

UNIVERSITI TEKNOLOGI MARA

**DESIGN, ANALYSIS AND
FABRICATION OF DESK MOUNT
LAPTOP STAND WITH COOLER**

ANAQI BUNYAMIN BIN ZULHAZMI

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ABSTRACT

Mechanical Engineering students of semester 4 were given a task to create a product that helps in solving everyday problem. An idea to solve a common problem for laptop users is used for this project which are overheating and the lack of workspace. The objective of this project is to design a laptop stand that helps in increasing the cooling performance of the laptop and gives the user more workspace to be utilized. This proposal contains the major steps in manufacturing a product which are doing research, literature review, implementing a concept design to be visualize in a 3D rendering software, and fabrication. By the completion of this proposal, a more in-depth understanding will be gained and improvement in the ability to write a solid proposal for fabricating an engineering design, which will assist the students in the future professional environment of the engineering world.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

The idea of this project was inspired from a personal problem of mine. During this pandemic, we had to attend online classes and my laptop had to run for at least half of the day for online meetings, assignments, and all. Unfortunately, my laptop overheats and had to be sent to the service center for a repair. One of the main reasons is my desk is very small and a few numbers of boxes were stacked to lift the laptop so that the keyboard and mouse have some space to work with. The box causes the laptop to overheat because it blocks the airflow of the laptop. An idea was created that can solve both space and cooling problem. This idea mainly targets laptop users with small amount of workspace. It can also improve the efficiency of the user's work performance since it helps in improving the amount of workspace for the user.

The base structure of the laptop stand is made from steel. This is because steel is heavy duty and can hold the weight of the center pole and the laptop. However, the base structure that holds the laptop is made from aluminum. Aluminum is lightweight and sturdy so it can help in maintaining the stability of the whole structure. Both materials are easy to fabricate and does not cost much. The center pole has motor attached to it so it can be adjusted upwards and downwards by the push of a single button. This gives the ability for the user to adjust the height without any hassle. The arm that holds the laptop can rotate 180° and the base of the laptop holder is mounted with 2 medium size fans that is powered by USB cable.

This laptop stand is designed to be cost-friendly, easy to setup and improving the ventilation and cooling of the laptop. Other than that, it provides more comfort for the user in a long-term use session of the laptop. The height of the stand can be adjusted, and the user can find the most comfortable laptop height position for their personal use. Since the laptop is lifted above the desk, the user gains a lot more workspace to use. It can improve the user's work performance. Lastly, the base of the laptop holder is mounted with fans that can help keeping the laptop cooled and prevents overheating