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TAJUK PROJEK:

‘CONTROLLABLE MOP MACHINE’

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TABLE OF CONTENT

TABLE OF CONTENT.....	I
LIST OF TABLE.....	III
LIST OF FIGURE.....	IV
ABSTRAK.....	1
ABSTRACT.....	2
CHAPTER 1: INTRODUCTION.....	3
1. 1 INTRODUCTION.....	3
1. 2 PROJECT BACKGROUND.....	4
1. 3 PROBLEM STATEMENT.....	4
1.4 PROJECT OBJECTIVE.....	4
1.5 RESEARCH QUESTION.....	5
1.6 PROJECT SCOPE.....	5
1.7 IMPORTANCE OF PROJECT.....	5
1.8 SUBTOPIC SUMMARY.....	6
CHAPTER 2: LITERATURE REVIEW.....	7
2.1 INTRODUCTION.....	7
2.1.1 The evolution of the invention of the mop to the machine.....	7
2.2 Previous Studies/Reviews/Investigations.....	8
2.2.1 TYPE OF MOP MACHINE AVAILABLE IN MARKET.....	8
2.2.2 COMPARISON WITH OTHERS MACHINE MOP IN MARKET.....	1
2.2.3 COMPONENT IN MACHINE MOP.....	2
2.3 MECHANISM DETAIL.....	6
2.4 SUMMARY.....	13
CHAPTER 3: METHODOLOGY.....	14
3.1 INRODUCTION.....	14
3.2 Project Design.....	15
Discussion between group members and giving of ideas.....	21
3.2.3 Cost of material for controllable mop machine.....	24
3.2.4 Data Analysis Methods.....	25

3.3 SUMMARY.....	28
CHAPTER 4: PRELIMINARY FINDING OF STUDY.....	29
4.1 INTRODUCTION.....	29
4.2 DATA.....	29
4.3 PRELIMINARY.....	32
4.3.1 Analysis.....	32
4.3.2 Interpretation.....	32
4.3.3 Comparative Study.....	32
4.4 Summary.....	33
Reference.....	34
v. https://www.-work/rc-toys-radiowaves/story/17649.html	34
ATTACHMENT.....	35

LIST OF TABLE

Table 2.1 : Comparison with others machine mop in market.....	1
Table 2.5 : Differences Between AC and DC Motor.....	7
Table 2.6 : Differences Between Dry Cell and Wet Cell.....	9
Table 3.1 : Material.....	22
Table 3.2 : Cost of material.....	24

LIST OF FIGURE

Figure 2.1 : Evolution of mop machine.....	8
Figure 2.2: Model A.....	9
Figure 2.3 : Model B.....	10
Figure 2.4: Model C.....	10
Table 2.2 : Types of pipes.....	3
Table 2.3 :DC Motor.....	4
Table 2.4 :Types of battery.....	5
Figure 2.13 : Differences Between AC and DC Motor.....	7
Figure 2.14 : Model RC Car.....	10
Figure 2.15 : Integrated circuit.....	10
Figure 2.16 : RC Model.....	11
.....	12
Figure 2.17: Part of RC Toy.....	12
Figure 2.18: Transmitter.....	12
Figure 2.18 : Power source.....	12
.....	13
Figure 2.19 : Motor and circuit board.....	13
.....	15
Figure 3.1: Isometric view 1.....	15
Figure 3.2 : Front view 1.....	15
Figure 3.3 : Side View 1.....	15
.....	16
Figure 3.4 : Isometric view 2.....	16
Figure 3.5 : Front view 2.....	16
Figure 3.6 : Side View 2.....	17
Figure 3.7 : Isometric view 3.....	17
Figure 3.8 : Front view 3.....	18
Figure 3.9 : Side View 3.....	18
Figure 3.10 : Sketch project.....	22
3.2.2 Material Type & Equipment.....	22
Figure 3.11: PVC Plate.....	25
Figure 3.12: DC Motor.....	26

Figure 3.13: Circle Cotton Mop.....	26
Figure 4.2.1: Pie Chart 1.....	30
Figure 4.2.2: Pie Chart 2.....	30
Figure 4.2.3: Pie Chart 3.....	30
Figure 4.2.4: Pie Chart 4.....	31
Figure 4.2.5: Pie Chart 5.....	31
Figure 4.2.6: Pie Chart 6.....	31

APPRECIATION

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ABSTRAK

Mop adalah merupakan alatan yang wajib ada di setiap rumah. Walaubagaimanapun, mop yang terdapat di pasaran menggunakan banyak masa dan tenaga untuk menyiapkan kerja mengemop lantai. Oleh sebab itu, Kami bercadang untuk mencipta sebuah mesin mop lantai yang mana dapat memudahkan dan mempercepat proses mengemop lantai serta menjimatkan tenaga. Hal ini kerana tidak semua orang yang mempunyai banyak masa di rumah dek kerana kesibukan bekerja atau mempunyai banyak kerja untuk disiapkan di rumah terutamanya golongan suri rumah. Oleh sebab itulah kami merancang untuk membina sebuah mesin mop yang menggunakan alat kawalan jauh bagi memudahkan para pengguna. Untuk simulasi projek ini langkah pertama yang perlu dilakukan ialah suis dihidupkan supaya menggerakkan mesin mop tersebut menggunakan alat kawalan jauh. Seterusnya paip air dibuka untuk memastikan air mengalir keluar daripada tangki. Tambahan pula, untuk mengecasnya hanya menggunakan kuasa elektrik yang mana proses mengecasnya berlaku selama anggaran 2 jam untuk dicas sepenuhnya. Ia dapat mengurangkan penggunaan tenaga serta menjimatkan masa kepada pengguna. Akhir sekali, penambahbaikan yang boleh dilakukan pada masa akan datang ialah mencipta automatic spray yang mengeluarkan air dan sabun secara serentak dalam masa yang sama.

ABSTRACT

Mop is a must-have tool in every home. However, mop available in the market uses a lot of time and energy to complete the work of mopping the floor. Therefore, we plan to create a floor mop machine which can simplify and speed up the process of mopping the floor, as well as saving energy. This is because not everyone has a lot of time at home due to busy work or have a lot of work to complete at home especially housewives. That is why we plan to build a mop machine that uses a remote control to facilitate the users. For the simulation of this project the first step that needs to be done is to turn on the switch so as to move the mop machine using the remote control. Next the water pipe is opened to make sure the water flows out of the tank. Furthermore, to charge it only uses electrical power for which the charging process takes place for approximately 2 hours to be fully charged. It can reduce energy consumption and save time for users. Finally, improvements that can be done in the future is to create an automatic spray that removes water and soap simultaneously at the same time.

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Nowadays all human beings want everything simple to lighten their daily workload. This is because they are busy in completing daily work that cancels all their work while at home. Technology production nowadays can save time as well as reduce their workload but in this case, there are also those who have to use a lot of energy especially at home. As we know housewives are the group who certainly have a lot of things to do and completed at home. Of course they need tools and equipment that can help them complete the work quickly and easily.

According to our study, we have created a product that can help housewives that is a floor mop machine known as controllable mop machine. This mop consists of many components including motor wheels and so on which aims to move the product without using human energy. All this is quite different compared to the existing mop on the market that does not use manpower but only controlled using a remote control.

The advantages of this mop machine is to reduce the time taken to mop the floor besides water and soap do not have to be manually placed on the floor because this machine has a container that allows the water and soap to come out on its own through a dedicated channel to ensure optimal cleaning of the floor surface. Finally, we also have a design through inventor software that shows the actual shape of the product through a three-dimensional shape.

1.2 PROJECT BACKGROUND

In this modern age, the shape of the mop has changed or evolved from an ordinary mop to a machine. However, the mop machines available in the market still use human energy to move it. As a result, users will quickly feel tired even if it is a machine whose features have been improved. Not only that, users have to go to the machine to reach it if they want to remove or block the soapy water from coming out. This will cause users to take some time to mop the floor. As such, we have studied and designed a mop machine model that can overcome these problems that will provide convenience to users.

1.3 PROBLEM STATEMENT

- i. Existing manually operated mop machine which the user has to move while mopping the floor.
- ii. Mopping work takes a long time for example for a two -storey house it can take 30 minutes to complete.
- iii. ‘Cotton floor mop’ openings that do not fully meet the floor surface.

1.4 PROJECT OBJECTIVE

- i. To develop a machine that uses a remote control.
- ii. To reduce the time taken to mop the floor or save time.
- iii. Using a "cotton mop" that has a wide and flat surface.

1.5 RESEARCH QUESTION

- i. How does this mop machine work?
- ii. Does this mop machine save time when mopping the floor?
- iii. What are the materials and features of a mop machine?
- iv. Is this mop machine lightweight and does not cause back pain?

1.6 PROJECT SCOPE

This study focuses on the suitability of the project use on a flat surface. Besides, it discusses the period of time this tool works in one time. Next, the quantity of water required for an area of 5 square meters.

Finally, we also focus on the amount of gear rotation and the quantity of gear teeth required for a mop machine.

1.7 IMPORTANCE OF PROJECT

The importance of this study is not to use a lot of manpower. This is because, it is controlled using a remote control only without having to move it manually. As a result, it can avoid fatigue to users. Besides, it can save users time. This is because the materials and the components used are lightweight and do not put a burden on the users. Therefore, the users especially those who do not have much time at home can use it comfortably without having to rush to complete the work.

1.8 SUBTOPIC SUMMARY

In conclusion, the study of high-tech mop machines in this day is very necessary to ensure that the work of mopping the floor can be done quickly and smoothly while saving users' time. This can be seen by the presence of a remote control that makes it easier for users to control it remotely without having to move the machine manually. Therefore, this mop machine is very suitable for all users, especially housewives who definitely need tools or equipment that can facilitate their daily work at home.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In this era of globalization, in the Malaysian market there are only mop machines that use manual methods. For example, the mop machine needs to be pressed a button to remove soapy water for washing. heavy load. Existing mop machines can be found in the Malaysian market and abroad. Therefore, the mop machine that we want to produce is not available anywhere else in the market.

Accordingly, mop machines on the market also have disadvantages. For example, existing mop machines depend on wiyer connected to the electric plug. As a result, the mop machine has a limited distance to clean a large area causing users to have to move the electric plug. For example, the new mop machine that will be created can be controlled remotely.

2.1.1 The evolution of the invention of the mop to the machine

Nowadays, the method of cleaning the floor using a mop is very important for use in homes, business premises, government administration buildings and even in factories.



Figure 2.1 : Evolution of mop machine

2.2 Previous Studies/Reviews/Investigations

2.2.1 TYPE OF MOP MACHINE AVAILABLE IN MARKET

There are various mop machines available in the Malaysian market now. In addition, each mop machine produced has a different shape and specifications. Therefore, the diagram below is accompanied by the advantages and disadvantages of mop machines in the market.

MODEL A

The mop machine below has a simple and lightweight shape. This machine is very easy to carry anywhere because it uses battery power to turn on the machine. This machine also rotates with moderate conditions. Furthermore, this model A machine also has a disadvantage, which is that the used battery can not be replaced and must be recharged after use. This will cause problems to users as they will not be able to continue the cleaning work for longer.



Figure 2.2: Model A

MODEL B

In addition, the mop machine for this model has a strong cleaning power because it uses a high -powered electric motor. In addition, it also has a very large water storage capacity with a capacity of 8 liters for cleaning use. This machine also has a disadvantage, namely it using short and limited wires causes the user to have to move to another electrical socket. Next, this machine requires a lot of manpower to push the machine because it has a mass weighing 28 kilograms.



Figure 2.3 : Model B

MODEL C

In addition, the mop machine for model C can be controlled by driving as if driving a car during the cleaning process. This machine has the ability at the maximum level in cleaning activities. For example, this high-powered mop machine cleans at high speed. while attracting excess soapy water. Meanwhile, this machine has the disadvantage that its manufacturing cost is too expensive and requires high cost to repair it if damaged. In addition, it is not suitable for use indoors because it has a large size to be stored indoors. Furthermore, it is suitable for use in industrial areas and shopping malls only. Finally, this machine requires a skilled person to drive it.



Figure 2.4: Model C

2.2.2 COMPARISON WITH OTHERS MACHINE MOP IN MARKET

Table 2.1 : Comparison with others machine mop in market

TYPE MACHINE VIEW	FEATURE/DISADVANTAGE	DESIGN	TECHNOLOGY
 <p>Figure 2.2 : Model A</p>	<p>-It only use for short time because have a small battery.</p> <p>-it has a small tank of water.</p>	<p>oval</p>	<p>Manual</p>
 <p>Figure 2.3 : Model B</p>	<p>- very heavy to use</p> <p>-Cannot to use for long distance .</p> <p>-short wire</p>	<p>oval</p>	<p>Manual</p>

 <p>Figure 2.4 : Model C</p>	<ul style="list-style-type: none"> -Can clean in big area such as in mall. -More powerful clean floor. -Must have good drive to use it. -Too expensive 	<p>Rectangle</p>	<p>Drive</p>
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2.2.3 COMPONENT IN MACHINE MOP

List of component for project :

- i. DC Motor
- ii. Battery
- iii. Cotton mop
- iv. Wire
- v. Pvc plate
- vi. Hard Plastic Case
- vii. Pipe
- viii. Water Valve
- ix. Switch button

Types of pipe:

Table 2.2 : Types of pipes

Type	Advantages	Disadvantage
 <p>Figure 2.5 : PVC (Polyvinnyl Chloride)</p>	<p>Cheap and can be used for long term such as for irrigation</p>	<p>Sunlight degradation</p>
 <p>Figure 2.5 : Paip ABS Blue (acrylonitrile butadiene stirrene)</p>	<p>Stronger than PVC pipe</p>	<p>Warps and deforms at a certain temperature</p>
 <p>Figure 2.6 : (High Density Polyethylene.)</p>	<p>More Flixible</p>	<p>To soft to used</p>

Conclusion

In opinion ,we would to choose type of PVC pipe because it can be use for long term and cheap price.

Table 2.3 :DC Motor

Type DC Motor	Advantages	Disadvantage
 <p>3v power</p>	<p>-The rotational power possessed by a 3V dc motor is suitable for use on portable fans.</p> <p>-save battery energy</p> <p>-Cheaper prices</p>	<p>-The power he has is not able to move a mop with a diameter of 20cm.</p>
 <p>6v power</p>	<p>-The rotational power possessed by the 6v dc motor is capable of moving objects with a diameter of 20cm.</p> <p>-Lightweight and easy to install</p>	<p>- It is not able to move objects that are too heavy and have a large diameter.</p>
 <p>12v power</p>	<p>-The rotational power possessed by 12v dc motor is high speed.</p> <p>-Very suitable for rotating large diameter and also heavy objects.</p>	<p>-Requires a lot of battery power causing the battery power to run out in a short time. - very heavy to install on a project.</p>

Conclusion :

In my opinion ,we would like to choose 6v power for dc motor because it has enough energy to rotate the mop.

Table 2.4 :Types of battery

Type	Advantages	Disadvantages
 <p>F</p> <p>Figure 2.10 : Dry Cell Battery</p>	<ul style="list-style-type: none"> -very cheaper prices -easy to bring anywhere -suitable for toys 	<ul style="list-style-type: none"> -cannot use for long term -not powerful
 <p>Figure 2.11 : Rechargeable Battery</p>	<ul style="list-style-type: none"> -worth the price -long lasting battery power -rechargeable -light mass 	<ul style="list-style-type: none"> -the charging period is quite long .
 <p>Figure 2.12 : Lithium Polymers Battery</p>	<ul style="list-style-type: none"> -Has a lot of power -rechargeable 	<ul style="list-style-type: none"> -This price is too expensive -has a mass that is too heavy

Summary :

In my opinion, we would like to choose recharge able battery because it has a long lasting battery power and light mass for our product.

2.3 MECHANISM DETAIL

PART A: ELECTRIC MOTOR

(REDHUAN HARITH BIN ABD RAHMAN)

Futhermore , we want to use electric motor for our product .An electric motor is an electrical machine that converts electrical energy into mechanical energy. Most electric motors operate through the interaction between the motor's magnetic field and electric current in a wire winding to generate force in the form of torque applied on the motor's shaft.[1]

An alternating current (AC) motor is a type of electric motor. The AC motor is made up of two basic components: an outer stator with alternating current coils that produce a rotating magnetic field, and an interior rotor coupled to the output shaft that produces a second revolving magnetic field.

A DC motor is made up of a stator, an armature, a rotor, and a brush commutator. The two magnetic fields inside the motor have opposite polarity, which causes it to turn. DC motors are the most basic sort of motor and are seen in domestic items like electric razors and automobiles' electric windows.

Differences Between AC & DC Motors

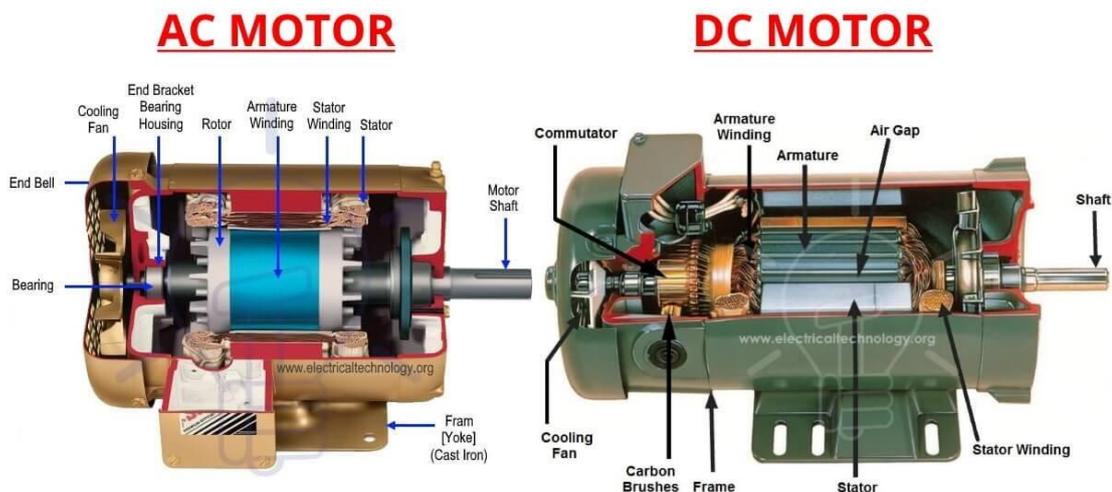


Figure 2.13 : Differences Between AC and DC Motor

Table 2.5 : Differences Between AC and DC Motor

Ac motors are powered from AC current.	DC motors are powered from DC current.
In AC motors conversion of current is not required.	In DC motors conversion of current is required like ac into dc current.
AC motors are used where power performance is sought for extended periods of time.	DC motors are used where motor speed required to be controlled externally.
AC motors can be single-phase or three phases.	All DC motors are single phase.
In AC motors Armatures do not rotate while magnetic field continuously rotates.	In DC motors, the armature rotates while the magnetic field does rotate.
Repairing of DC motors is costly.	Repairing of AC motors is not costly.
AC motor does not use brushes.	DC motor uses brushes.

AC motors have a longer life span.

DC motors have not longer life span.

The speed of AC motors is simply controlled by varying the frequency of the current.

The speed of DC motors is controlled by varying the armature winding's current.

AC motors require effective starting equipment like a capacitor to start operation.

DC motors do not require any external help to start operation.

PART B : BATTERY

(MUHAMMAD IZZUDDIN BIN ISAM)

A battery is a power source consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode. These batteries consist of two types namely dry cell and wet cell.

A battery is made up of electrochemical cells that store chemical energy before converting it to electricity. The energy is stored in an immobilised electrolyte paste in a dry-cell battery, which eliminates the requirement for water. Zinc-carbon batteries and alkaline batteries are two common types of dry-cell batteries. Dry cells are the most common type of cell.

A wet cell battery, as the name implies, uses a liquid electrolyte-containing medium to initiate a chemical reaction. A liquid electrolyte solution containing 65 percent water and 35 percent sulfuric acid, for example, sits in contact with lead and lead oxide metal plates in a lead acid battery. Wet cell batteries are commonly utilised as secondary rechargeable batteries.

Table 2.6 : Differences Between Dry Cell and Wet Cell

Dry cell	Wet Cell
Dry cells are small	Wet cells are large
Electrolytes are moist solids	Electrolytes are liquids
There is no leaking of chemicals	Corrosive chemicals tend to leak
Easy to handle	Difficult to handle
More expensive	Less expensive
Difficult to manufacture	Easy to manufacture
Cannot withstand overcharging	Has the ability to withstand overcharging

PART C : RADIO CONTROLLED / REMOTE CONTROL RC CIRCUIT BOARD

(ADLAN HAZIQ BIN MOHD IZAAN @ ZANI)

Radio control (often abbreviated to R/C or simply RC) is the use of control signals transmitted by radio to remotely control a device. Examples of simple radio control systems are garage door openers and keyless entry systems for vehicles, in which a small handheld radio transmitter unlocks or opens doors.

Radio-controlled or remote-controlled toys, popularly called RC toys, are self-powered and can be controlled from a distance using a remote that works with radio waves. 1. When we push the control, the transmitter sends a specific number of electrical pulses corresponding to that action through the air. The vehicles from a hand-held radio transmitter.

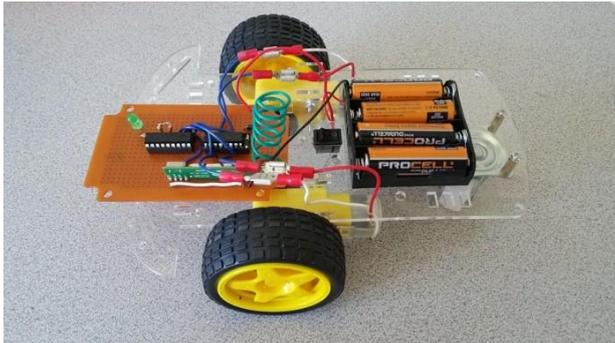


Figure 2.14 : Model RC Car

The RC car is a great project for all ages and it doesn't require any programming. **It uses simple integrated circuits (IC) and it is controlled wirelessly by a remote controller.** The remote controller sends out an encoded radio-frequency (RF) signal to the RC car. The RC car decodes the signal and moves accordingly. The car moves like a tank: to turn left, the right motor is turned on and pivots on the left wheel, and vice versa.

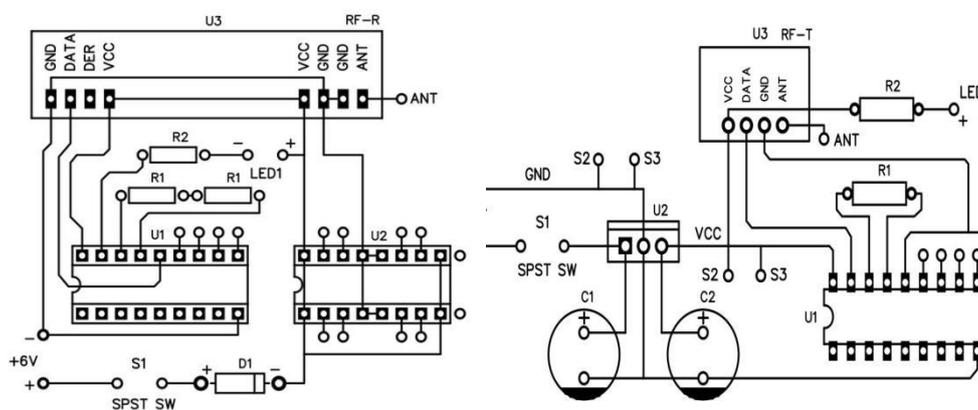


Figure 2.15 : Integrated circuit

How it work ?

1. When we press the button, the transmitter emits a specified number of electrical pulses across the air, proportional to the action. The transmitter runs on its own power, which is commonly a 9-volt battery. The transmitter will not be able to send radiowaves to the receiver without the battery.

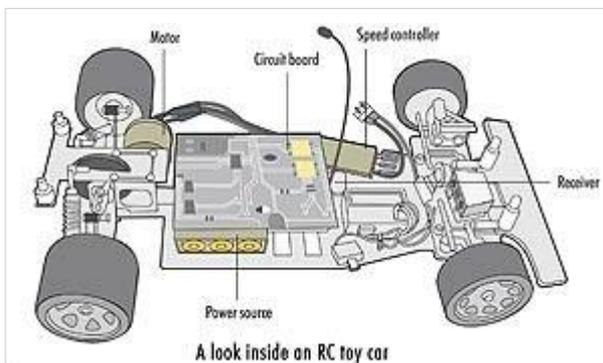


Figure 2.16 : RC Model

2. When the RC toy receives the radio signals, the motors start up and perform a certain action. All operating parts, including the motor, receive power from the power source. The transmitter sends radio waves to the receiver, which activates the motors. A pair of electrical contacts touch when we press a button on the transmitter to make the RC toy move forward or backward. I am the receiver

3. Circuit board translates the number of electrical pulses (signals) into action. Full-function controllers have six controls and these works through following the pulse sequences:

Parts of an RC toy



Figure 2.17: Part of RC Toy

Transmitter: The remote control contains a radio transmitter which operates on a particular frequency that the receiver is designed to receive.



Figure 2.18: Transmitter

Receiver: The receiver is fixed within the car and constantly receives signals from the transmitter. When a transmission is identified, it translates the number of electrical pulses into action.



Figure 2.18 : Power source

Power source: All remote control cars require a power source. Rechargeable batteries power small electric motors. Alternatively, some use small internal combustion engines.



Figure 2.19 : Motor and circuit board

Motor and Circuit Board: The motor is responsible for the turning motions of the toy while the circuit board works like a pool through which all commands go on to specific parts.

2.4 SUMMARY

Finally, after this study is done, there is a variety of information that we have collected and it can be used in designing projects that we will build. In addition, the study can help us in selecting the best design for controllable mop machine that will design for helps in reducing the use of manpower and speeding up the process of cleaning the floor in the house.

CHAPTER 3: METHODOLOGY

3.1 INRODUCTION

This chapter discusses in detail the methodology and the project design process of the study. This discussion will guide to complete the controllable mop machine project. The differences of the characteristic of all the design and the main importance needed to fulfil the purpose of the project. The design that will be choose will be explained in detail to be understand clearly of the project drawing during implementation.

All the function and importance will be discussed and identified so that the project objective is achieved. At the end of the chapter, we will prepare a table that will show you the total time taken to complete the project and also a table that shows the item cost that will be needed to complete the project.

3.2 Project Design

Design 1 (ADLAN)

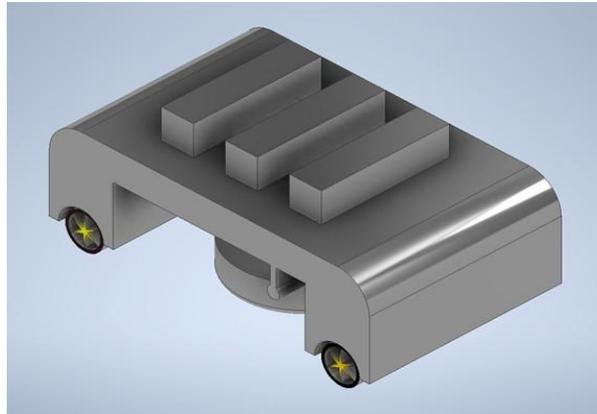


Figure 3.1: Isometric view 1

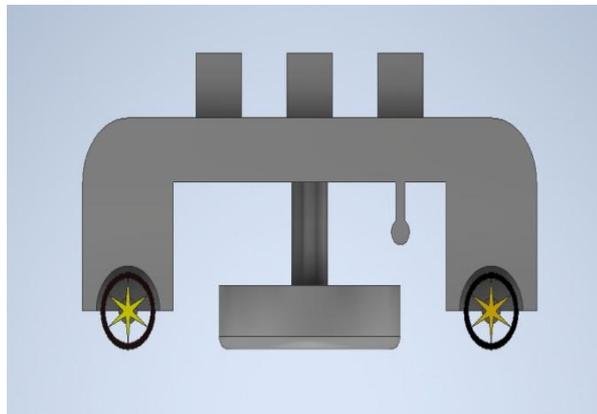


Figure 3.2 : Front view 1

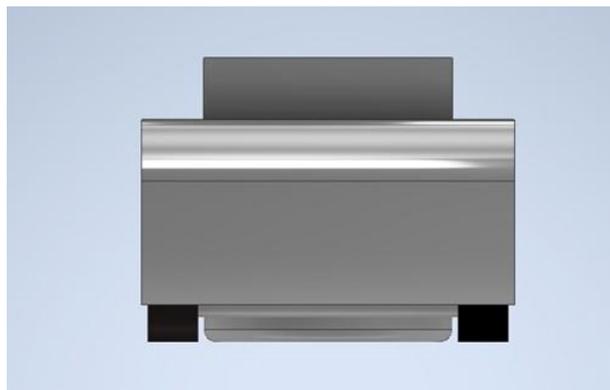


Figure 3.3 : Side View 1

Design 1 is our first design idea for our Controllable Mop Machine using the Autodesk Inventor Professional 2021. For this design, it uses plastic for the main body so that it will have more weight on it. Cotton based material are used for the mop because it is easy to get and safe to use. The first design is more likely to have advantages than the two other design. The water tank material that used for the design is plastic, which is suitable because it will not break while using the machine.

Design 2 (IZZUDDIN)

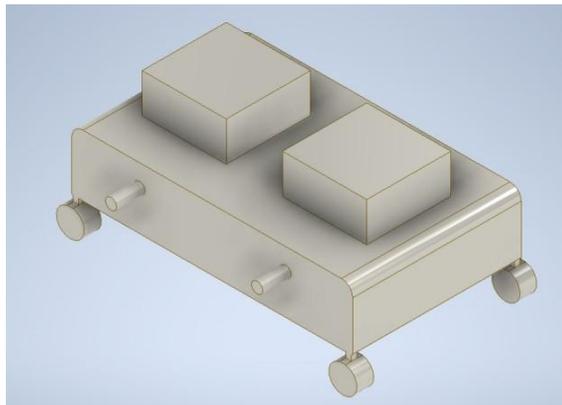


Figure 3.4 : Isometric view 2

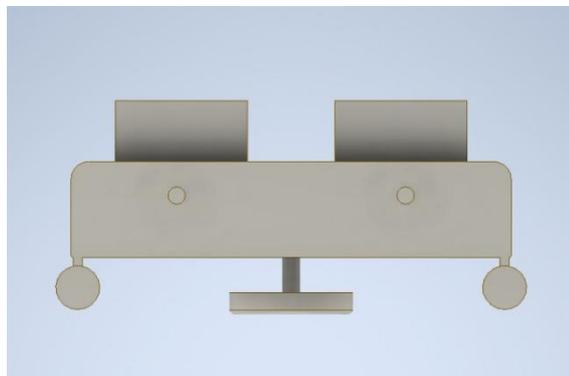


Figure 3.5 : Front view 2

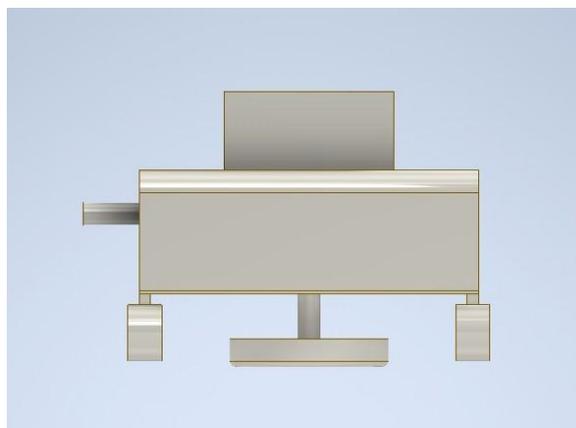


Figure 3.6 : Side View 2

Design 2 is our second design idea for our Controllable Mop Machine using the Autodesk Inventor Professional 2021. This design body is mainly using aluminium. Using aluminium really lower the cost, but the material is not durable. The mop material for the design is also using cotton with the same reason as the first design. Glass is used for the water tank, and the disadvantages of it is that the material is fragile and not suitable to be used.

Design 3 (REDHUAN)

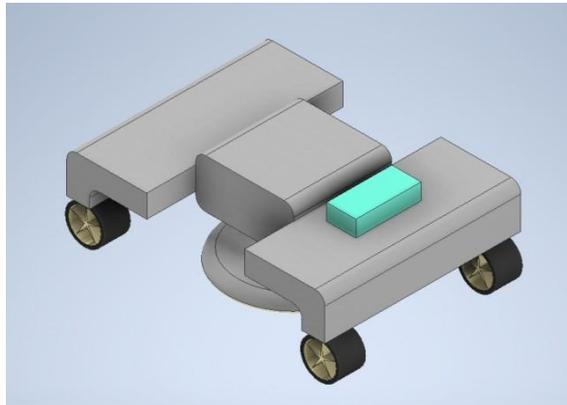


Figure 3.7 : Isometric view 3

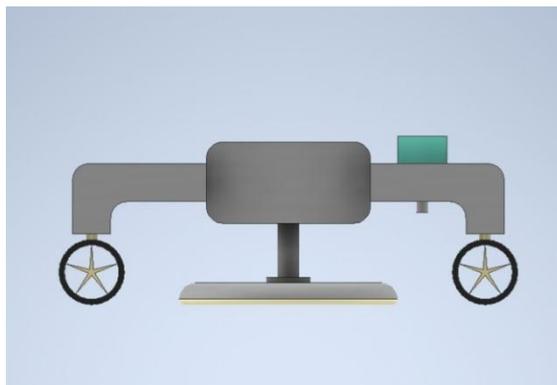


Figure 3.8 : Front view 3

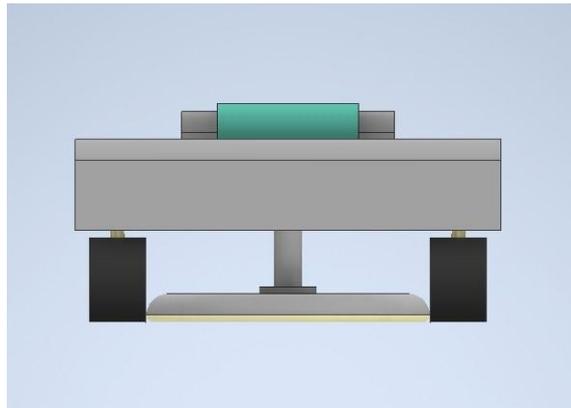
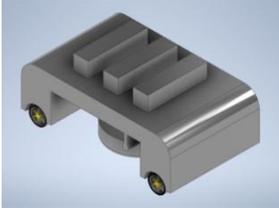
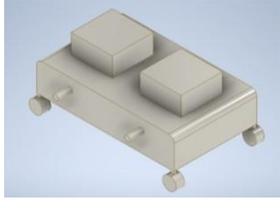
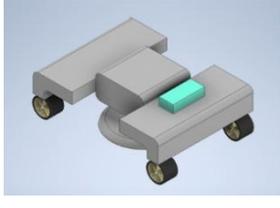


Figure 3.9 : Side View 3

Design 3 is our third and final design idea for our Controllable Mop Machine using the Autodesk Inventor Professional 2021. For this design, aluminium is also the material for the main body. Like design 2, aluminium is not durable to be used although the cost for the material is low. The mop material for this design is microfiber, which is better than cotton. And the material for the water tank is also glass, which is fragile to be used.

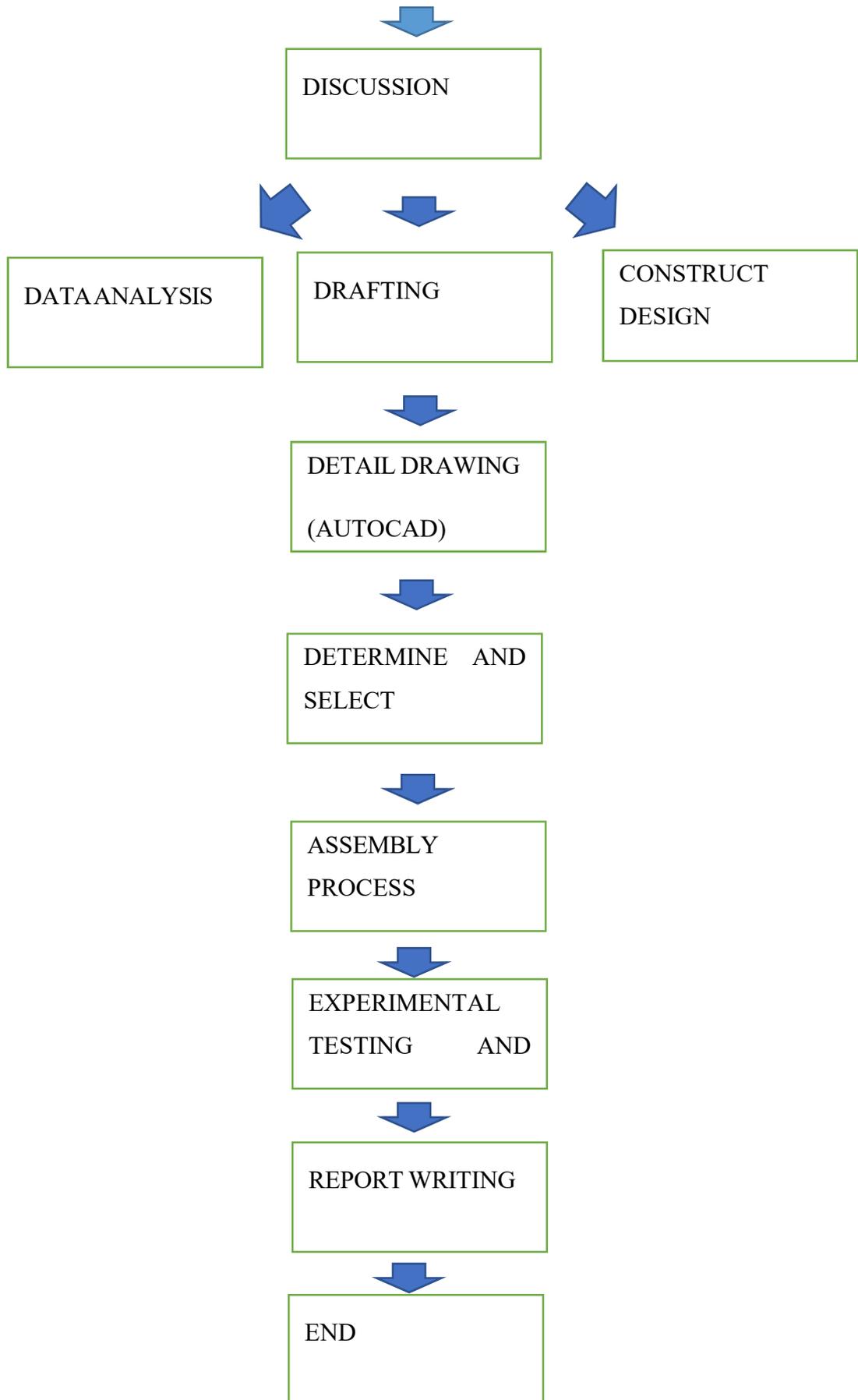
Evaluation

Design			
	Design 1	Design 2	Design 3
Main Material (Body)	Plastic	Aluminium	Aluminium
Dimension (cm)			
Mass (kg)	20	15	18
Mop material	Cotton	Cotton	Microfiber
Water tank material	Plastic	Glass	Glass
Water tank capacity (l)	1.0	0.8	0.5

From the table above, Design 1 is the ideal design considering the material, durability, cost, time taken and functionality. So for the conclusion, we are using Design 1 for our project in this final year.

3.2.1 Project Production Method

START



Discussion between group members and giving of ideas.

Giving ideas must provide important information and must follow the theme provided which is innovative and sustainable.

Project goals and objectives

The objective of the project is to make improvements to the goal. For the purpose of the project should focus on solving problems that are in our environment.

Project sketch

In this process, each sketch produced must have a detailed design that has its own function on each part.

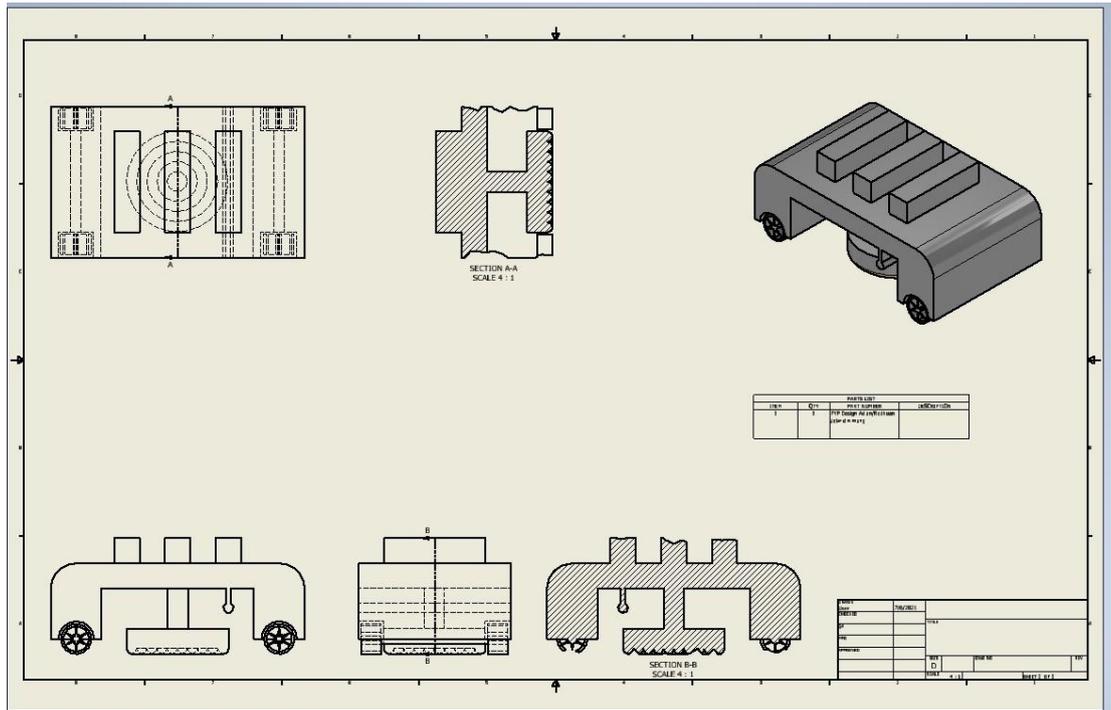


Figure 3.10 : Sketch project

3.2.2 Material Type & Equipment

Table 3.1 : Material

PART	MODEL AND SIZE
	<p>1. PVC Plate</p> <p>Length = 30cm</p> <p>Width = 20cm</p>
	<p>2. Bekas keras</p> <p>Length = 30cm</p> <p>Width = 20cm</p>

	<p>Water tanker</p> <p>Length = 10cm</p> <p>Width =10cm</p>
	<p>3.Dc motor</p>
	<p>3. Ccotton mop</p> <p>RADIUS = 10CM</p> <p>DIAMETER = 20CM</p>
	<p>4. Baterry Lithium Rechargeable</p> <p>=7000 MAH</p>
	<p>5. Wire</p> <p>= 1 meter</p>
	<p>6. Body and mother board of RC car</p> <p>Length = 30cm</p> <p>Width =20cm</p>

	<p>8. PVC Pipe</p> <p>Length = 30cm</p>
	<p>9.0 Switch on off</p>

3.2.3 Data Analysis Methods

PVC Plate



Figure 3.11: PVC Plate

PVC plate is used as the main body part. We select this material because it has lower price and it is durable to be used. This material also easy to get, so this will safe our time and ease ourself.

DC Motor



Figure 3.12: DC Motor

DC motor is one of the main component of this project. DC motor is used to spin the circle mop cotton. And we use the motor with 6v power because it really comes with the speed that we needed for the project.

Cotton Mop



Figure 3.13: Circle Cotton Mop

We use cotton as the material for the mop. Instead of using microfiber, we use cotton because the price is low and it is easy to get.

Assembly and Finishing Process

The assembly process will be assemble when all the material is complete and enough. And for the finishing process will be proceed when the pvc plate has been combined.

Availability and Cost

The product that we made is still not available in the market. The other mop machine that exist is the one with the artificial intelligence and the one you push manually. Our product is different compared with the existing mop machine, which is using remote control. So we are taking initiative to produce a product that suitable for everyone daily usage. And also this product is affordable for everyone to purchase. And for the material cost, you can refer table 2 on 3.2.2 .

Ergonomic Analysis

Ergonomic term is the most significant term and always related to the world industry, of manufacturing, building and engineering technology. Ergonomic is also known as ‘human factor’ become one of the most important issue in the profession world. The term human factor initiates at the United States of America and the term ergonomic mainly used in the Europe, Asia, Africa and almost the entire world.

Expected Results

The expected results for the project is to produce a product that will help everyone to mop the floor without worrying about the risk. Other than that, the product that we will produce will ensure you excitement while doing your task so that you will not feel bored. Next, this product gives benefits for those who are disabled such as

paralyzed and handicapped. And our product also give positive effects like saving our energy and our aim is to get this product to be available and sold in the market.

3.3 SUMMARY

As for the conclusion, we conclude that the product that we invent will help everyone in their daily life and lighten their burden. We also hope that this product will be accepted by the society and will be upgraded in the future and by the future generations.

CHAPTER 4: PRELIMINARY FINDING OF STUDY

4.1 INTRODUCTION

In the preliminary investigation of this study we will discuss about the comparison between Controllable Mop Mechine project with mop machines already available in the market, In addition, we will also make a project evaluation as well as the advantages and disadvantages of the project. We will also discuss about the project that has been innovated. Next, we also provide the results of research obtained from the public by using google form.

4.2 FINDINGS/ DATA / PRELIMINARY INVESTIGATION OF STUDY

We have used google form from public response for the purpose of preliminary study of our project.

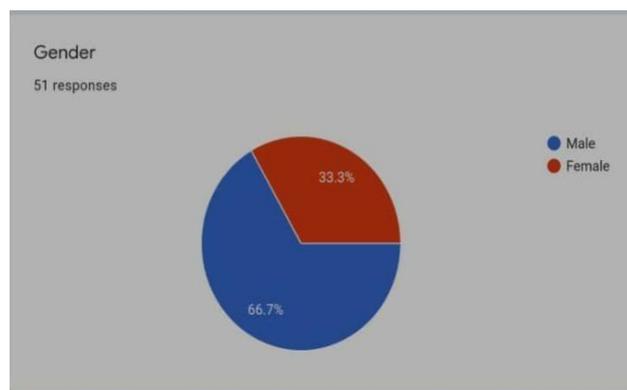


Figure 4.2.1: Pie Chart 1

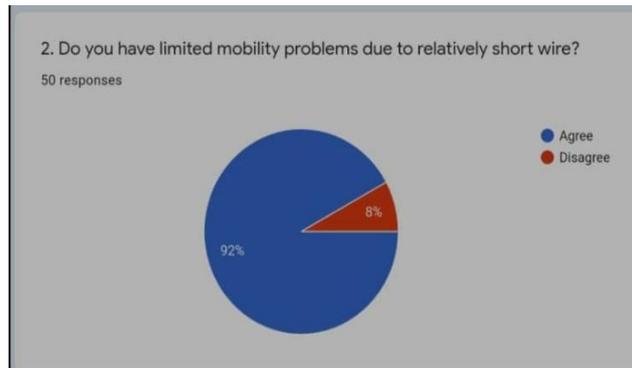


Figure 4.2.2: Pie Chart 2

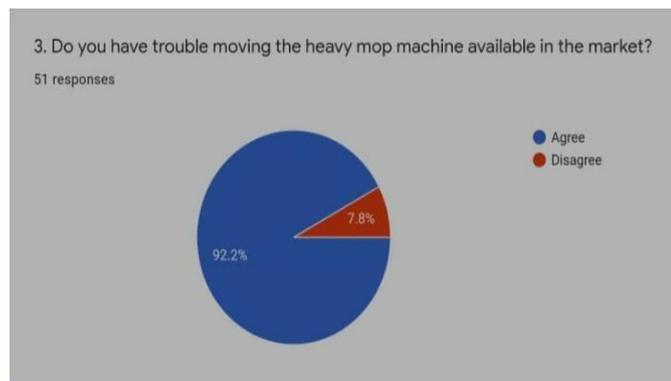


Figure 4.2.3: Pie Chart 3

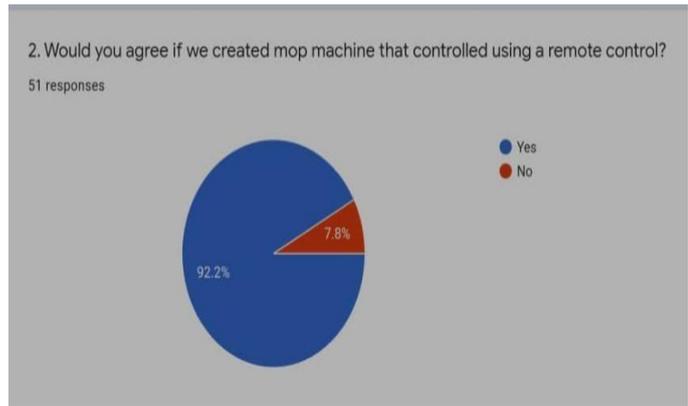


Figure 4.2.4: Pie Chart 4

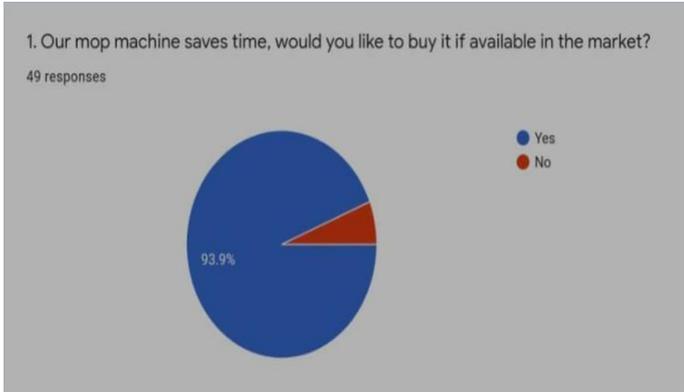


Figure 4.2.5: Pie Chart 5

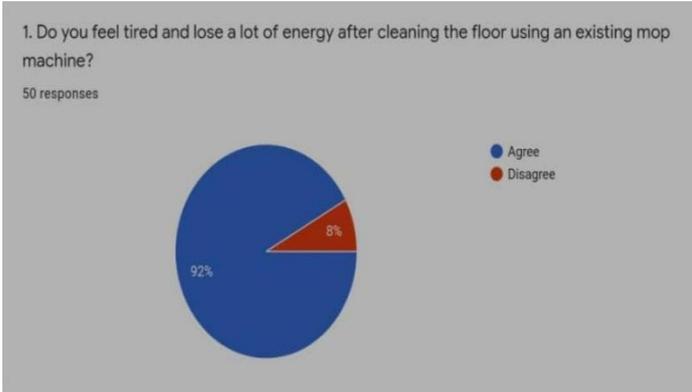


Figure 4.2.6: Pie Chart 6

4.2.2 Analysis

Ready made product

- Takes a long time to mop the floor
- Requires users to also move Together while mopping the floor

Products that have been innovated

- Takes little time to mop the floor.
- Users only need to control using the remote control only.

4.2.3 ADVANTAGE AND DISADVANTAGE OF MOP IN THE MARKET

ADVANTAGE	DISADVANTAGE
Easy to use	Use a lot of energy
Readily available in the market	Hard to repair

4.2.4 PROJECT INNOVATION



**Figure 4.2.7 : with cotton mop
at the bottom**



**Figure 4.2.8 : with water bottle
at the front top**

4.2.4 ADVANTAGE AND DISADVANTAGE OF INNOVATION PROJECT

ADVANTAGE	DISADVANTAGE
able to clean the floor surface with a high mop rotation speed	A bit expensive
control using remote control	the battery runs out quickly
saves time	recharging is quite long

4.3 PROPOSAL

The following improvements can be made to this project to increase the efficiency and accessibility of product innovation.

1. use a water drawer to channel water from the back to the front of the project.
2. the water comes out automatically when the mop moves.

4.4 SUMMARY

For conclusion, we are satisfied with our project and the response from the public greatly helped us to make this project a success. We will also add additional features to satisfy users to be satisfied with our project.

CHAPTER 5 : DISCUSSION AND CONCLUSION

5.1 Introduction

For this chapter, the decisions made are based on all the results obtained from the experiments conducted and the discussions in the previous chapters. In this chapter as well, relevant matters are related to the objectives of the study and also recommendations for the study conducted. In addition, conclusions were drawn for this experiment.

5.2 DISCUSSION

(ADLAN HAZIQ BIN MOHD IZAAN @ZANI)

In this project, a controllable mop machine using a remote control has been successfully established and tested. Due to having user-friendly features so used by household users. The best benefit is that it reduces the wastage of time that has been wasted. In addition, this project provides optimal cleaning because it uses a high -speed DC motor to indirectly clean the floor surface to the maximum. The advantages of this project are many. If this technology is implemented in the real world ,. The best solution of this project is controlled use for the purpose of time saving and optimal cleaning.

(MUHAMMAD IZZUDDIN BIN ISAM)

Controllable mop machine has the advantage of spinning mop speed of 12v and 12 000rpm. It automatically when moving the switch is turned on will rotate the mop at maximum speed. Indirectly the mop makes the floor surface smooth and clean.

(HARITH REDHUAN BIN ABDUL RAHMAN)

In the manufacture of controllable mop machine starting from problem identification, application design, application creation and tools. To implement a controllable mop machine starts from the preparation of tools, connecting tools and conducting experiments on the living room area in the house

5.3 CONCLUSION

The results of the experiments conducted on the controllable mop machine can be concluded that APW has achieved the objective of the study which is to clean the floor at maximum speed to make the floor surface clean and smooth. .

References

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- ii. https://en.m.wikipedia.org/wiki/Dry_cell
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- iv. <https://sciencing.com/wet-vs-dry-cell-battery-5510631.html>
- v. <https://www.-work/rc-toys-radiowaves/story/17649.html>

LAMPIRAN

A. Gantt Chart

TASKS	OCT 2021				NOV 2021				DEC 2021			JAN 2021		
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
MATERIAL SELECTION	█	█												
MATERIAL PURCHASE		█	█											
METHOD SELECTION				█	█									
BUILD						█	█	█	█					
TEST RUN										█				
ANALYSIS DATA											█			
FINAL PRODUCT PRESENTATION												█	█	
THESIS SUBMISSION														█

B. Project Cost Estimated

Type	Cost (RM)
DC Motor	12.00
Battery	24.00
Cotton mop	25.00
Wire	3.00
PVC plate	30.00

Pipe	5.00
Water valve	13.00
Switch button	4.00
PVC tube	5.00
Water bottle	1.00
RC Car	120.00
TOTAL	242.00

