DCW50243 :WOOD BASED TECHNOLOGY
PROJECT

SURVIVAL STAFF

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ACKNOWLEDGMENT

First of all, we would like to say that the success and final outcome of this report required a lot of guidance and assistance from many people and we extremely fortunate to have got this along completion for our project report.

Whatever we have done is only due to such guidance and assistance and we would not forget to thank them .We respect and thank to Encik Muhd Kamal Ariffin bin Hj Badrun for giving we an opportunity to do this project report work and providing us all support and guidance which made us complete the report on time, we extremely grateful to him for providing such a nice support and guidance.

We are really grateful because we managed to complete this report within the time given by Encik Muhd Kamal Ariffin bin Hj Badrun which is our best lecturer in this course DCW 40173 Project Proposal.Futhermore,this project cannot be complete without the effort for our team members.Last but not least,we would like to express our gratitude to our friends classmate for support and willingness to spend some time with us making some discussion about report with us.

ABSTRAC

The purpose of this project is to produce Survival Staff by using recycled materials. Survival Staff is a hybrid of wood and rattan sticks. The Survival Staff is enhanced the wooden and rattan sticks by replacing them with aluminium created from recycled materials.The purpose for introduction Survival Staff it has been explained about the introduction of the beginning of wood used since time immemorial and from time to time until the wooden stick was converted into a stick made of recycle aluminum pole. The use of this Survival Staff also has many advantages which is survival staff can help us balance the body and other uses.In addition, the beginning of the wood and who used the wood and background of study we learned with this course related to the final year of the project we produced and at the same time , in the making Survival Staff we need to make a problem statement that we face during the process of making Survival Staff.The purpose of the literature review conducted was to gain an understanding of the existing research and debates related to Survival Staff.There are a several of people who professional and have experience in Survival Staff are giving their respective opinions in terms of its design and function.The purpose content for the methodology is there are drawings, designs, types of materials we use such as oil palm chopper aluminium palm and solid for triport adaptor, Connecting adaptor and also Lid produced by 3D printer and Snapbot Markerbot.It also procedure for Survival Staff.The purpose for data and analysis is to finding the problem and solving the problem. There are several problems that need to be emphasized for this Survival Staff. From here, we can making conclusions based on the questionnaire that has been made. Among the research that most respondents disagreed with was in the statement stating that Survival Staff is suitable for everyone. So from here the solution, we found that most of our respondents are not from someone who likes adventure season, forest exploration and hiking. This research focuses for adults who wishes to enter survival dimension. Survival Staff have to be test Loading Testing,Impact Testing,Skracth Testing,Water Poising Testing,Drop Testing and Wind Testing.W e were able to learn many ways about the use of 3D printer and Makerbot machines during the triport adaptor,connecting adaptor and lid manufacturing process and were able to get to know the machine tools that we had never seen and heard of before. There we can experience together by making our Final Year Project for this 5th semester. With the help given by Sir Kamal, Sir Razli, Sir Hanif, Sir Shahril, Sir Fahmi in the process of making this triport and lid, we really appreciate the services and efforts they have given us by helping us to setup a 3D Printer and Makerbot machine. as well as not to forget also to our friends who were involved in helping us to make our Final Year Project. We really appreciate the help they have given. Finally, we were able to complete our Final Year Project, Survival Staff, smoothly and with Allah permission.

CHAPTER 1

1.0 Introduction

Survival staff have been an inseparable part of the history, because these were used by great discoverers Survival Staff Basics. Pat Crawford developed the original Survival Staff nearly 30 years ago and its brilliantly simple design is still unrivaled in today's market. The Survival Staff appears to be nothing more than a high-quality hiking staff made from aluminium instead of wood. In reality, it's an incredibly versatile, completely modular survival system that offers functionality far beyond a humble stick.. Like any tool, the real utility of the Survival Staff lies in your ability to make it and its components perform the tasks you need when you need them. Because it's a modular system that you can configure, its ability to meet those needs is quite impressive. As a hiking staff or walking stick, it helps you keep your balance on any kind of terrain, makes a potent impact weapon, and provides on-board storage for a comprehensive survival. This Survival Staff focuses for aldults who wishes to enter survival dimension.

Survival Staff are a common hiking accessory that function to assist walkers with their rhythm, to provide stability, and reduce strain on joints on rough terrain.The use of Survival Staff is one of theoptions for climbers. When in use, Survival Staff resembleas they have many features in common, such as baskets at the bottom to prevent the pole sinking through unstable surfaces, and rubber-padded handles and wrist straps to strengthen holding grip. Their maximum length is usually 278.68 mm

Survival Staff Basics. Pat Crawford developed the original Survival Staff nearly 30 years ago and its brilliantly simple design is still unrivaled in today's market

FIGURE 1 : Pat Crawford with his Survival Staff

Used Of Survival Staff

In common use ,Survival Staff have a lot of function to use for example :

1. To help balance the body, for example when crossing a small or heavy river,Hills, crossing uneven rocky areas, if carrying heavy items and when taking a short break in uneven areas.

FIGURE 2

2. For pressure on the back of the body and the knees of the feet the effect provides extra energy and balance of climbing compilation, pressure on the knees while descending the hill. The pressure load on the body and back can be reduced

FIGURE 3

3. Other uses of this stick are as a weapon in an emergency, as a tool to support a backpack (to stand), as a handle/cling if a short break (do not place the bag) and also serves as a tool to clean if there are obstacles in the way.

FIGURE 4



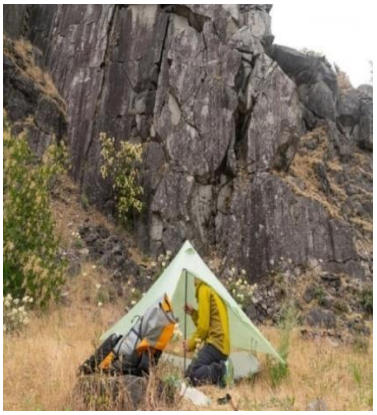


FIGURE 5

4. As a pole for a tent or flysheet and a camera tripot

5. To help/increase your efficiency for example to step over a fallen tree, or a rock on the path (track) and as a deterrent to avoid falling

FIGURE 6


FIGURE 7

6.To be used as survival hiking a flagpole other than a survival item

1.2 History of Staff

The walking staff is one of mankind's oldest and simplest tools. People have used these long wooden shafts for thousands of years.Walking staffs are sometimes called "staves" or simply "sticks." The earliest types were just straight, sturdy rods of wood. But then as now ,the staff had hundreds of uses.Laborers used staffs to help support the loads they carried. Poor people who weren't allowed to own other weapons used the staff for protection.(Remember the staffs used by Robin Hood's merry men?) Travelers relied on the staff to provide balance in rough terrain and when crossing rivers.

Some ancient people used staffs for record-keeping. The Norse used a notched staff called a"skor" to keep track of numerical information. The word stuck around to become today's"score." Many Boy Scouts still "keep skor" by notching their staffs every time they hike a certain number of miles.

In ancient times, the staff was also a symbol of authority and power. It was an emblem of office for pharaohs in Egypt. The staff with a crook has long represented the shepherd watching over his animals. Some American Indians carried a staff called a "coup stick" that was decorated with carvings and feathers to celebrate victories in battle.Staffs are still used as symbols. For example, a stylized figure with a staff often marks the location of hiking trails.In many countries, the same symbol indicates a hostel—a place of rest for a weary walker. As you can see, the staff has a long, interesting history. And like any tool used for many centuries, the staff has changed a lot since its beginnings. Many staffs now are made from metal or other materials instead of wood. Some staffs can be folded to fit in a pocket or backpack. Some have added accessories, such as compasses or camera holders.One thing hasn't changed, however. The staff in all its forms still has hundreds of uses.The main reason most people use a staff is for balance. With a staff in hand, you can carry heavy loads across steep slopes, rocks and bogs with confidence. On flat ground and good trails, the staff helps maintain a walking rhythm. "A hiking stick helps make the miles glide by," wrote Robert Birkby in Boys' Life magazine. "It swings comfortably in your hand, offering balance and a rhythm to your gait."

1.3 Background of study

In this course, Diploma Wood Based Technology have emphasizes a combination of introductory and advanced machine operations for furniture construction and produced product .Current industry standards are introduced. Students conceptualize solutions to various problems, then design and build a final product.

Students engage in various learning activities including note taking, research, individual projects, demonstrations, and presentations. Students develop and use several skills including safe work habits, organization, problem solving, and practical application of woodworking techniques to acquire an appreciation of craftsmanship. Students are assessed through observation and performance as measured through tests, quizzes, assigned tasks and projects, and by the quality of work produced. Wood Technology class maintains state of the art machines currently used in industry practice, in order for students to prepare for competitive entry into the current job market.

Wood based industries means any industry or processing unit whose primary raw material is wood or wood based products including round or sawn wood, softwood, pulpwood, plywood, veneers, wood chips, pulp, but does not include bamboos and their products .These three types are softwoods, hardwoods, and engineered wood. Each of these different wood types can be used in a different ways.

The basic element for wood-based composites is the fiber, with larger particles composed of many fibers. Elements used in the production of wood-based composites can be made in a variety of sizes and shapes. Typical elements in- clude fibers, particles, flakes, veneers, laminates, or lumber

1.4 Problem statement

Limit Space : Survival staff is one of the products that can save space with a size that is not too large and only suitable for placing a small capacity for example spear, underwear, first aid, and survival item

Design : Design for our survival staff is simple suitable for users who want a simple and easy design with small capacity.

Material: Wooden material fails in a different way for example rot , greasy and not durable. Although , we change wooden material to an aluminium trekking pole because to avoid illegal logging and timber can only be used for a short period of time if not properly cared for. Wood material also variety of pets are attracted to and can destroy the wood material by Termites ,carpenter bees ,carpenter ants , powder post beetles and wood – devouring fungi…

Time constraints : The time constraints that apply can cause a short time for the production process of lid and tripod adapter by using a 3D printer and Snap MakerBot machine that operates for 74 hours equivalent to 3 days for the production process of triport adaptor and lid.

Machine problem constraints : Machine constraints that cause the machine for 3D printers and MakerBot machines are always break down such as Triport adaptor falling during operation. This causes, triport adaptor and lid can not be implemented properly.

Constraints of instructor : Lack of more skilled instructors in 3D Printer machine and MakerBot machine.

Costs problem constraints : The aluminium pole that needs to be bought is priced at RM 1100. One aluminium pole costs RM 220. We need to buy 5 aluminium poles.

1.5 Signification Of Study

Aim : This research focuses for adults who wishes to enter survival dimension.

Study : This project creates Survival Staff that can be used for recreational purposes such as trekking.

Finding : This product is produced for users to do trekking activities comfortably for survival in the jungle

1.6 Objective

- To be used as survival hiking a flagpole other than a survival item.
- To build the strength of a survival hiking that can help us balance our body.
- As a protective survival container during an emergency when colliding with danger and high risk situation in the forest.

1.7 Scope

- This research focuses for adults who wishes to enter survival dimension.
- Although ,the research focus on the stuff but its also have an alternative usage…The survival flagpole…
- Shelter construction this staff can be used as a pole to set up a tent or flysheet and can be used as a triport for a camera and also as a flag pole. Here we can save the available space, and one staff has a variety of uses and our needs.

1.8 Survival Staff Sizing Guide

Standard size of Staff that generally generally be 6 to 8 inches above your elbow when standing straight up. When holding the pole with the tip on the ground next to your foot, your arm should make a 90-degree angle bend right at the elbow. Most of the time, adjustable hiking sticks are recommended for the best fit.Although,for the Suvival Staff, it consists of a two-piece body, a steel point, an aluminum handle and cap, a 440C stainless steel blade, a rubber crutch tip, and a soft rubber grip. When all of these parts are assembled together, it produces a 57 -inch climbing staff that hides a 440C stainless steel blade at the top like a sword rattan. The bottom, provides on-board storage space for living supplies and accessories-as well as other unique functions (more on that in a moment).

FIGURE 8

Various types of stick holders

FIGURE 9

Various types of body and locking systems

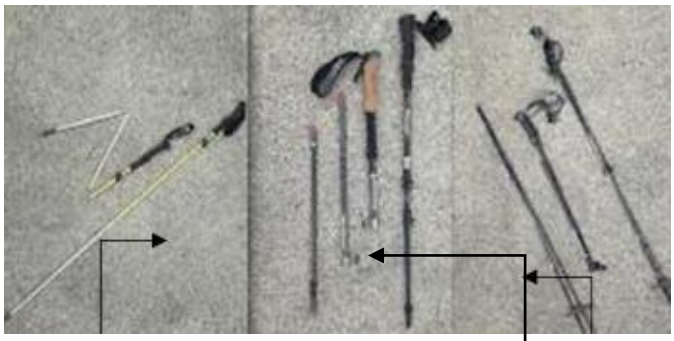


FIGURE 10

The picture shows the type of folding/ adjustment stick. Left: the stick is foldable and can usually be used to pitch a tent or fly as well. Middle: 2-piece telescopic stick, suitable for filling/storing in a hiking bag when not in use. Right: 3-piece hiking pole, more compact, easy to carry, and most commonly used.

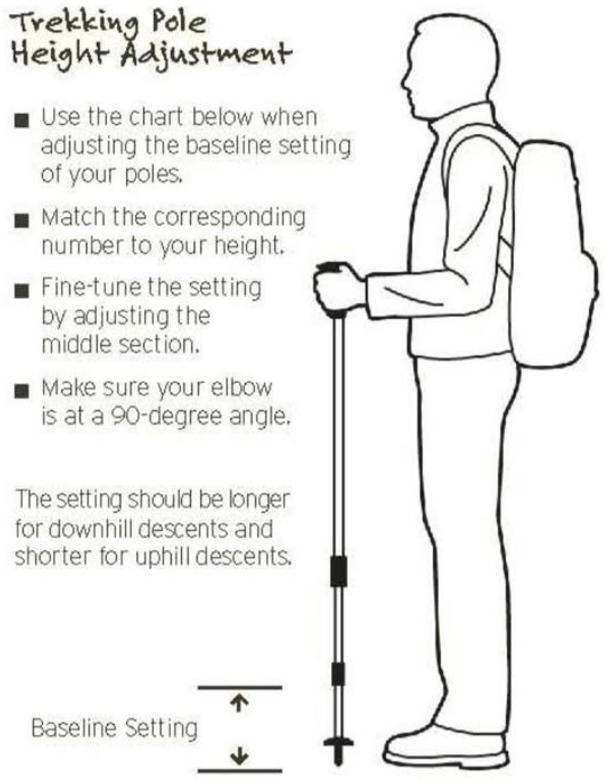


FIGURE 11 : TREKKING POLE HIGH ADJUSTMENT

FIGURE 12 : Adjustment of the sticks according to the shape of the earth's surface.

CHAPTER 2

2.0 Literature Review

A literature review is a compilation of scholarly texts on a certain subject. It includes a summary of current knowledge, pertinent theories, methodologies, and research gaps. Aside from that, literature reviews include secondary sources that include original experimental work, academic journals, book reviews, and peer-reviewed journal articles that provide fresh research. A literature review can also be written as a thesis, dissertation, or journal article.

In ancient times, a walking staff was a decorative tool to indicate power and affluence. Similarly, in the 17th and 18th centuries, people carried walking staffs instead of swords. Since time immemorial, people have been using walking sticks to improve their balance, navigate new and rough terrain, or fight off all manners of predators.

According to Pill West (2014) product design is no longer limited to functions that only require a person's physiology, more people are pay attention to the psychological value created by good product modelling design .if the design is a creative activity combined with art, science, the technology and rationale of the design work of additional form shapes based on thought excavation to obtain the best result.

According to the All-Purpose Survival Staff maker (2014), you do not need to carry excess survival tools when you go for an adventure in the forest or while camping. First, you can use it outdoors to clear your way by parting thick tall grasses and branches. If you are not fond of spiders, All-Purpose Survival Staff can help clear spider webs. While outside, you can use All-Purpose Survival Staff to poke and inspect those things you are unsure of, like tiny bugs, poisonous plants, and animals.

All-Purpose Survival Staff can be used as a defensive tool against any predator. Additionally, you can use All-Purpose Survival Staff to knock down obstacles like rocks while trekking.All-Purpose Survival Staff is knurled to enhance traction and offer you balance when crossing narrow bridges, rocky waterbeds, and muddy areas.If you are crossing a foreign water body, you can use All-Purpose Survival Staff to gauge the depth of the water. Similarly, All-Purpose Survival Staff can help you identify obstacles underwater, marshland, or deep snow that could make you stumble when crossing over.All-Purpose Survival Staff has a fishing spear, thus effectively finding food when camping or for an adventure.

According to Pat Crawford and his son West (2012),by design, you can get a sturdy walking staff that works as a sword cane from this hiker's staff with the hidden blade. The distinctive bottom works well for storing your gear and other necessary personal items, amongst other things. It's clear that individual parts of the design look great by themselves, but the real genius of the design comes when you mix and match them.

The Survival Staff's modular design can accommodate different lengths, specialized sets of tools, and more, making it a favourite for serious survivalists. The Pat Crawford staff surprised many specialists and, because of this, they began creating several accessories to better it.

According to Dave Canterbury (1963) which is a well-known survival expert, used to own one. Survival Staff can began designing additions for it. According to him, the original model had a pretty standard blade, but he wanted an edge geometry that would be wider and better suited to its purpose.

According to James C.Jones (August 18th 2020) Survival Staff lists every item of gear you need to have in order to survive and, eventually, thrive. Here you will find detailed descriptions of the following gear: sleeping bags, shovels and saws, stoves, clothing and footwear, advanced medical care equipment, communications and monitoring devices, biological and chemical survival equipment, and much more. Not only is every item examined carefully, but Jones also tells you how to use it, and how to maintain it.

According to David Goyette, Dennis William Magill, Jeff Denis (2006) this Survival Staff appears to be nothing more than a hiking staff made from aluminium instead of wood. It is an incredibly versatile, completely modular survival system that offers functionality far beyond a humble stick. This survival staff review tells you more about every necessary information you need to know

CHAPTER 3

3.0 Methadology

Research methodology is the specific procedures or techniques used to identify, select, process, and analyse information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

3.1 SKETCHES

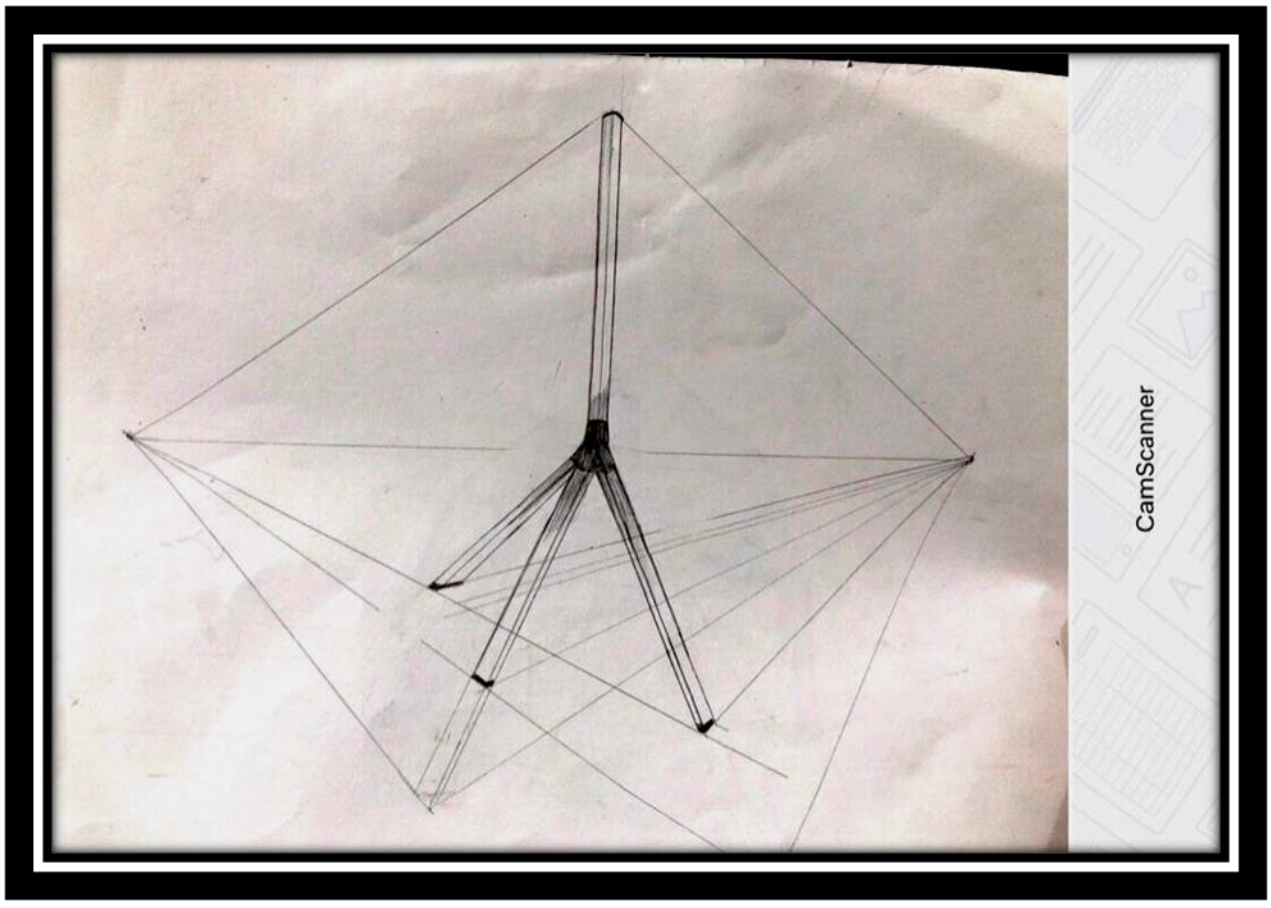
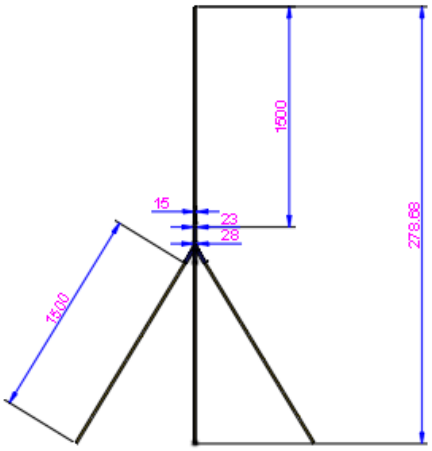


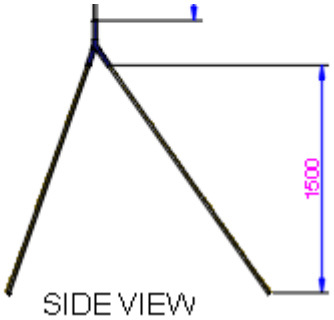
FIGURE 13 : SURVIVAL STAFF SKETCH

3.1 Technical drawing

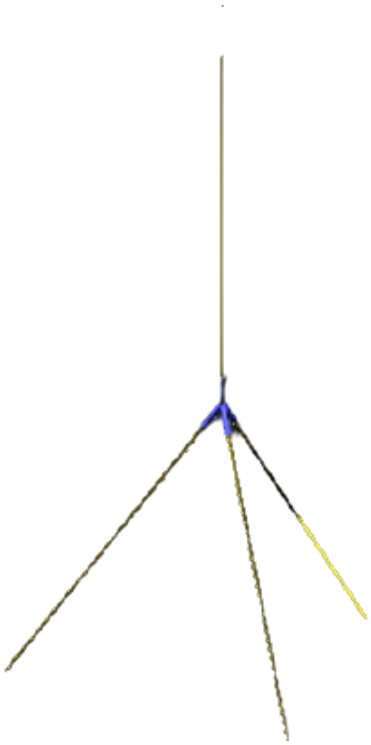
3.1.1 Orthographic view with dimension (Survival Staff)

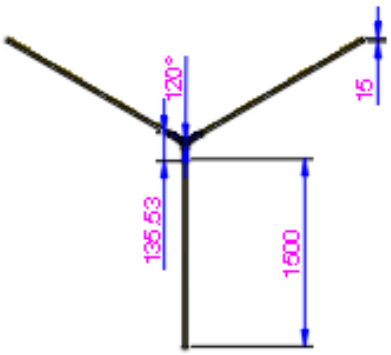


FRONT VIEW



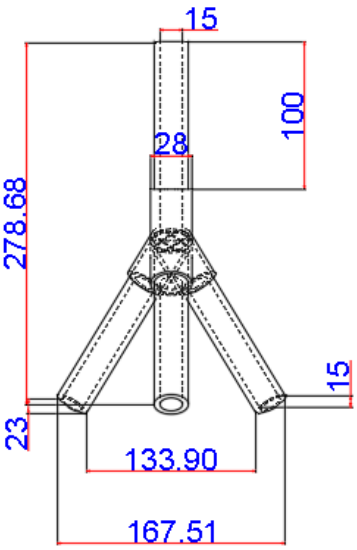
SIDE VIEW



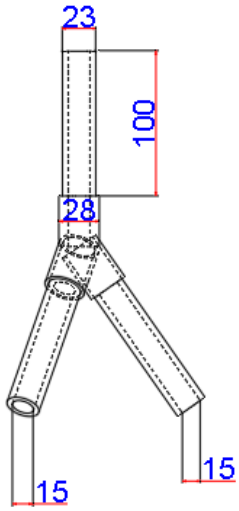


PLAN VIEW

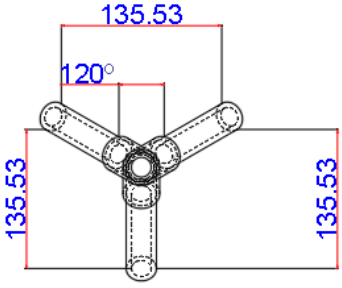
3.1.2 Orthographic view with dimension (Triport Adaptor)



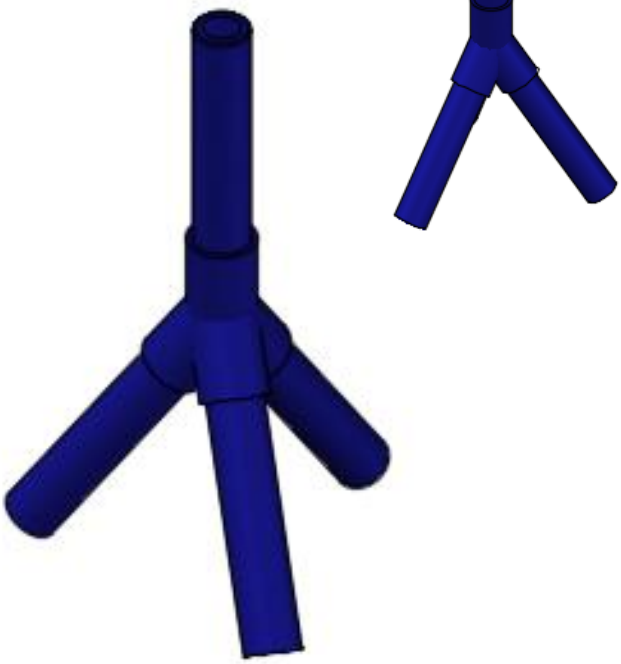
FRONT VIEW

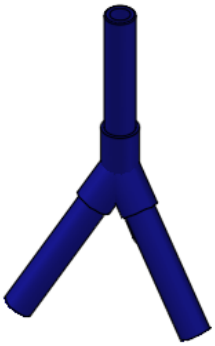


SIDE VIEW

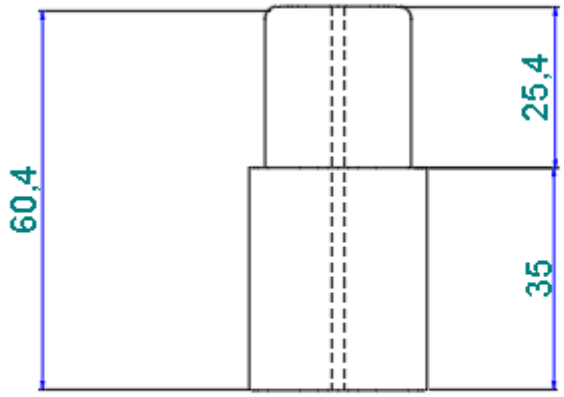


TOP VIEW

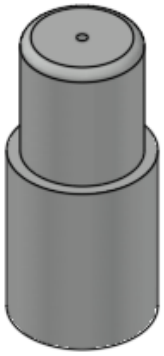


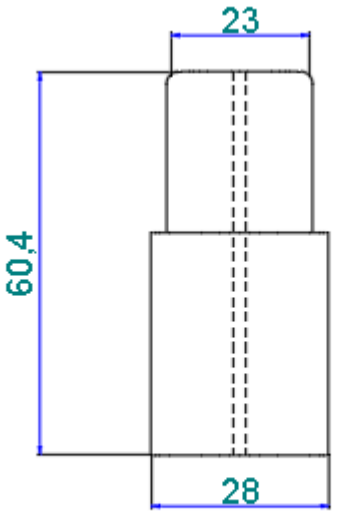


3.1.3 Orthographic view with dimension (LID)

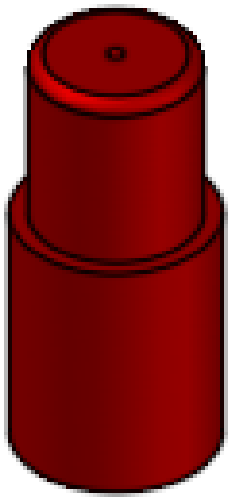


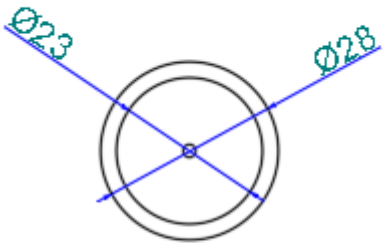
FRONT VIEW





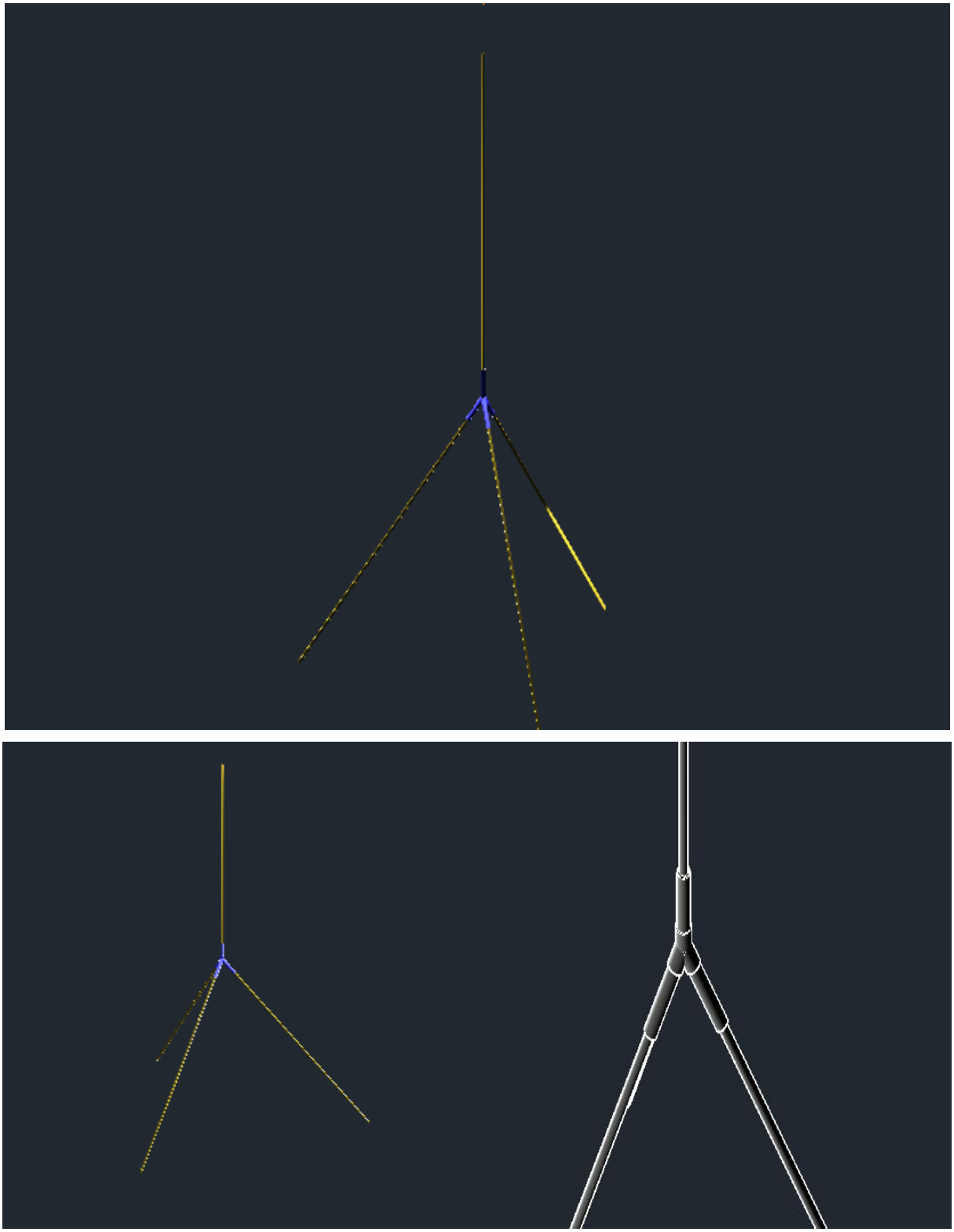
SIDE VIEW



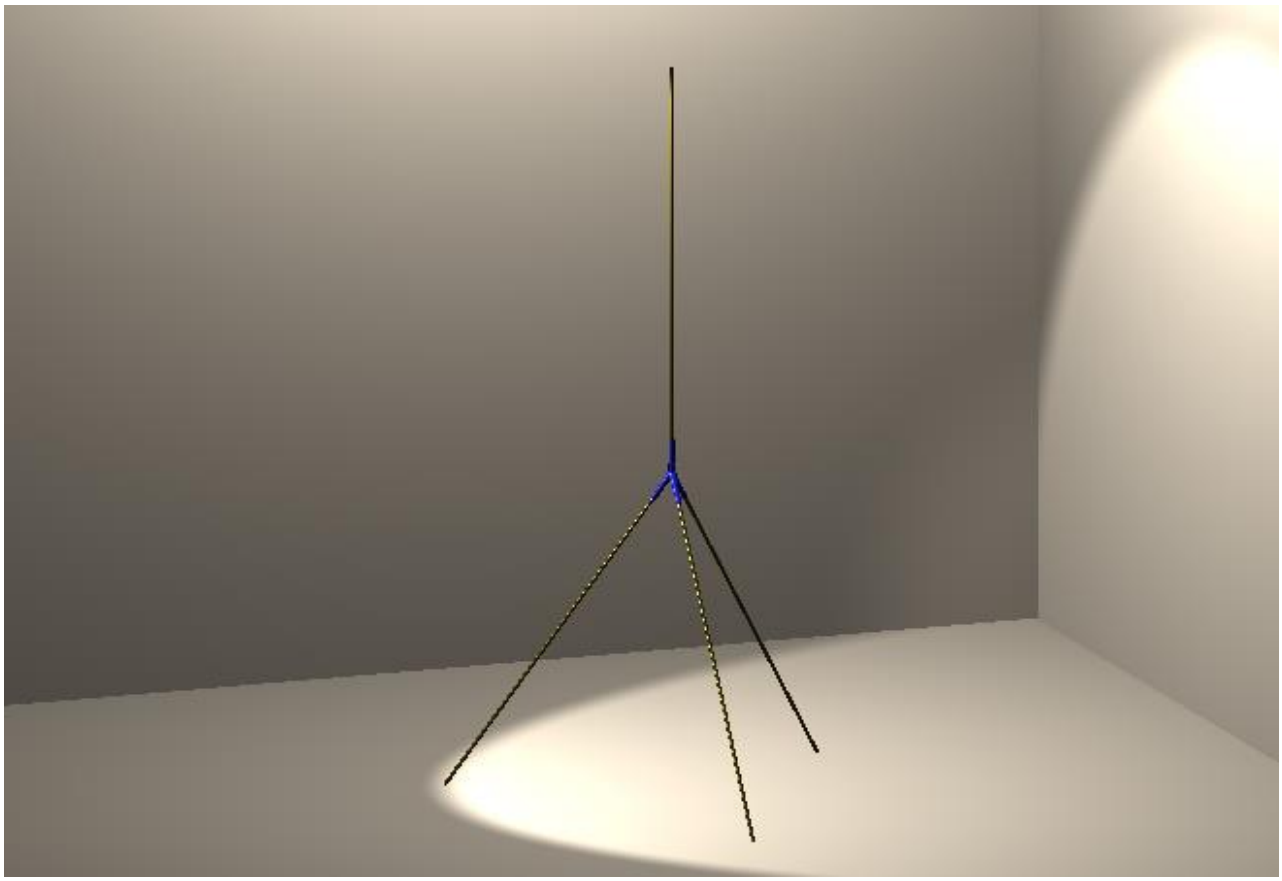


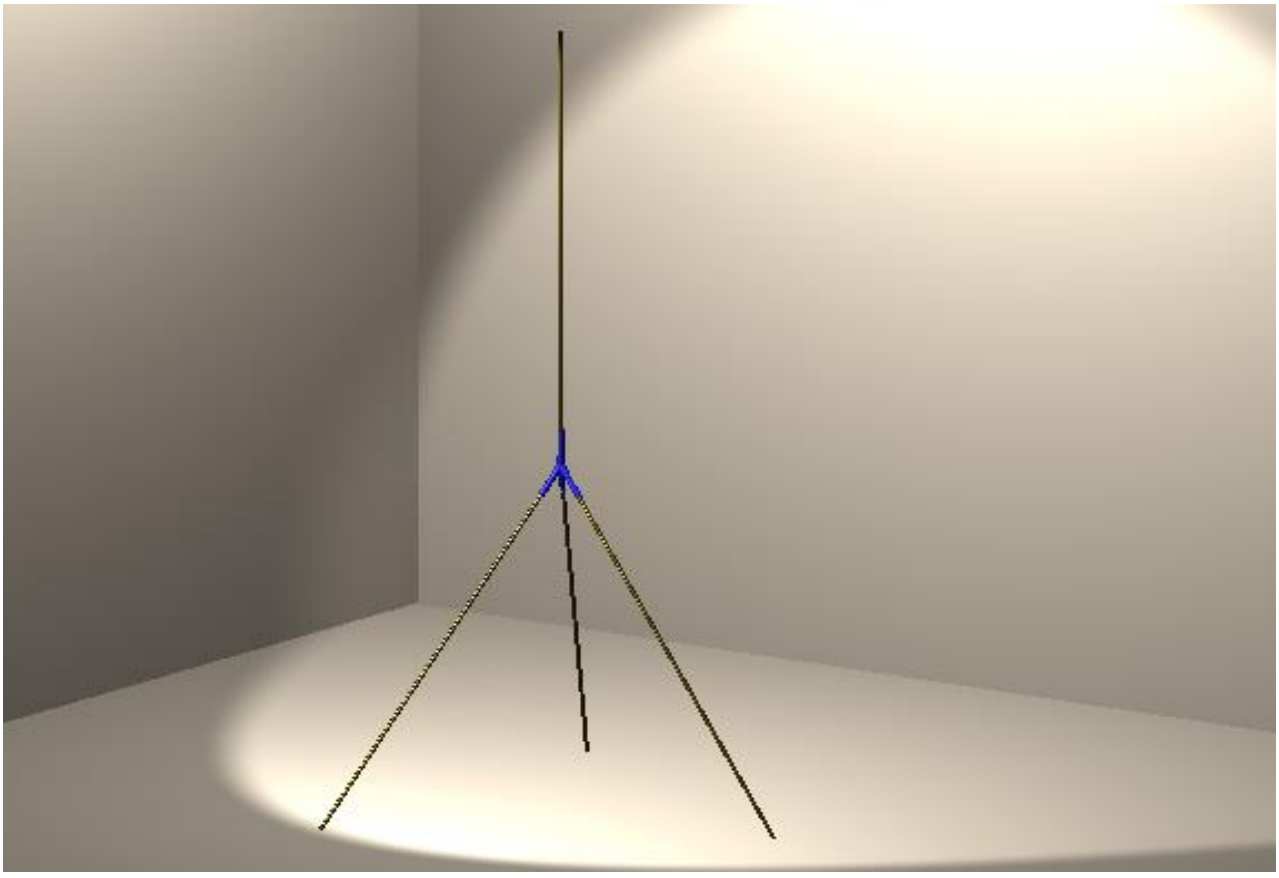
TOP VIEW

3.2 Isometric with realistic view

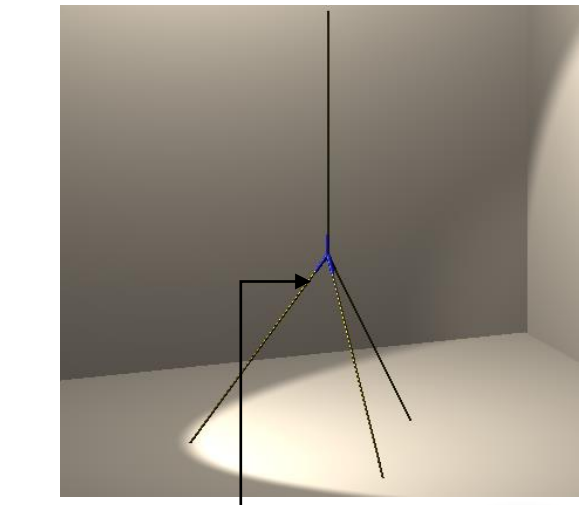


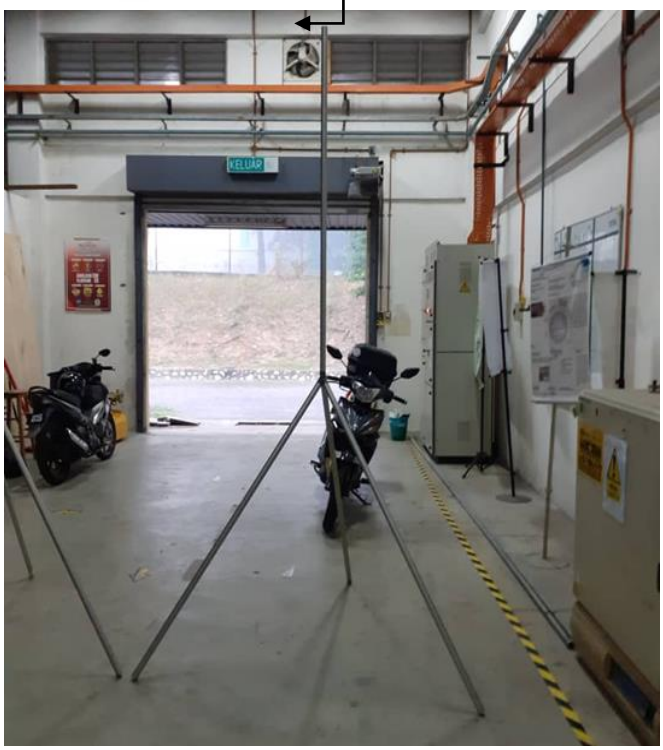
3.2.1 Isometric view with rendered





3.3 Design

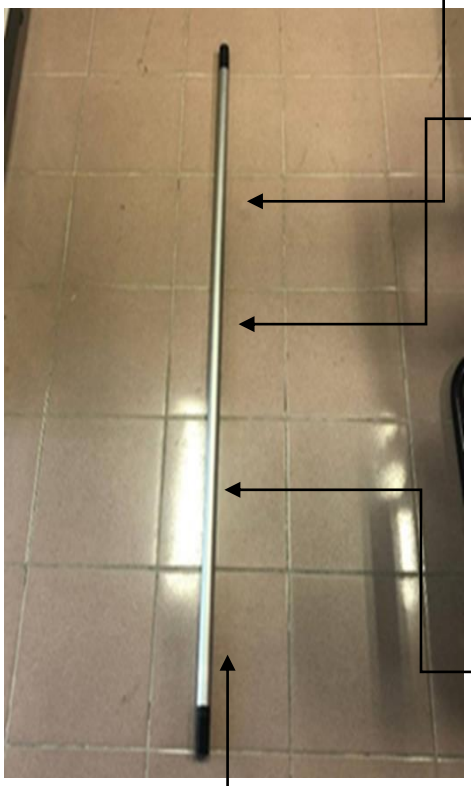




Survival Staff is a hybrid of wood and rattan sticks. We enhanced the wooden and rattan sticks by replacing them with aluminium created from recycled materials. Although, We innovated the cover (Lid) and survival content into the sticks. The Triport adaptor has a three-pronged design. It is a simple design, but it will make it easier for each aluminium pole rod to link well and snugly to the component legs using this design. Furthermore, Survival Staff has a height of 6’ 2”. With this height, it will be simpler for someone to hoist the flag on the Survival Staff and also for someone to view the flag because of the height of the Survival Staff.

3.4 MATERIAL

Main materials : Recycle Aluminium pole (Aloy)



Survival Staff is a hybrid of wood and rattan sticks. We enhanced the wooden and rattan sticks by replacing them with aluminum created from recycled

For one, aluminium is completely recyclable and the metal can be melted down and reused repeatedly without any loss of material or quality to produce the same quantity of aluminium plate, aluminium coil and aluminium pipe. The recycling of aluminium has early beginnings.

OD : 28 mm

The outside or outer diameter (OD) is one of the key specifications of rolls of labels; this measurement refers to the diameter of the entire roll of labels in its finished form.

ID : 23 mm

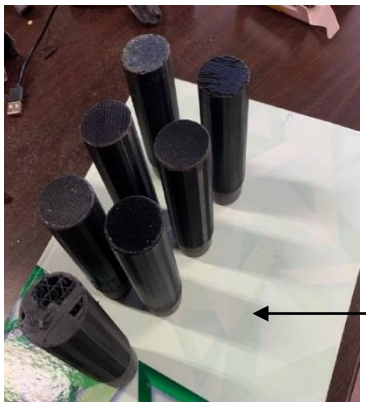
The internal diameter of a tube, conductor, or coupling, as distinguished from its OD (Outside Diameter).

1) Recycle Aluminium Pole (Aloy)

OD : 28mm

ID : 23 mm

FIGURE 14



2) Lid

Lid is the cover for the Survival Staff

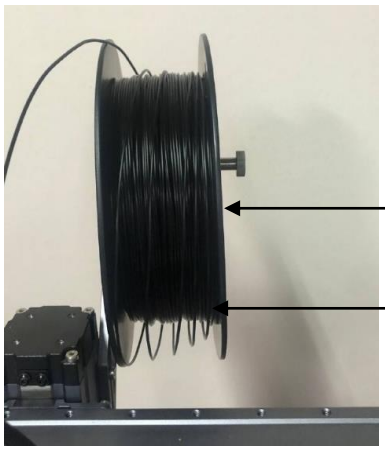
FIGURE 15

3) Triport Adaptor

Triport Adaptor serves to make a connection between each aluminium pole for the aluminium pole legs components and rods component

FIGURE 16

PLA Filament



PLA is the "default" suggested material for many desktop 3D printers. The reason is that it's suitable for a wide range of printing applications, is odorless fibers and low-warp, and doesn't require a heated bed. Features: PLA filament is one of the most environmentally friendly 3D printer materials on the market.

FIGURE 17

Polylactic Acid, commonly known as PLA, is one of the most popular materials used in desktop 3D printing. It is the default filament of choice for most extrusion-based 3D printers because it can be printed at a low temperature and does not require a heated bed

FIGURE 18

3.5 Equipment Used,Machinaries And Hand Tools

1) 3D Printer (Snap Maker)

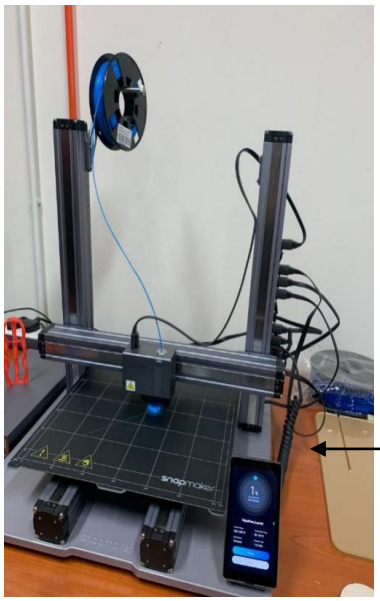


FIGURE 19

3D printing uses computer-aided design (CAD) to create three-dimensional objects through a layering method. Sometimes referred to as additive manufacturing, 3D printing involves layering materials, like plastics, composites or bio-materials to create objects that range in shape, size, rigidity and color.

A 3D printer is a type of material design printer that designs and builds 3D models and products of devices and components using an additive manufacturing process

3D printers, sometimes known incorrectly as “3D printing machines”, are additive manufacturing machines that specialize in making custom parts with accuracy. As the name suggests, 3D printers add material, layer-by-layer, to form a 3D object

FIGURE 20

HOW DOES A 3D PRINTER WORK?

3D printers are part of the additive manufacturing family and use similar methods to a traditional inkjet printer-albeit in 3D. It takes a combination of top-of-the-line software, powder-like materials and precision tools to create a three-dimensional object from scratch.

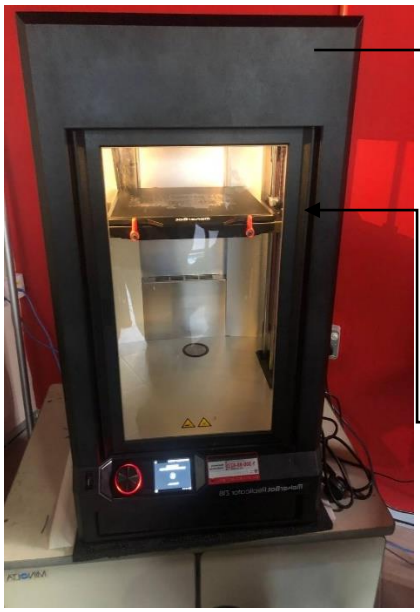


FIGURE 21

2) 3D Printer (Makerbot)

MakerBot Print is free software that optimizes and streamlines the 3D printing process. It allows you to discover, prepare, manage, and share 3D prints.

What is the main purpose of 3D printing?

3D printers can be used for both business purposes and as a hobby. The main purpose is to create items with only minimal material used. In industry products are made cheaply with mass production due to techniques such as injection moulding to ensure there is no material wastage.

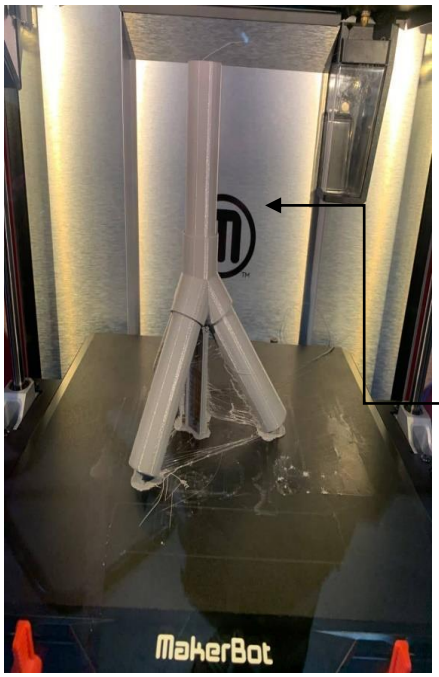
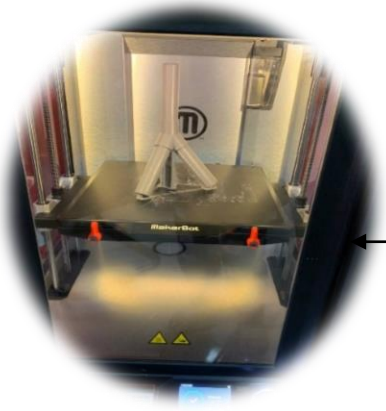


FIGURE 22

How does MakerBot printer work?

MakerBot's 3D Printers rely on a technology called Fused Deposition Modeling or FDM. It uses an extruder, which acts similar to a hot glue gun. Plastic filament is fed in through the top, is melted at 215°C, and finally is “extruded” out of a small nozzle into the layers that build a 3D print.



Is MakerBot a good printer?

Bottom Line. Historically, MakerBot has made 3D printing easier and more accessible to new users. That said, the 5th Generation Replicator is an average printer at best, and grossly overpriced at worst. MakerBot's Replicator is among the top well-known 3D printers on the market.

FIGURE 23

2) Sand paper

Sandpaper is produced in a range of grit sizes and is used to remove material from surfaces, either to make them smoother (for example, in painting and wood finishing), to remove a layer of material (such as old paint), or sometimes to make the surface rougher (for example, as a preparation for gluing).

FIGURE 24

3) Pliers

Diagonal cutting pliers are used for cutting wire and small pins in areas that cannot be reached by larger cutting tools. Because the cutting edges are diagonally offset about 15 degrees, these can cut objects flush with a surface.

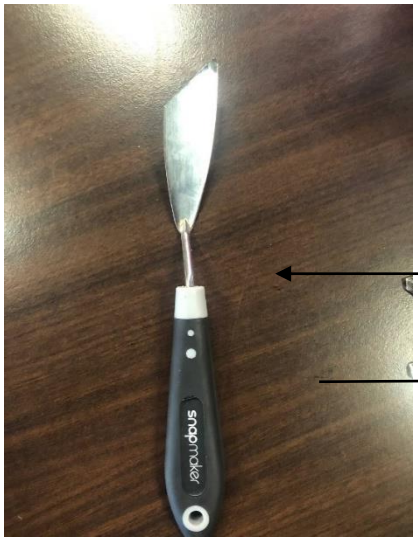


FIGURE 25

4) Snapmaker Knife (Sharp spatula)

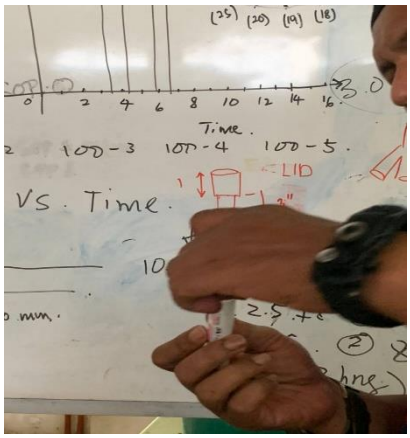
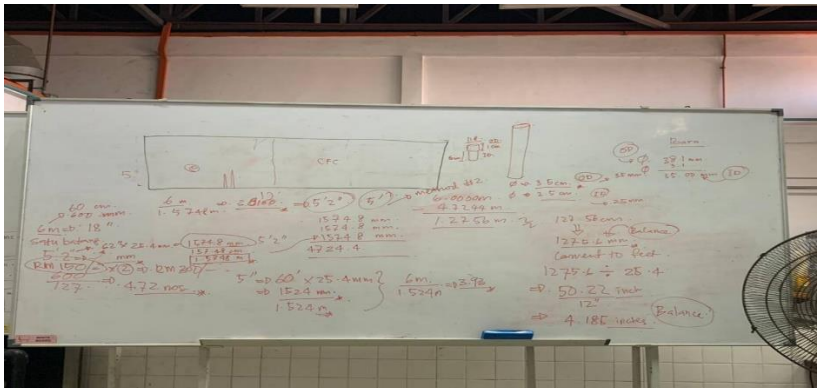
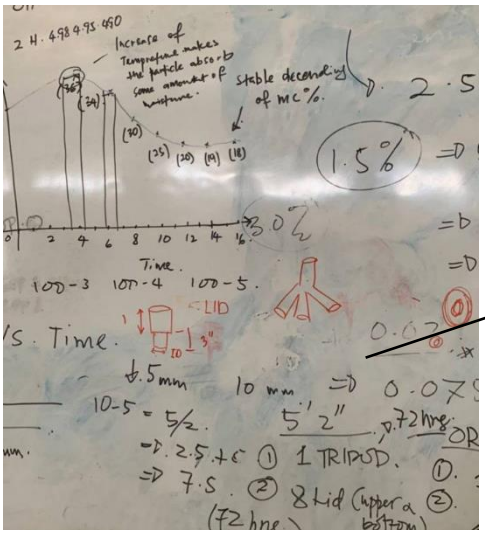
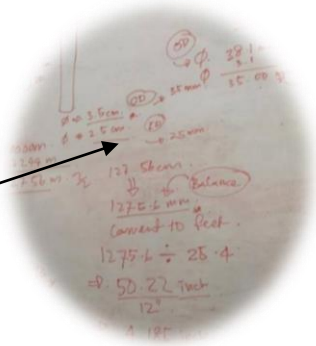
To dig up Triport Adapters and Lids that have been produced by 3D Printers Snapmaker and Makerbot

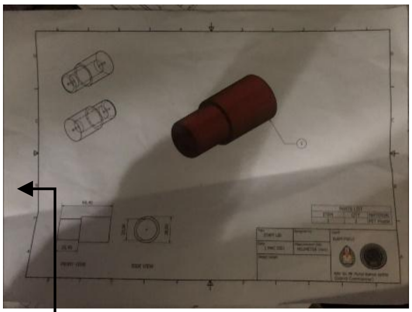
5) LED Bicycle Taillight Light Cycling

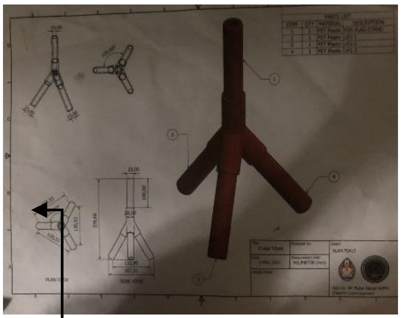
To be assembly on the top of survival staff to look bright at night.

FIGURE 26

3.6 Procedure

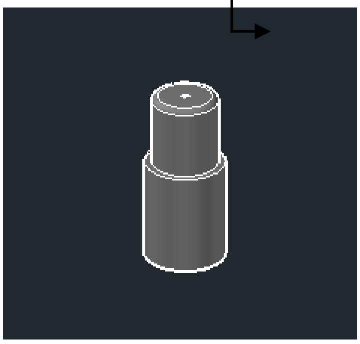
FIGURE	MANUFACTURING PROCESSES
    	**STEP 1 :** Identify the size for The inside diameter (ID) of a hollow circular aluminium poles,the outer diameter (OD) of a hollow circular aluminium poles,size of Triport Adaptor and Lid.

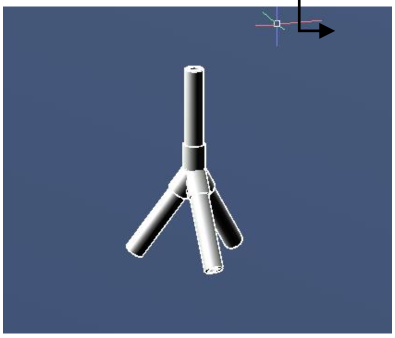




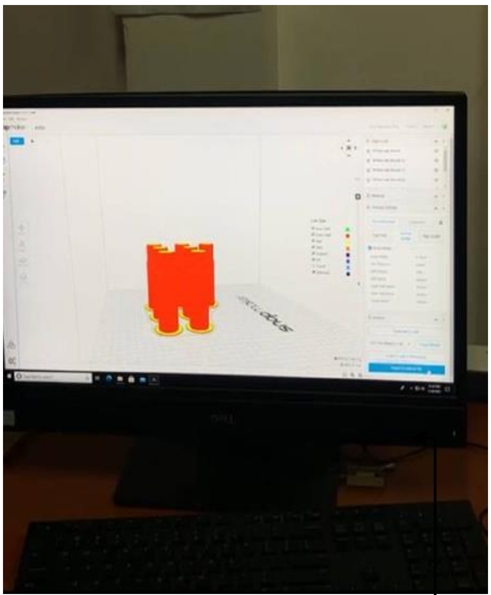
Lid

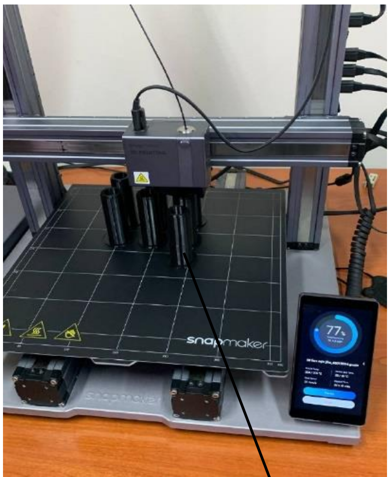
Triport Adaptor





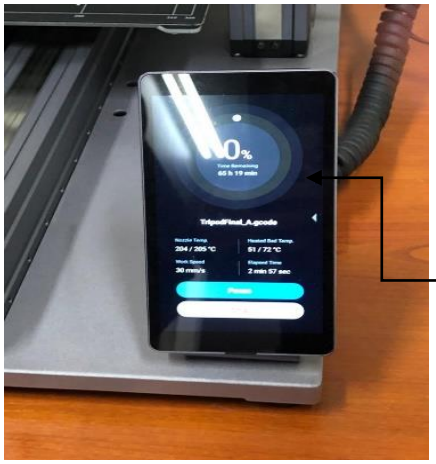
STEP 2 : Make a survival staff design for the Lid section and Triport Adaptor in the autocad before transferring to a computer snap maker, namely a 3D Printer (snap bot and marker bot) according to the standard size of Survival Staff measurements.

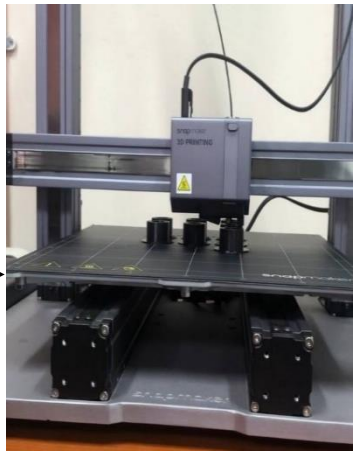


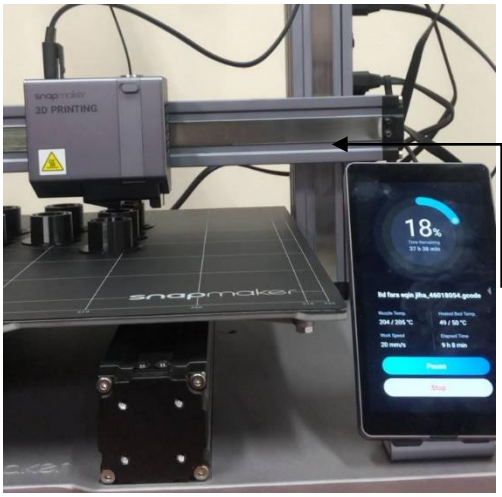


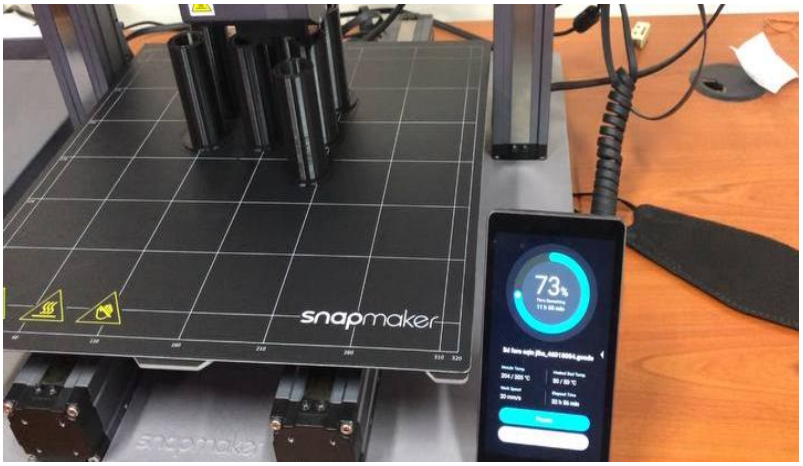
Transfer autocad Lid to the 3D Printer Snapmaker

STEP3 : Turn on button for 3D Printer Snapmaker machine to run out.After that, transfer Autocad Lid file to a computer that connected to a 3D printer.Using Snapmaker knife to dig up Triport Adapters and Lids.









3D Printer machine will be printer the 7 Lid for 65 hours non-stop for 100%.

Preheat to a temperature of 50°c first before start running the 3D Printer Snapmaker.

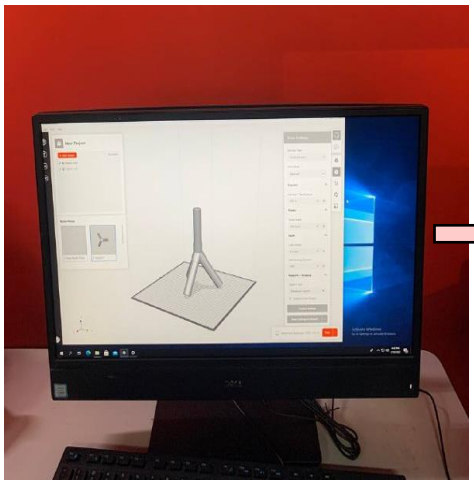
SOP FOR 3D PRINTER

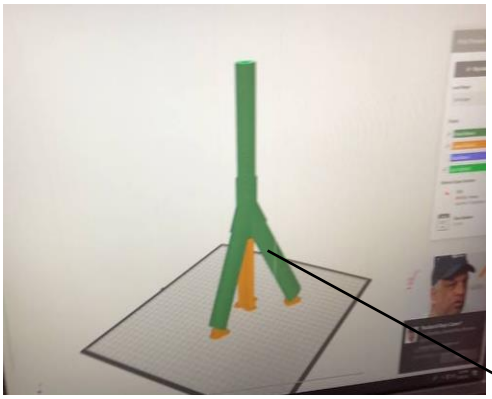
1) Before running the 3D printer machine make sure to clean the surface first from the dust and
PLA that sticky in 3D plate.

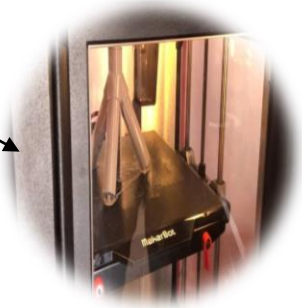
2) Only ONE person should operate this machine – or remove finished products. Always wear safety glasses and gloves when removing support materials.
DO NOT TOUCH any moving parts during operation.

Keep both hands behind the sharp spatula and tools when removing perf-board and scaffolds.

3) During temperature heating keep your hands away from the surface site of the 3D printer.

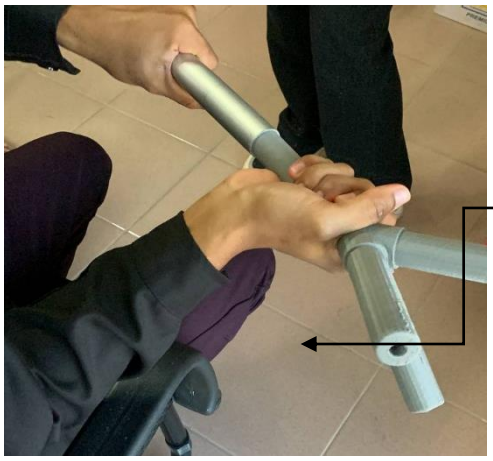






STEP 4 : Turn on button for 3D Printer Makerbot machine to run out.After that, transfer Autocad Triport Adaptor file to a computer that connected to a 3D printer Makerbot .Using pliers to cut the PLA filament in an oblique position

  Triport Adaptor Lid	Lid and Triport adaptor successfully produced
 	**STEP 5 :** Remove any damaged or slightly deformed areas on the triport adaptor and lid with grit #60 sandpaper.



Final assembly

Assemble all the parts to see if it was suitable for markets and testing if there are any problems with the Survival Staff that can be improved.

Survival Staff successfully produced

After finished produced Survival Staff making testing for :

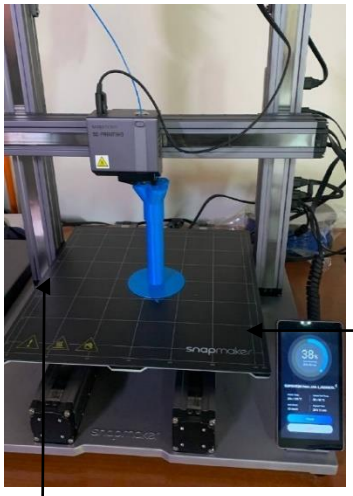
- Loading Testing
- Impact Testing
- Skracth Testing
- Water Poising Testing
- Drop Testing
- Wind Testing

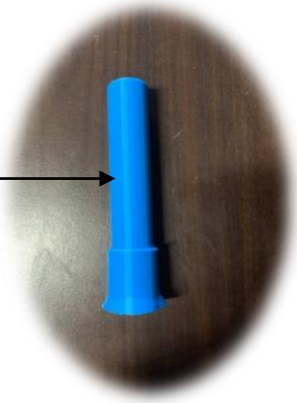
3.7 Final Result Survival Staff

3 Generations for Survival Staff → GENERATION 1 | GENERATION 2 | GENERATION 3 (THE NEW ONE)

3.8 Defect Survival Staff During Processes

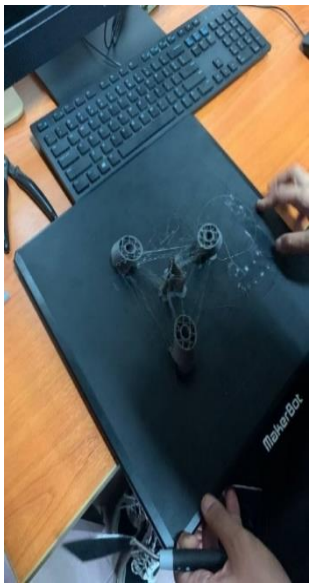
While produce triport adaptors, and lids, most of them are a lot of error. This is due to machine constraints. Machine constraints that cause the machine for 3D printers and MakerBot machines are always break down such as Triport adaptor falling during operation. This causes, triport adapter and lid can not be implemented properly.





Triport Adaptor produced using 3D Printer Snapmaker has dropped by 46%. So triport adapter is transferred to 3D Printer makerbot machine for produced.

Lids cannot be produced for 3D Printer Snapmaker machine because PLA Filament does not stick to the surface of 3D printer Snapmaker machine



3.9 Gantt Chart

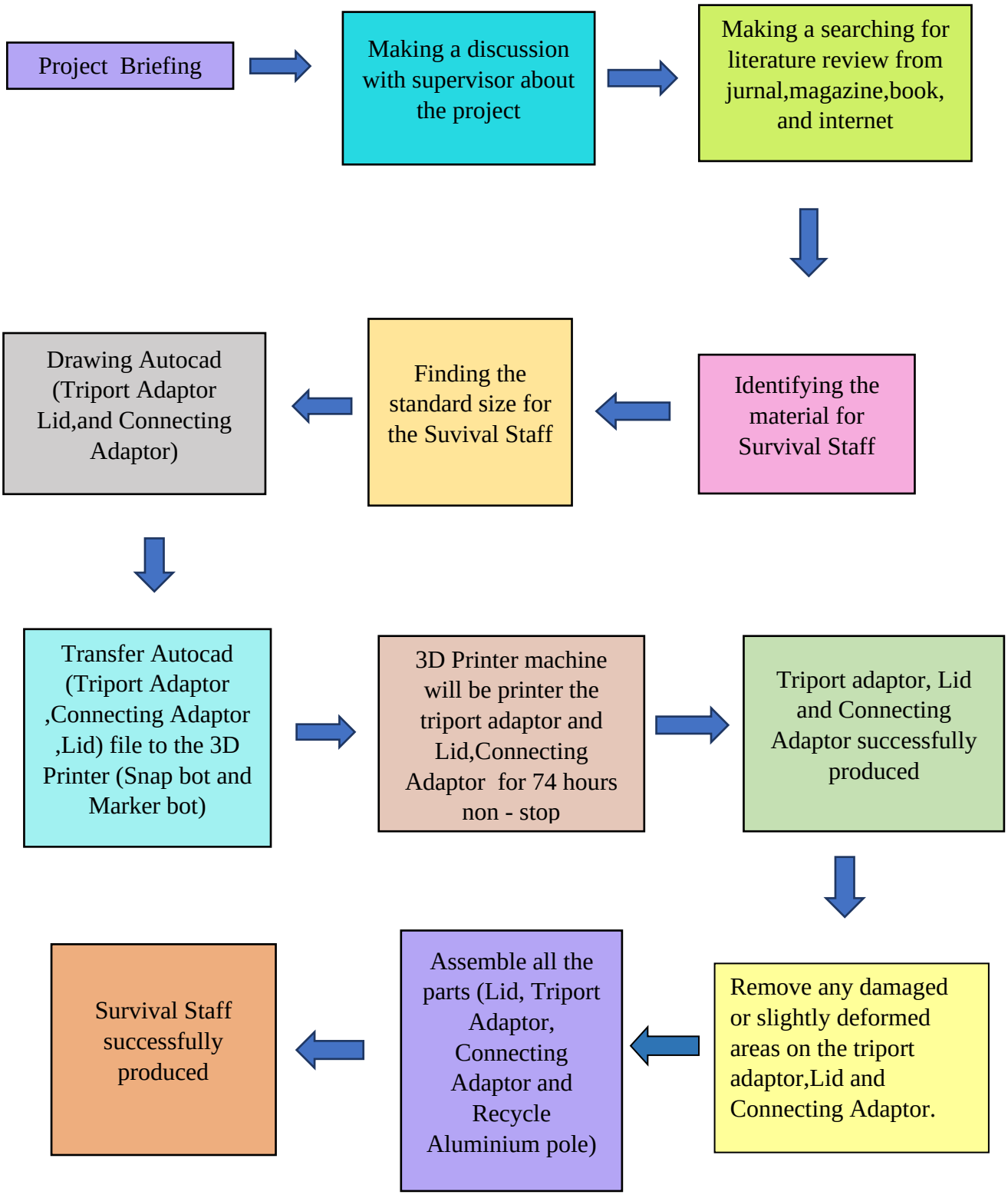
NO	ACTIVITIES	WEEK													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Project briefing														
2	Consultation with supervisor														
3	Project / research activities (Finding introduction to Survival Staff)														
4	Sketch and drawing in Autocad														
5	Presentation														
6	Amali														
7	Report writting														
8	Prototype														
9	Final proposal														

WORK PLANNING

IMPLEMENTATION

3.9.1 Flow Chart

Flow charts are simple diagrams that map out a process, so that you can easily communicate it to other people. You can also use them to define and analyze a process, build a step-by-step picture of it, and then standardize or improve it.



3.9.2 Bill Of Material

This figure 3.9.2 show bill of material (BOM) for components of Survival Staff A bill of materials (BOM) is a centralized source of information used to manufacture a product. It is a list of the items needed to create a product as well as the instructions on how to assemble that product. Manufacturers that build products start the assembly process by creating a BOM

BoM Level	Description	Qty	Cost
1	Aluminium poles	5	-
2	Sand paper grid #60 #240	2	RM 2.00
3	LED Bicycle Taillight Light Cycling	4	RM 27.60
Total			RM 29.60

3.9.3 Cutting List

This figure 3.9.3 show cutting list for components of Survival Staff It is to used correctly, a cut list can be a great aid in part layout, confirming key dimensions. A cutting list is a tabulated list showing information about the materials required for the job. It shows you things like: the kind of material needed for each part; how much to use; length; width and thickness of the material; and any special notes on what needs to be done.

No	Components	Length	Width	Thickness	Materials	Qty	Units
1	Aluminium poles	1574.8	28	3.88	Aloi	5	mm
2	Lid	100	28	28	PLA Filament	7	mm
3	Triport Adaptor	278.68	28	3.88	PLA Filament	2	mm

CHAPTER 4

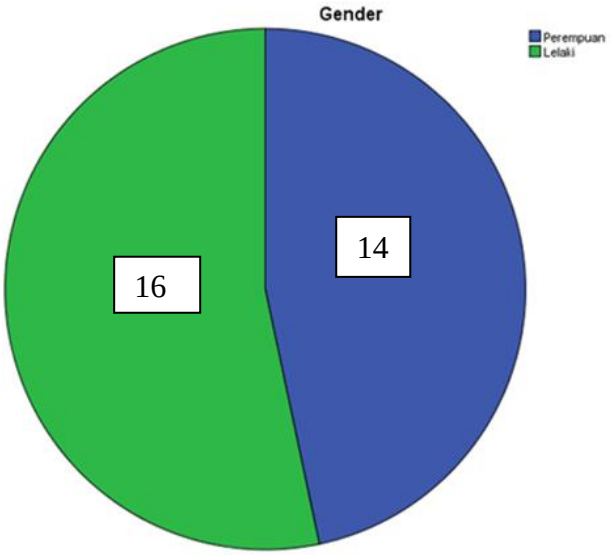
4.0 Survey

This questionnaire have been proceed for given to the respondents through social media platform to know their feedback about the Survival Staff product whether meet the requirement or not.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Perempuan	14	46.7	46.7	46.7
	Lelaki	16	53.3	53.3	100.0
	Total	30	100.0	100.0	

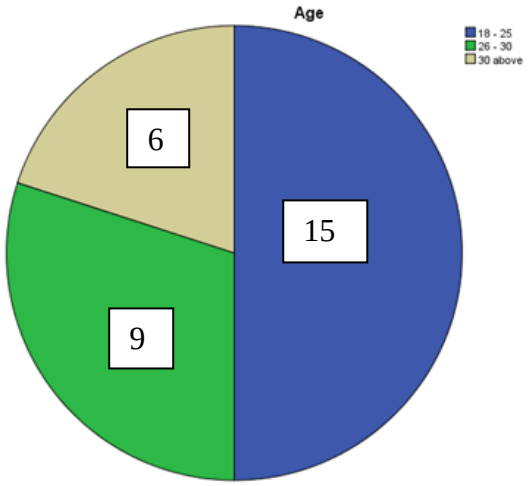
Table 4.1.1 shows the gender for respondents



Age

		Frequency	Percent	Valid Percent	Cumulative Percent
	18 - 25	15	50.0	50.0	50.0
	26 - 30	9	30.0	30.0	80.0
	30 above	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

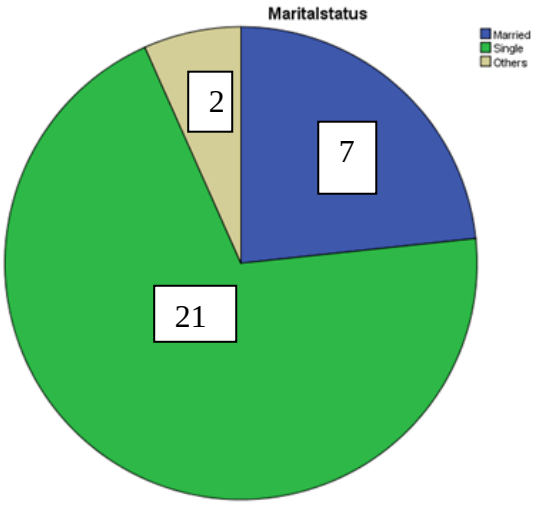
Table 4.1.2 shows the age of respondent that respond to this questionnaire



Marital status

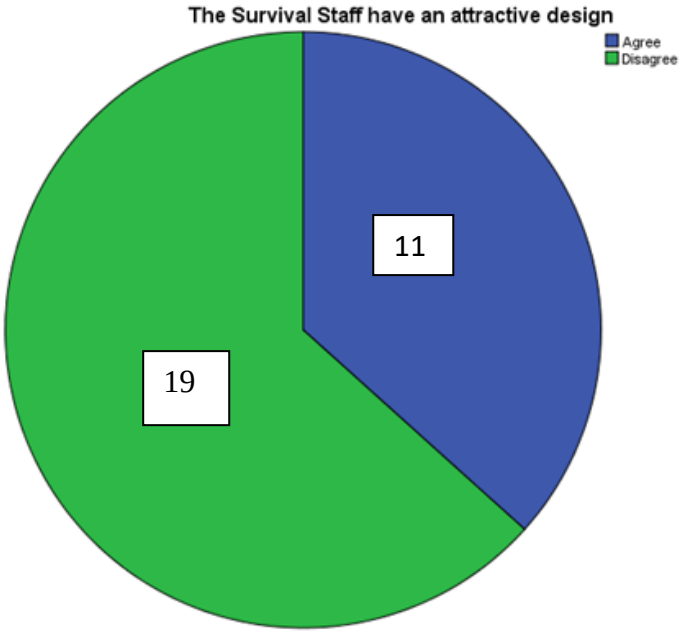
		Frequency	Percent	Valid Percent	Cumulative Percent
	Married	7	23.3	23.3	23.3
	Single	21	70.0	70.0	93.3
	Others	2	6.7	6.7	100.0
	Total	30	100.0	100.0	

Table 4.1.3 shows the marital status of respondents



The Survival Staff have an attractive design

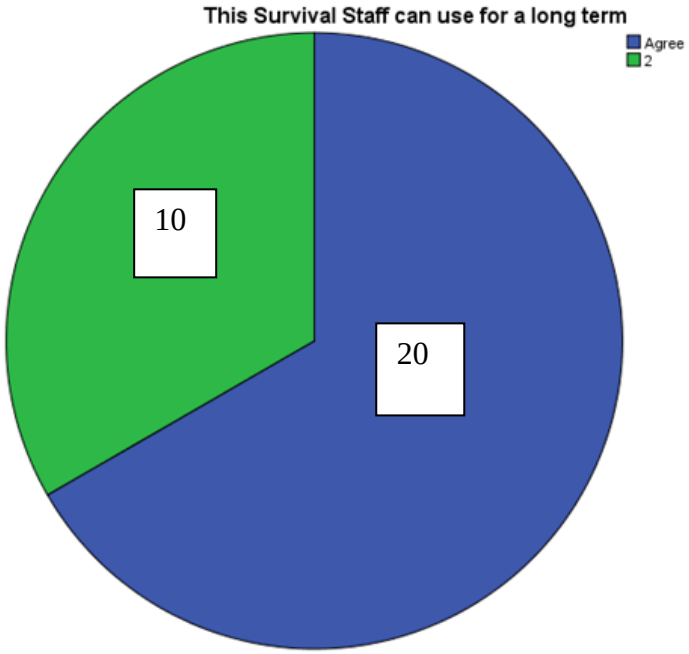
		Frequency	Percent	Valid Percent	Cumulative Percent
	Agree	11	36.7	36.7	36.7
	Disagree	19	63.3	63.3	100.0
	Total	30	100.0	100.0	



The table 4.1.4, this show us the majority of 63.3% of respondents disagree that our survival staff have attractive design because it's very simple and just only aluminium pole but actually with only aluminium pole, our survival staff can place a variety of items in there like crawford knife, flat pole, first aid and spear, also can put accessories at aluminiumpole like LED bicyle tailight light cycling. While 36.7% of respondents are strongly agree that our survival staff have attractive design because they know that a simple product can be modified according to their creativity

This Survival Staff can use for a long term

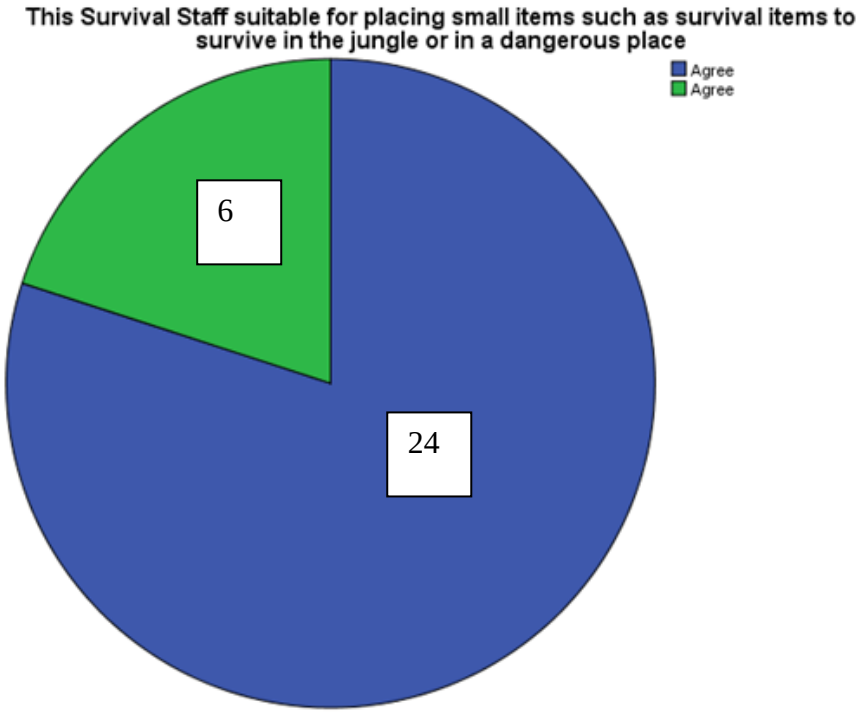
		Frequency	Percent	Valid Percent	Cumulative Percent
	Agree	20	66.7	66.7	66.7
	Disagree	10	33.3	33.3	100.0
	Total	30	100.0	100.0	



The table 4.1.5 above shows 66.7 % agree that The Survival Staff can use for a long term. Survival Staff is a hybrid of wood and rattan sticks. We enhanced the wooden and rattan sticks by replacing them with aluminum created from recycled materials. Moreover, Survival Staff is from aluminum material is much stronger and will last longer than wooden ones. Aluminum offer exceptional strength for long lasting durability. Aluminum to last for decades, if take good care of aluminum product well. Meanwhile, 33.7 % of respondent are strongly disagree statement that The Survival Staff can use for a long term. This is because the respondent though this particular property of aluminium can also actually as a disadvantage. It can be more easily dented and scratched in comparison to steel. Steel is strong and less likely to warp, deform or bend under any weight, force or .heat.

This Survival Staff suitable for placing small items such as survival items to survive in the jungle or in a dangerous place

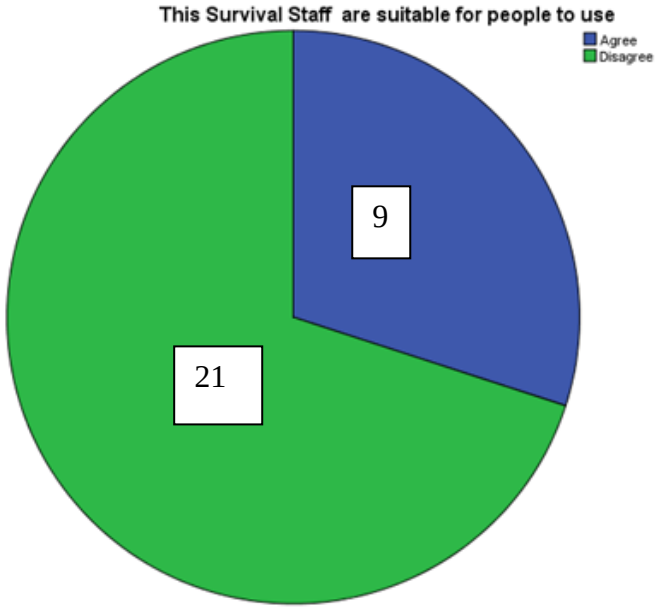
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	24	80.0	80.0	80.0
	Disagree	6	20.0	20.0	100.0
	Total	30	100.0	100.0	



The diagram of table 4.1.6 above shows that the majority of 80.00% of respondents agree that Survival Staff is suitable for placing small items such as survival items to survive in the forest or in dangerous places and at the same time, can save available space by placing crawford knives, first aid, safety jackets and hooks for fishing in the jungle later. This is because the majority of respondents who agreed with this statement have experienced this situation, while only20.0% of the respondents disagreed with the statement, saying they were less interested because the space available was very limited and it was difficult for them to put large items in it.

This Survival Staff are suitable for people to use

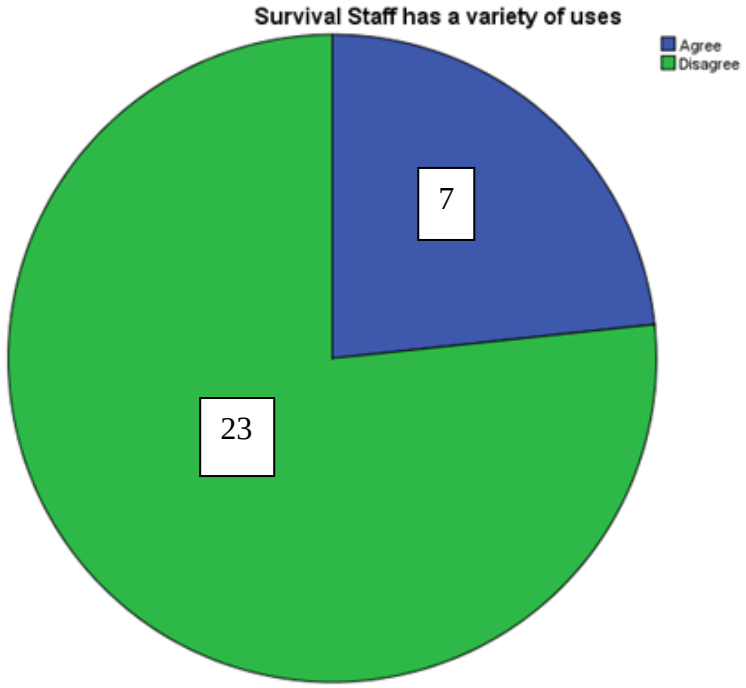
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	30.0	30.0	30.0
	Disagree	21	70.0	70.0	100.0
	Total	30	100.0	100.0	



This diagram of table 4.1.7 shows there are 70% respondent are strongly disagree the statement about The Survival Staff suitable for people to use. This is because the respondents thought that the Survival Staff cannot be used in daily life. Survival Staff suitable to someone who love to be on adventure such as hiking. Besides that, there are 30% agree with the statement about The Survival Staff suitable for people to use .In this statement of agree, we can founded that this respondent person love to be on adventure. Survival Staff used as survival hiking a flagpole other than a survival item. It also to build the strength of survival hiking that can help us balance our body and as a protective survival container during an emergency when colliding with danger and high risks situation in the forest. Survival Staff is a staff that has a weapon in it that can protect itself from a threat.This research focuses for adults who wishes to enter survival dimension

Survival Staff has a variety of uses

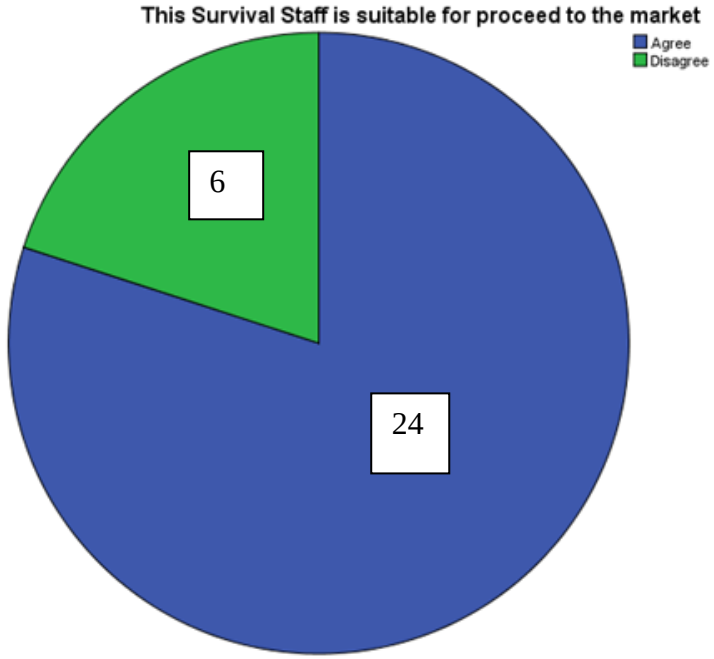
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	7	23.3	23.3	23.3
	Disagree	23	76.7	76.7	100.0
	Total	30	100.0	100.0	



The diagram 4.1.8 show there are 76.7% respondents are disagree from the statement about survival staff has a variety of use because they thought our survival staff does not have many functions and they only focus on the name but do not know the function of our survival staff and the variety of uses on the survival staff. In fact, there are many things that can be done with our survival staff, among them can be used as a flagpole and also a place of detention in the tent, as well as can be used as a protection for yourself while climbing a mountain from the threat of danger but for those who totally agree 23.3% respondents with this statement because they are interested in mountain climbing and they know our survival staff is quality and a wise choice for a climber.

This Survival Staff is suitable for proceed to the market

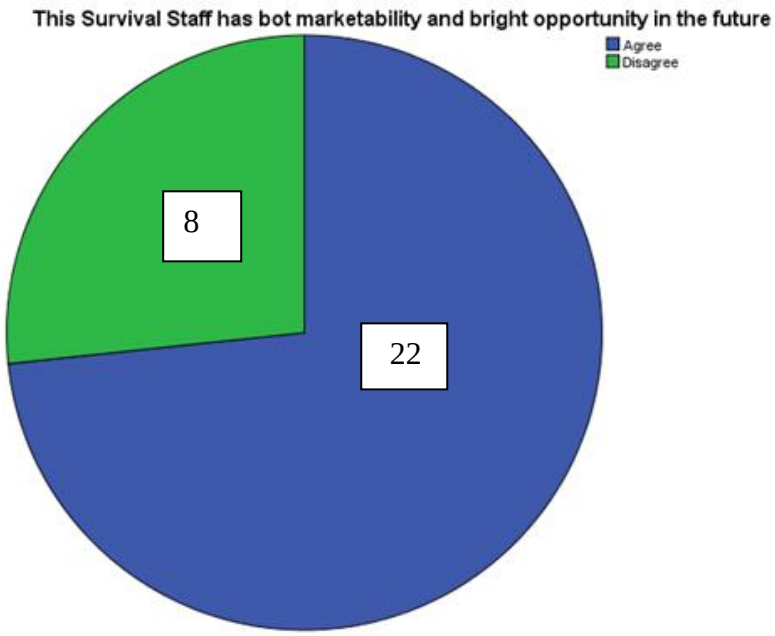
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	24	80.0	80.0	80.0
	Disagree	6	20.0	20.0	100.0
	Total	30	100.0	100.0	



The diagram 4.1.9 above shows that the majority of 80% of the respondents agree that this survival staff is suitable to proceed to the market because the model and design are attractive and suitable for hiking enthusiasts to use. It can last a long time and can be further expanded in all markets and sports centre shops by placing a reasonable and affordable price on it, while only 20% of the respondents disagreed with the statement, because for them it is just ordinary goods that they can replace by using the available wooden sticks as their survival staff and can save money.

This Survival Staff has bot marketability and bright opportunity in the future

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	22	73.3	73.3	73.3
	Disagree	8	26.7	26.7	100.0
	Total	30	100.0	100.0	



This diagram of Table 4.2.0 above shows the majority 73.3% agree that the Survival Staff has bot marketability and bright opportunity in the future. The respondents thought that the Survival Staff has been produced with the design and have variety uses for the first time. The uniqueness found on this Survival Staff is its also have alternative usage,with 6'2" height of Survival Staff,it can used as a flagpole as addition, it also can put a lot of survival items inside the aluminium poles, so if the Survival Staff will be purchasing to the market, there's a lot of people who loves to exploration forest, montain, adventure places will be purchasing this product. Futhermore, there is 26.7% totally are disagree .This is because the respondent did not like to be on adventure life such as hiking.

CHAPTER 5 : CONCLUSION

In conclusion, we managed to discuss and build Survival Staff as our final year project. Furthermore, the design of the Survival Staff is suitable in a variety of uses especially for hiking use where there are various survival items and uses to hoist the flag. Survival Staff is suitable for those who like to do hiking activities. The main goal of this Survival Staff is to be used as a survival hiking flagpole rather than a survival item, to build the strength of a survival hiking flagpole that can help us balance our bodies, and to serve as a protective survival container during an emergency when encountering danger and high riks situations in the forest. Furthermore , We also used a 3D printer to create triport adaptors and lids. To achieve 100%, the triport adaptors must be constructed for 65 hours nonstop. Therefore, we need to give more of our daily time to monitor the 3D Printer machine so that the 3D Printer machine is not error. Although it is very tiring but we get a lot of experience.

From the experience we got from making this survival staff is that we can use a 3D Printer and know how to use it to create a triport adaptor and we have to wait for 74 hours non -stop. We got a lot of lessons in making this survival staff including we have to wait for the 3d printer to be ready as we have to sleep all day there for monitoring and we can also help people by creating survival staff for mountaineering enthusiasts to make it easier for them to climb. Our survival staff can be used at all ages because our this staff can be adjusted according to the comfort and ergonomic height of the user.Besides that, survival staff can also put a small flashing light on this stuff to protect the safety of users, and most importantly, this staff can also be used as a self-defence tool during hiking when stumble upon wild animals in the forest.

Last but not least, while produce triport adaptors, and lids, most of them are a lot of error. This is due to machine constraints. Machine constraints that cause the machine for 3D printers and MakerBot machines are always break down such as Triport adaptor falling during operation. This causes, triport adapter and lid can not be implemented properly. Besides that, we also have time constraints to complete the fyp with only 2 weeks left. the time constraint we face is the 3D printer machine has a problem for processing the adapter triport, so there we have to restart and it has to repeat again for 3 days. We will collect all the defects (lid, triport) that exist to be used as proof that the 3D printer and snap makerbot machine needs to be serviced. as well as will make the work easier when the machine runs smoothly and what work we do will be completed quickly without any problems and we will often use the machine to do work so that the machine is not left unused for a long time.After finished produced Survival Staff,we making testing ,we failed for water poising testing,drop testing and wind testing. This is because the triport adaptor are made from ‘non solid ‘that has been produced is easily broken after being tested for wind testing.

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