CHAPTER 1

INTRODUCTION

1.1 Overview

This project presents design and fabrication of a lab adjustable table for secondary students that considers the height of table and ergonomics factor. This adjustable table would be different from existing table in market nowadays. The Diploma final year project allocates the duration of 1 semester, this large man-hour project requires significant efforts of the student to participate. Basically the entire Design and Fabrication of Lab Adjustable Table for Secondary Student could be divided into 3 stages which are concept review and fabrication, designing and make finishing.

The Lab Adjustable Table for Secondary Student is equipped by using all items and methods for instance square hollow carbon steel, square hollow steel, rubber, and also skills in manufacturing processes like Submerged Arc Welding (SMAW) welding to join the parts. The advantages of the proposed adjustable table to be developed can be seen that it portable which can be easily handling, travelling and very useful for our secondary students.

The process of fabrication is initiated from conceptual design stage by considering the advantages as well simplicity. In order to make safety and ergonomic factor will be taken. Practical fabrication and design involves the measurement, cutting the materials into required size and shape, assembly and making finishing.
1.2 Problem Statement

Most of the current lab table in market nowadays just designs to make it look modern and beautiful but the functions not suitable for secondary student used. Besides that the current product has many heights and needs spaces when to use or store, and also it difficult to transfer to another place like to go travelling.

It is important o further improve the current design of lab table for secondary student, so that it is more efficient to use.

1.3 Importance of The Project

The project leads the student to understand how to use the knowledge and skill gathered before solve the problem. This project also promote the student is capability of research, data gathering, analysis and then solving problem scientifically.

The project also educates the student in communication like in presentation and educates them to defend their research in the presentation. The project also will generate student that have capability to make good research report in thesis form or technical writing. This project also can produce and train student to capable of doing work with minimal supervisory and more independent in searching, detailing and expanding the knowledge and experiences.

1.4 Project Objectives

There are two main objectives to achieve in this research which are:

a) Design the lab adjustable table for secondary student that suitable for any height.
b) Fabricate the lab adjustable table for secondary student that suitable for any height.

1.5 Scopes of the Project

The Scope of this Project are:

i. To study the process of engineering design in making a product

ii. Improvement of the designed table; especially for students’ need and its function

iii. Fabricate the lab adjustable table with small scaling

iv. Come up with the idea of human factor in the design

1.6 Project Planning

This project started with a research and literature review. It is from internet, magazines, public areas and my supervisor that related to my project title. All of this literature review takes about five week. I also do my schedule management for my project. This is done by using Microsoft Excel Worksheet using Gantt Chart system. The next week I have been submit my project title acceptance form and continue detail research in lab adjustable table that it takes a week to be done.

After all literature review done, I must find out what are the advantages and problem or weakness about the current product in the market nowadays. After that I sketch my ideas for making a new features design. I have sketched 5 ideas before. Then, I decide the best ideas that I choose for PTA project. The sketching of the table takes about three weeks to be done. The sketching done using Auto CAD software.

After decide the best ideas that have been choose, I have changed the manual sketching hand in Auto CAD 3D and Solid Work that have the full dimension.