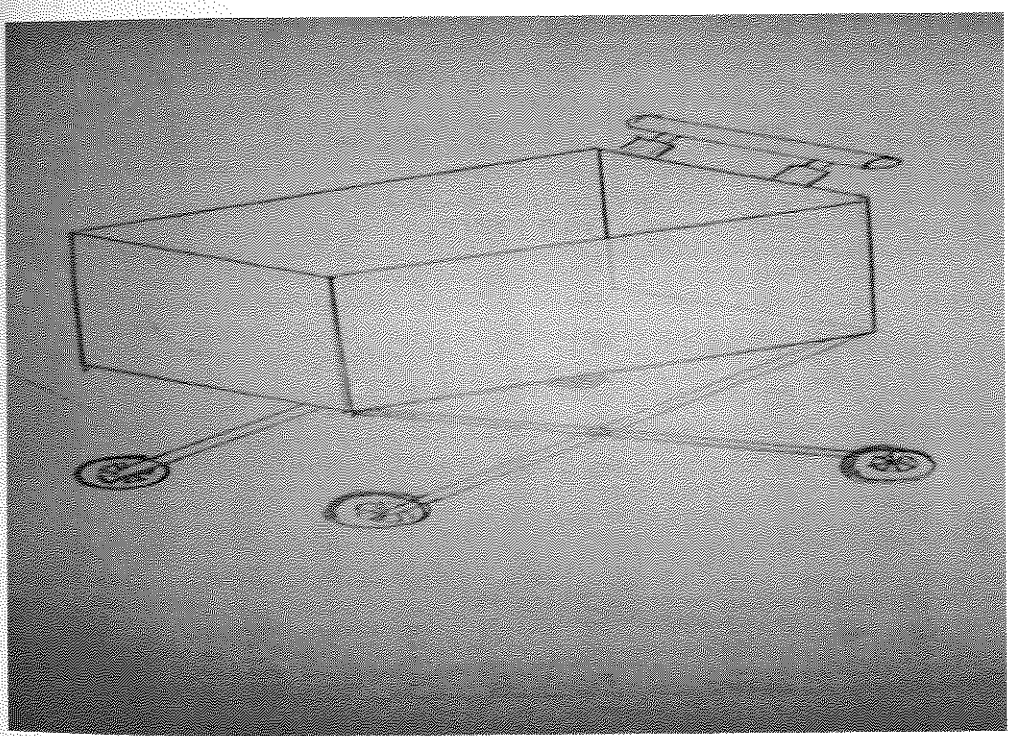

Figure 3.2.1 Trolley concept A

- Just a simple trolley that can carry anything but cannot climb stair.
- Use at supermarket.