



KEMENTERIAN PENGAJIAN TINGGI



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RESEARCH AND INNOVATION UNIT

**PROJECT TITLE: SMART DESK**

DEPARTMENT: CIVIL ENGINEERING

STUDENT'S NAME & MATRIC NO	MUHAMMAD FARIS BIN HISHAM	08DBK18F1033
	MUHAMMAD ALIFF HAIQAL BIN AZMAN	08DBK18F1017
	NIHAYATUL NABILAH BINTI SABRI	08DBK18F1012
	AINORSHAHIRAHUDA BINTI JAFFRI	08DBK18F1029
SUPERVISOR'S NAME	ENCIK TEO ENG YEAW	

## TABLE OF CONTENT

<b>ITEM</b>	<b>PAGES</b>
1.0 – Problem statement .....	1
1.1 – Design of desk .....	1
1.2 – Function of desk .....	1
1.3 – Space of desk .....	1
2.0 – Research methodology .....	2
2.1 – Location .....	2
2.2 – Flow chart .....	2
3.0 – Solution proposal .....	3
4.0 – Benefits of study desk .....	4
4.1 – Benefits to society .....	4
4.2 – Benefits to country .....	4
4.3 – Benefits to economy .....	4
4.4 – Benefits to environment .....	4
5.0 – How to Implement .....	5
6.0 – Conclusion .....	6
Appendix .....	

## **1.0 – Problem statement**

### **1.1 – Design of desk**

Nowadays, not all existing study desks in the market meet the requirements of the design. Design of study desk in the market do not attract the attention of consumers. This is probably because a simple or too crowded design of the study desk, no additional elements, and more. Furniture is an object that can be seen and touched based on certain functions for daily and current use. Therefore, study desks should be designed that have specific functions for specific uses. Everyone has their own design that they think it's suitable and interesting for them.

### **1.2 – Function of desk**

Consumers nowadays are more concerned with the function of furniture. They are more interested in multi-functional furniture. This is because it can facilitate users in the use of furniture such as study desks that we produce not only to do work or learning. In fact, it can also be used for storage such as goods or books. Some study desk usually do not provide with drawer, shelf and other. It would appear that the desk is less attractive and it will look cluttered and make them feel uncomfortable.

### **1.3 – Space of desk**

The space of the study desk is also important. Some people take it easy about the space as long as the table still can use for learning time. Actually, the space also influence someone's comfort while studying. If the study desk not meet the appropriate standard size, the space disrupts the learning time. Besides, land for home construction is now limited and people nowadays prefer to use the furniture that can save space. Therefore, the manufacture of study desk should be suitable so it will not to affect the space in a home. A combination of study desk can be more focused on the height rather than width. This is prevent the product from taking too much space and can reduce furniture in the house.

## 2.0 – Research methodology

This chapter will discuss the research methodology used for achieve the objectives of the study. This chapter begins with the study design and followed by a descriptive study process. An important component in methodology will be discussed in detail in the next section. Using the concept ohsuga method and CAD modelling. This product development process is based on the studies and observations that have been made to improve the quality of the product.

### 2.1 – Location

The project will be run at the Politeknik Sultan Salahuddin Abdul Aziz workshop. We chose this place because there are several facilities available. In addition, our target area for this project is at home.

### 2.2 – Flow chart

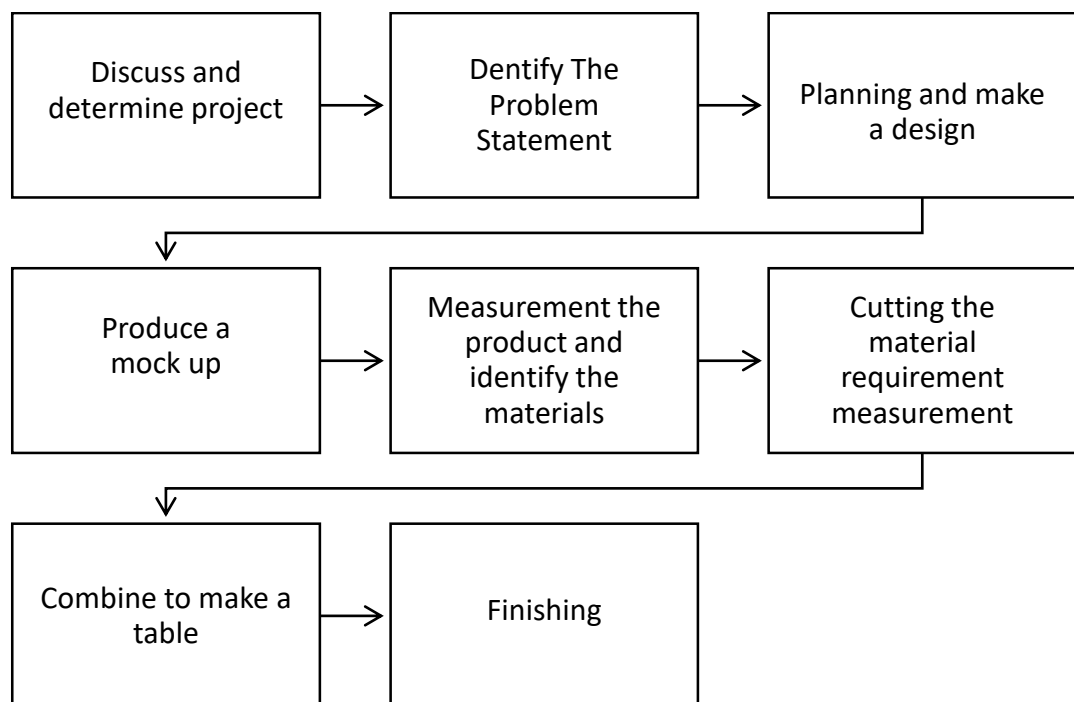


Figure 1: Flow chart process making smart desk

### **3.0 – Solution proposal**

This study desk is a combination of desk and bookshelf where this design has its own creativity. It has been modified into a better product in terms of storage, space and attractive design. Market-based design is needed to meet market criteria such as aesthetics, price, practicality, and so on. Besides, the material is easy to find and safe to use a convenient and convenient construction system and in terms of facilities for production, storage and transportation.

Other than that, this study desk is made from a combination of pine wood, MDF, plywood and powder coated steel. But mostly use pine wood to produce this table. The use of pine wood is unique because although pine is classed as a soft wood, pine is one of the strongest softwoods in the world. Many carpenters and manufacturers preferring to use it over the softer spruce for creating furniture. Besides, pine has a great deal of stiffness and resistance to shock, which makes it a solid choice for many furniture pieces. Pine tends to be easier to work with during the furniture building stage due to its softer nature. Pine has a very distinct look with its dark knots and light wood colour. If this style fits your preferences, that distinct look is a benefit worth considering. Moreover, the light colour makes pine easy to stain to achieve nearly any colour you want, or you can simply use a clear coat to protect the wood while letting the natural light colour take centre stage. Because of its light colour, pine furniture fits in well with other furnishings in your home. It has a versatile look that also pairs well with various wall colours, patterns and other details in your décor.

Next, the use of powder coated steel which is a high-quality finish found on thousands of products you come in contact with each day. Powder coating protects the roughest, toughest machinery as well as the household items you depend on daily. It provides a more durable finish than liquid paints can offer, while still providing an attractive finish. This reduces the risk of scratches, chipping, abrasions, corrosion, fading, and other wear issues. It's tough. It looks great. In addition to being durable, powder coating is an attractive choice due to environmental advantages.

#### **4.0 – Benefits of study desk**

##### **4.1 – Benefits to society**

This product benefits to society. It can provide comfort to the users. This is because the products produced have been in accordance with ergonomics and appropriate measurements. Besides, it can strengthen the relationship between the seller and the buyer during the buying process. The seller and the buyer need to interact or communicate to each other. Despite of that, it can build up the relationship between the buyer and the customer.

##### **4.2 Benefits to country**

By using quality materials, producing the high quality and multifunction study desk can attract customers from within and outside of the country. Therefore, it can improve the image of the country and can contribute to the development of the country because of high quality product is in demand by customers from abroad.

##### **4.3 – Benefits to economy**

The existence of agencies that are suppliers of products, it can be the cause of the country's economic growth. Besides, can improve the country's economy because the product is in high demand from users abroad and within the country.

##### **4.4 – Benefits to Environment**

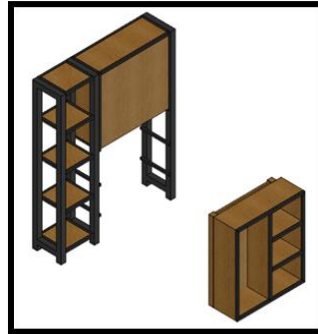
The product produced can give benefit the environment which is, it can protect the environment from the occurrence of waste in terms of the use of timber. Therefore, produced a high durability study desk so the logging activities to produce new furniture can be reduced.

Other than that, it can preserve the forest which is one of the treasures of the country. In terms of producing a high durability study desk, we also emphasize about the resource of the wood that we used. For instance, we used pine wood and it is renewable resource that comes from plantation. So, it can lessens our demand on timber from our state forests thus preserving the natural beauty of the forest in our country.

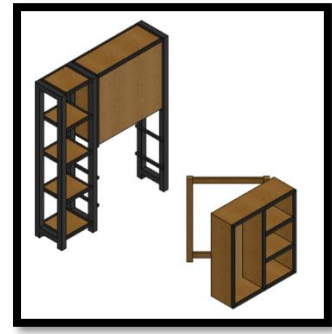
## 5.0 – How to implement



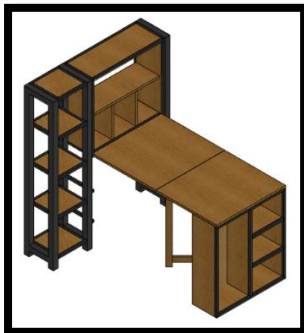
Step 1 :  
Product design  
before open



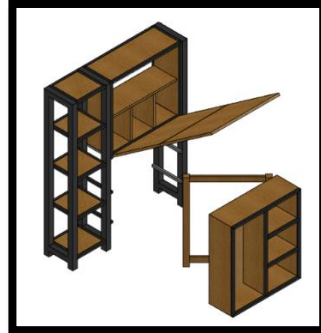
Step 2 :  
Move the shelf forward



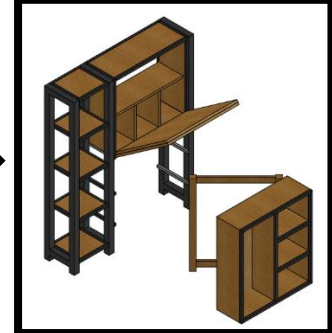
Step 3 :  
Open the support leg  
of top table



Step 6:  
Product design  
after fully open



Step 5:  
Open the folds of the  
second table top



Step 4:  
Open the folds of the  
first table top



## **6.0 – Conclusion**

In conclusion, this product can achieve the objectives that have been discussed. With the use of the concept ohsuga method and CAD modelling, a smart desk was created. The latest design by combining wood and powder coated steel can add uniqueness to attract the interest of users.

Besides that, current housing development conditions have side effects in furniture selection, therefore smart desk can help in the selection of study desks that are able to give an effective effect to the space.

Modern effects such as multi-functional give many advantages to the user, with age accuracy it can provide complete comfort to the user. Furthermore, the finishing touches are important in order to bring this table to the attention. Finally, hope that product will get a high response to the domestic and foreign markets.



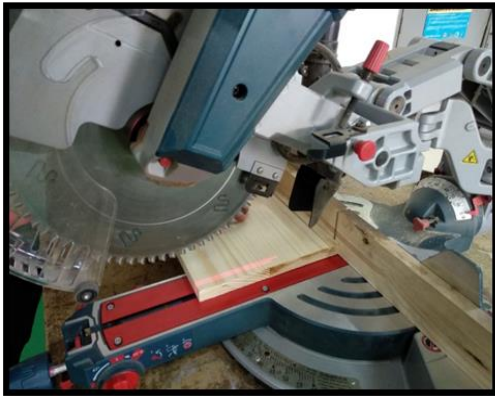
## Appendix



Plywood cutting process using table saw



Groove making process using trimmer



Pine wood cutting process using miter saw



Process of merging pine wood into a rack



Making support for table top so that the wood not curved



Process of merging pine wood into a shelf